National Testing Agency

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	CHEMICAL SCIENCES 28th July 2025 Shift 2
Subject Name :	Chemical Sciences
Creation Date :	2025-07-28 21:38:36
Duration :	180
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Change Font Color :	No
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Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

CHEMICAL SCIENCES

Group Number :	1
Group Id :	5629543
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	200

PART - A

Section Id :	5629547
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	15
Section Marks :	30
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	5629547
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 562954196 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Consider the following statements:

Statement I: All Booklets are Manuals.
Statement II: All Manuals are Catalogues.

If Statements I and II are True, which one of the following conclusions can be conclusively drawn?

1. All Manuals are Booklets.
2. All Catalogues are Booklets.
3. All Booklets are Catalogues.
4. All Catalogues are Manuals.

Question Number : 1 Question Id : 562954196 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित कथनों पर विचार करें :

कथन I: सभी पुस्तिकाएं नियमावलियां हैं
कथन II: सभी नियमावलियां सूचियां हैं

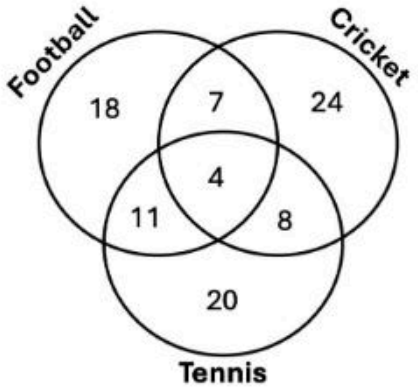
यदि कथन I और II सत्य हैं तो निम्न में से कौन सा निष्कर्ष निश्चित रूप से निकाला जा सकता है ?

1. सभी नियमावलियां, पुस्तिकाएं हैं
2. सभी सूचियां पुस्तिकाएं हैं
3. सभी पुस्तिकाएं, सूचियां हैं
4. सभी सूचियां नियमावलियां हैं

Question Number : 2 Question Id : 562954197 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The given Venn diagram shows numbers of players playing one or more than one sport.



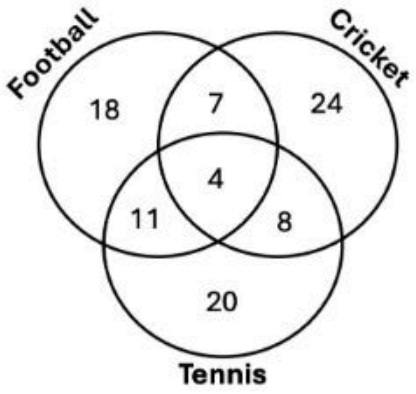
The percentage of players who play exactly two sports is closest to _____%.

1. 5
2. 14
3. 28
4. 32

Question Number : 2 Question Id : 562954197 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

दिए गए वेन आरेख में उन खिलाड़ियों की संख्या प्रदर्शित की गई है जो एक या उससे अधिक खेलों को खेलते हैं।



उन खिलाड़ियों की प्रतिशतता जो ठीक दो खेल खेलते हैं ..... % के निकटतम होगी

1. 5
2. 14
3. 28
4. 32

Question Number : 3 Question Id : 562954198 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The value of a company is measured as the total value of its shares owned by different investors. Rakesh owns 2/15 of the shares of a company. He sells 1/3 of his shares for Rs. 75,000/-. What is the total value of the company at that time?

1. Rs. 15,75,800
2. Rs. 16,87,500
3. Rs. 17,75,800
4. Rs. 18,27,500

Question Number : 3 Question Id : 562954198 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

एक कंपनी का मूल्य, विभिन्न निवेशकों के स्वामित्व में इसके शेयरों के कुल मूल्य द्वारा मापा जाता है। राकेश के पास इस कंपनी के शेयरों का 2/15 भाग है। वह अपने शेयरों के 1/3 भाग को रु. 75,000/- में बेच देता है। इस कंपनी का कुल मूल्य उस समय क्या है?

1. रु. 15,75,800
2. रु. 16,87,500
3. रु. 17,75,800
4. रु. 18,27,500

Question Number : 4 Question Id : 562954199 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

A car has wheels of diameter 36 cm. If it runs at a speed of 60 km/h, then the rotation per minute (RPM) will be closest to _____ .

1. 884
2. 898
3. 906
4. 986

Question Number : 4 Question Id : 562954199 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

एक कार के पहियों का व्यास 36 सेंमी है। यदि यह 60 किमी/घंटे की गति से चलती है तो इसके पहियों का प्रति मिनट रोटेशन (RPM) _____ के निकटतम होगा।

1. 884
2. 898
3. 906
4. 986

Question Number : 5 Question Id : 562954200 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

A cylindrical container of radius 20 cm was filled with water up to 25 cm height. A solid spherical ball of radius 7 cm was then immersed in the water. What would be the approximate increase in water level in the container after the ball was fully immersed?

1. 1.14 cm
2. 2.28 cm
3. 5.50 cm
4. 7.00 cm

Question Number : 5 Question Id : 562954200 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

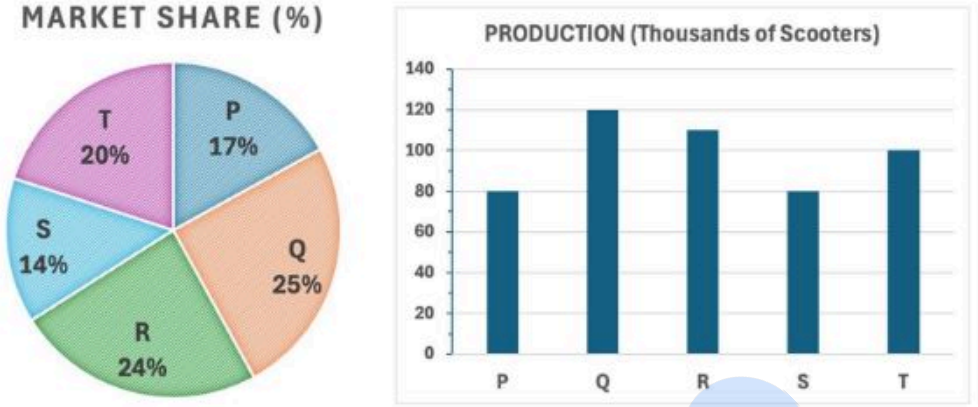
एक बेलनाकार पात्र जिसकी त्रिज्या 20 सेंमी है में 25 सेंमी ऊंचाई तक जल भरा गया। तत्पश्चात इसमें 7 सेंमी त्रिज्या के एक ठोस गोलाकार गेंद को डाला गया। इस गेंद के पानी में पूरी तरह डूबने के पश्चात पात्र में जल के स्तर में लगभग कितनी वृद्धि होगी?

1. 1.14 सेंमी
2. 2.28 सेंमी
3. 5.50 सेंमी
4. 7.00 सेंमी

Question Number : 6 Question Id : 562954201 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The market share (%) and annual production of scooters from five automobile companies P, Q, R, S, and T are shown in graphs.



If the profit of a company is directly proportional to the ratio of market share to production, then which of the following statements is/are CORRECT?

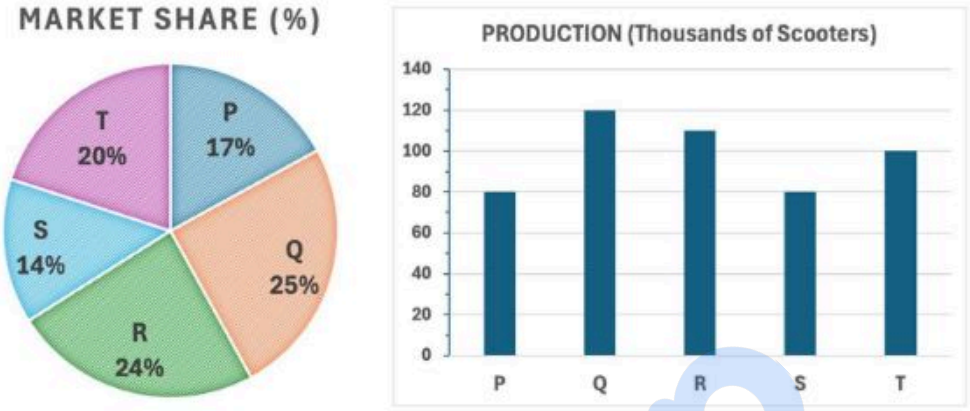
Statement X: Companies T and P have same profit
Statement Y: Company R has the maximum profit
Statement Z: Company S has the minimum profit

1. X and Y
2. X and Z
3. Y and Z
4. Only Z

Question Number : 6 Question Id : 562954201 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

नीचे दिए गए ग्राफ में P, Q, R, S और T नामक ऑटोमोबाइल कंपनियों के मार्केट शेयर (%) और स्कूटरों के वार्षिक उत्पादन को प्रदर्शित किया गया है।



यदि किसी कंपनी का लाभ इसके बाजार हिस्सेदारी व उत्पादन के अनुपात के सीधे समानुपाती हो तो निम्नलिखित में से कौन सा/से कथन सही है/हैं ?

कथन X: T और P कंपनी का लाभ एकसमान है
कथन Y: R कंपनी का लाभ सर्वाधिक है
कथन Z: S कंपनी का लाभ न्यूनतम है

1. X एवं Y
2. X एवं Z
3. Y एवं Z
4. केवल Z

Question Number : 7 Question Id : 562954202 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Rahul and his father started jogging on a circular track of radius 'r' (r >2). Rahul completed one round and stopped. His father got tired half way into the first round and returned to his starting point along a straight line. What is the ratio of the distances covered by Rahul and his father?

1. $\pi r / (\pi + 2)$
2. $2 \pi / (\pi + 2)$
3. 1
4. 2

Question Number : 7 Question Id : 562954202 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

राहुल और उसके पिता ने 'r' (r >2) त्रिज्या के एक वृत्ताकार ट्रैक पर दौड़ना प्रारंभ किया। राहुल ने एक चक्कर पूरा किया और रुक गया। उसके पिता पहले चक्कर के आधे रास्ते पे थक जाने के कारण एक सीधी रेखा में अपने प्रारंभिक बिंदु पर वापस आ गए। पिता के सापेक्ष राहुल द्वारा तय की गई दूरी का अनुपात क्या है?

1. $\pi r / (\pi + 2)$
2. $2 \pi / (\pi + 2)$
3. 1
4. 2

Question Number : 8 Question Id : 562954203 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Kavita starts from her house and walks 200 m northward, then turns 45° right and walks 70 m. After that, she turns 90° right and walks 70 m. Which of the following is the closest value of the shortest distance between Kavita's current location and her house?

1. 296 m
2. 240 m
3. 200 m
4. 223 m

Question Number : 8 Question Id : 562954203 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

कविता अपने घर से चलना प्रारंभ करती है और 200 मीटर उत्तर की ओर चलती है और उसके बाद 45° पर दाएं मुड़कर 70 मीटर चलती है। तत्पश्चात वह 90° पर दाएं मुड़कर 70 मीटर चलती है। कविता के वर्तमान स्थान और उसके घर के बीच की न्यूनतम दूरी का निकटतम मान निम्नलिखित में से क्या होगा?

1. 296 मीटर
2. 240 मीटर
3. 200 मीटर
4. 223 मीटर

Question Number : 9 Question Id : 562954204 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The initial monthly salaries of employees John, Riya, and Sunil were in the proportion 4:3:5. After an increase of Rs 10000 monthly to all, the new proportion becomes 6:5:7. What was the initial salary of Sunil?

1. Rs 20000
2. Rs 25000
3. Rs 30000
4. Rs 35000

Question Number : 9 Question Id : 562954204 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

जॉन, रिया और सुनील नामक कर्मचारियों के प्रारंभिक मासिक वेतन का अनुपात 4:3:5 है। सबके वेतन में रु. 10000 की वृद्धि होने पर नया अनुपात 6:5:7 हो जाता है। तो सुनील का प्रारंभिक वेतन क्या था?

1. रु. 20000
2. रु. 25000
3. रु. 30000
4. रु. 35000

Question Number : 10 Question Id : 562954205 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Numbers of Rose, Lotus, and Marigold plants in a garden are in the proportion 8:5:7. Later, 75%, 40% and 50% more plants of their respective categories were added. What will be the new proportion of plants, in the same order?

1. 5:3:4
2. 4:2:3
3. 5:4:3
4. 7:4:5

Question Number : 10 Question Id : 562954205 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

एक बगीचे में गुलाब, कमल और गेंदा के पौधों की संख्या का अनुपात 8:5:7 है। बाद में उनकी श्रेणी के क्रमश 75%, 40% और 50% और पौधों को शामिल किया गया। उसी क्रम में पौधों का नया अनुपात क्या होगा?

1. 5:3:4
2. 4:2:3
3. 5:4:3
4. 7:4:5

Question Number : 11 Question Id : 562954206 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

What will be the digit at the unit's place of $1^3 + 2^3 + 3^3 + 4^3 + 5^3 + 6^3 + 7^3 + 8^3 + 9^3$?

1. 0
2. 5
3. 7
4. 9

Question Number : 11 Question Id : 562954206 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

$1^3 + 2^3 + 3^3 + 4^3 + 5^3 + 6^3 + 7^3 + 8^3 + 9^3$ के इकाई स्थान पर क्या आएगा?

1. 0
2. 5
3. 7
4. 9

Question Number : 12 Question Id : 562954207 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Suresh asked Ramesh to identify the person in a photo that the latter is holding. Ramesh responds, "I have no brothers or sisters. However, that man's father is my father's son." Who is the person in the photo?

1. Suresh
2. Ramesh
3. Ramesh's son
4. Ramesh's cousin

Question Number : 12 Question Id : 562954207 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

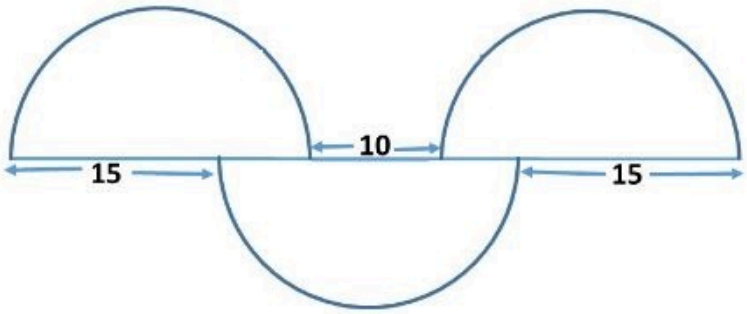
सुरेश ने रमेश से रमेश के पास स्थित फोटो में दिख रहे व्यक्ति की पहचान करने को कहा। रमेश ने कहा कि "मेरा कोई भी भाई या बहिन नहीं है। हालांकि उस व्यक्ति का पिता मेरे पिता का पुत्र है।" फोटो में दिख रहा व्यक्ति कौन है ?

1. सुरेश
2. रमेश
3. रमेश का पुत्र
4. रमेश का चचेरा भाई

Question Number : 13 Question Id : 562954208 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Three identical semi-circles are arranged as shown. What is the diameter of the semi-circles?

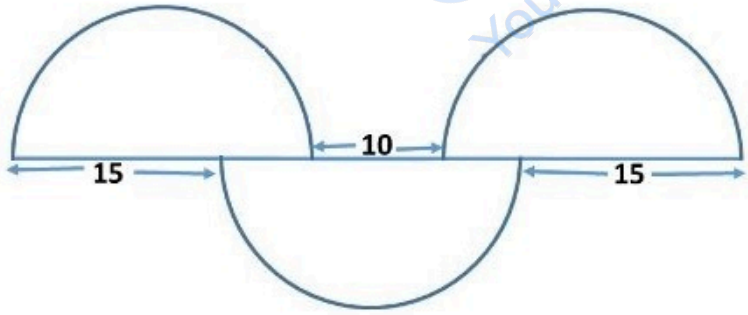


1. 5 π
2. 20
3. 15π /2
4. 25

Question Number : 13 Question Id : 562954208 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

तीन समान अर्ध-वृत्तों को दर्शाए गए क्रम में रखा गया है। अर्ध-वृत्तों का व्यास क्या होगा?



1. 5 π
2. 20
3. 15π /2
4. 25

Question Number : 14 Question Id : 562954209 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

A number is mistakenly divided by 2 instead of being multiplied by 2. What is the change in the result caused by this mistake?

1. 25%
2. 50%
3. 75%
4. 100%

Question Number : 14 Question Id : 562954209 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

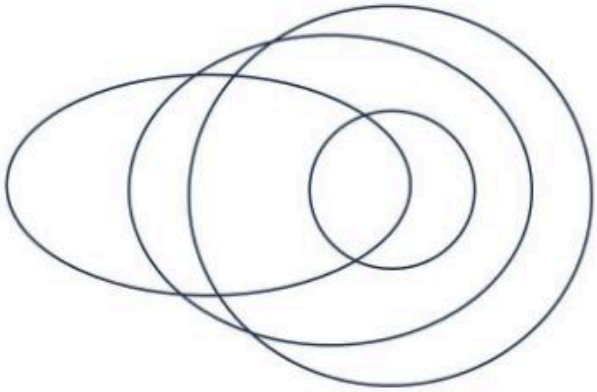
एक संख्या को 2 से गुणा करने के बजाय गलती से 2 से भाग दे दिया गया। इस गलती से परिणाम में कितना परिवर्तन होगा?

1. 25%
2. 50%
3. 75%
4. 100%

Question Number : 15 Question Id : 562954210 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The following diagram represents the relationship between four categories.



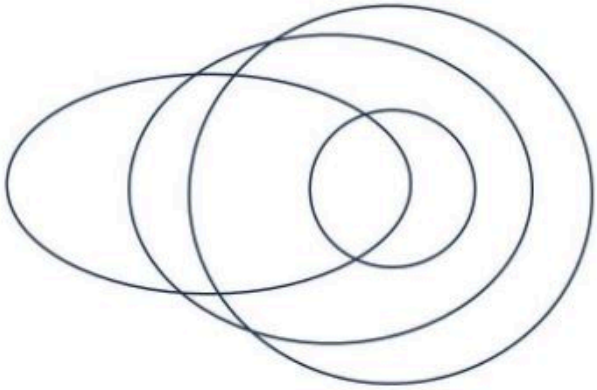
The categories could be

1. Rivers, water bodies, oceans, sources of evaporation
2. Parliamentarians, celebrities, elected persons, professional politicians
3. Monkeys, four-legged animals, pet animals, land animals
4. Furniture, chairs, seats, wooden objects

Question Number : 15 Question Id : 562954210 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

नीचे दिए गए चित्र में चार श्रेणियों के बीच संबंध को अभिव्यक्त किया गया है।



ये श्रेणियां हो सकती हैं

1. नदियां, जल निकाय, सागर, वाष्पीकरण के स्रोत
2. सांसद, प्रसिद्ध व्यक्ति, निर्वाचित व्यक्ति, पेशेवर राजनीतिज्ञ
3. बंदर, चार पांव वाले पशु, पालतू पशु, भू पर रहने वाले पशु
4. फर्नीचर, कुर्सियां, सीट, लकड़ी का सामान

Question Number : 16 Question Id : 562954211 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

In a code, the word DELTOID is written as 3152893. Then LOTION could be written as

1. 582986
2. 582981
3. 198396
4. 198392

Question Number : 16 Question Id : 562954211 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

एक कोड भाषा में DELTOID शब्द को 3152893 में लिखा गया है तो LOTION शब्द को कैसे लिखा जाएगा ?

1. 582986
2. 582981
3. 198396
4. 198392

Question Number : 17 Question Id : 562954212 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Sum of the digits of a two-digit number 'ab' is subtracted from the number and the result is divided by 9. Then the result of this will be

1. always a
2. always b
3. neither a nor b
4. either a or b depending on a+b

Question Number : 17 Question Id : 562954212 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

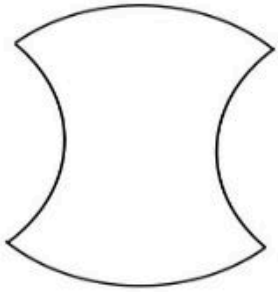
दो अंकों की संख्या 'ab' से इसके अंकों के योग को घटा कर प्राप्त अंक को 9 से विभाजित किया गया। इसका परिणाम होगा

1. सदैव a
2. सदैव b
3. न तो a और न b
4. या तो a या b जो a+b पर निर्भर करेगा

Question Number : 18 Question Id : 562954213 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

A circle of radius 1 unit is divided into four quarters and rejoined as shown below.



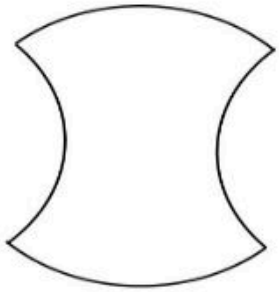
What is the area of this shape?

1. π
2. 1
3. 2
4. 4

Question Number : 18 Question Id : 562954213 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

एक इकाई वाली त्रिज्या के एक वृत्त को चार एक-चौथाई हिस्सों में विभाजित करके नीचे दर्शाए गए रूप में पुन: जोड़ा गया।



इस आकार का क्षेत्रफल क्या होगा ?

1. π
2. 1
3. 2
4. 4

Question Number : 19 Question Id : 562954214 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

A stock market trader has lost two thirds of her investment on a day. Next day she recovered one third of the previous day's loss. What fraction of her initial investment is she left with?

1. $\frac{1}{3}$
2. $\frac{2}{3}$
3. $\frac{2}{9}$
4. $\frac{5}{9}$

Question Number : 19 Question Id : 562954214 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

एक स्टॉक मार्केट व्यापारी को एक दिन अपने निवेश के दो तिहाई भाग का नुकसान हुआ। अगले दिन उसने अपने पहले दिन के नुकसान के एक तिहाई भाग की भरपाई (पुनर्प्राप्ति) कर ली। उसके प्रारंभिक निवेश का कितना भाग उसके पास बचा?

1. $\frac{1}{3}$
2. $\frac{2}{3}$
3. $\frac{2}{9}$
4. $\frac{5}{9}$

Question Number : 20 Question Id : 562954215 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Three friends, Mr. Rahman, Mr. George and Mr. Vedant, met after a long time. They were wearing red, green and violet colour shirts. Mr. Rahman and the person wearing violet shirt noticed that none of the three is wearing a colour that starts with same letter as his name. Which one of the following is the correct match of the persons with the colour of their shirts?

1. Rahman-Violet, George-Red, Vedant-Green
2. Rahman-Green, George-Violet, Vedant-Red
3. Rahman-Green, George-Red, Vedant-Violet
4. Rahman-Red, George-Violet, Vedant-Green

Question Number : 20 Question Id : 562954215 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Mr. Rahman, Mr. George and Mr. Vedant नाम के तीन मित्र बहुत लंबे समय पश्चात मिले। वे लाल (red), हरी (green) और बैंगनी (violet) रंग की कमीजें पहने हुए थे। Mr. Rahman और बैंगनी कमीज पहने व्यक्ति ने देखा कि उन तीन में से किसी ने भी उस रंग की कमीज नहीं पहनी है जो कि उनके नाम के पहले अक्षर से मिलती है। निम्नलिखित में से कौन सा कथन व्यक्तियों के नामों का उनकी कमीज के रंग से सही मेल को बताता है?

1. Rahaman-Violet, George-Red, Vedant-Green
2. Rahaman-Green, George-Violet, Vedant-Red
3. Rahaman-Green, George-Red, Vedant-Violet
4. Rahaman-Red, George-Violet, Vedant-Green

PART - B

Section Id :	5629548
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	40
Number of Questions to be attempted :	35
Section Marks :	70
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	5629548

Question Shuffling Allowed : Yes

Question Number : 21 Question Id : 562954216 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

A radioactive element X emits two α and one γ particles to yield element Y of mass number 82. X also emits one α and one β particles to yield element Z with an atomic number 44.

$$_{44}Z + \alpha + \beta \longleftarrow X \longrightarrow {}^{82}Y + 2\alpha + \gamma$$

The elements, X, Y and Z, respectively, are

1. $^{90}_{45}X$, $^{82}_{42}Y$ and $^{88}_{44}Z$
2. $^{90}_{45}X$, $^{82}_{41}Y$ and $^{86}_{44}Z$
3. $^{91}_{45}X$, $^{82}_{41}Y$ and $^{86}_{44}Z$
4. $^{91}_{45}X$, $^{82}_{42}Y$ and $^{86}_{44}Z$

Question Number : 21 Question Id : 562954216 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

एक रेडियो सक्रिय तत्व X द्रव्यमान संख्या 82 के तत्व Y को उत्पन्न करने के लिए दो α तथा एक γ कणों को उत्सर्जित करता है। तत्व X परमाणु संख्या 44 के तत्व Z को उत्पन्न करने के लिए एक α तथा एक β कणों को भी उत्सर्जित करता है

$$_{44}Z + \alpha + \beta \longleftarrow X \longrightarrow {}^{82}Y + 2\alpha + \gamma$$

तत्व, X, Y तथा Z, हैं, क्रमशः

1. $^{90}_{45}X$, $^{82}_{42}Y$ तथा $^{88}_{44}Z$
2. $^{90}_{45}X$, $^{82}_{41}Y$ तथा $^{86}_{44}Z$
3. $^{91}_{45}X$, $^{82}_{41}Y$ तथा $^{86}_{44}Z$
4. $^{91}_{45}X$, $^{82}_{42}Y$ तथा $^{86}_{44}Z$

Question Number : 22 Question Id : 562954217 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

For actinides, complex formation tendency follows the order

1. $M^{4+} > M^{3+} > MO_2^{+} > MO_2^{2+}$
2. $MO_2^{2+} > MO_2^{+} > M^{4+} > M^{3+}$
3. $M^{4+} > M^{3+} > MO_2^{2+} > MO_2^{+}$
4. $M^{4+} > MO_2^{2+} > M^{3+} > MO_2^{+}$

Question Number : 22 Question Id : 562954217 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

ऐक्टिनाइडों के लिए, संकुल विरचन प्रवृति जिस क्रम का अनुसरण करती है, वह है

1. $M^{4+} > M^{3+} > MO_2^{+} > MO_2^{2+}$
2. $MO_2^{2+} > MO_2^{+} > M^{4+} > M^{3+}$
3. $M^{4+} > M^{3+} > MO_2^{2+} > MO_2^{+}$
4. $M^{4+} > MO_2^{2+} > M^{3+} > MO_2^{+}$

Question Number : 23 Question Id : 562954218 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Consider the following unbalanced chemical reactions:

A. $NH_3 \rightarrow NO_2^-$
B. $O_2 \rightarrow H_2O_2$
C. $NO_2^- \rightarrow NO_3^-$
D. $H_2S \rightarrow S_8$
E. $CO_2 \rightarrow CO$

The reactions that are brought about by the chemolithotropic bacteria, are

1. B, C and D only
2. A, C and D only
3. A, B and E only
4. B, C and E only

Question Number : 23 Question Id : 562954218 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित असंतुलित रासायनिक अभिक्रियाओं पर विचार करें:

A. $NH_3 \rightarrow NO_2^-$
B. $O_2 \rightarrow H_2O_2$
C. $NO_2^- \rightarrow NO_3^-$
D. $H_2S \rightarrow S_8$
E. $CO_2 \rightarrow CO$

किमोलिथोट्रोफिक (chemolithotropic) जीवाणु द्वारा जो अभिक्रियाएं सम्पन्न होती हैं, वह हैं

1. केवल B, C तथा D
2. केवल A, C तथा D
3. केवल A, B तथा E
4. केवल B, C तथा E

Question Number : 24 Question Id : 562954219 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The correct statements about the copper-containing protein, hemocyanin, from the following

A. It is an extracellular protein.

B. It has an oligomeric structure with each sub-unit containing a pair of two copper atoms.

C. In deoxy form, the two Cu(I) atoms are separated by 2.8 Å.

D. The blue colour of oxy form is due to charge-transfer from superoxide-to-Cu(II) ion.

Are

1. A and B only
2. A and C only
3. B and C only
4. C and D only

Question Number : 24 Question Id : 562954219 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित में से कॉपर-युक्त प्रोटीन, हीमोसायनीन, के बारे में सही कथन

A. यह एक वाह्यकोशिकीय प्रोटीन है।

B. इसमें ओलिगोमेरिक संरचना होती है, जिसमें प्रत्येक उप-इकाई में दो कॉपर परमाणुओं का एक युग्म होता है।

C. डिऑक्सी रूप में, दो Cu(I) परमाणु 2.8 Å द्वारा पृथक हैं।

D. ऑक्सी रूप का नीला रंग सुपरऑक्साइड से Cu(II) आयन में आवेश-स्थानांतरण के कारण होता है

हैं

1. केवल A तथा B
2. केवल A तथा C
3. केवल B तथा C
4. केवल C तथा D

Question Number : 25 Question Id : 562954220 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Consider the following statements about NO and NO_2.

A. The unpaired electron is in π^* orbital of NO while it is in σ_{nb} orbital of NO_2.
B. NO does not prefer dimerization, whereas NO_2 does.
C. The reduction of NO is comparatively easier than NO_2.
D. There is a center of inversion in NO_2.

The option with the correct statements is

1. A and B only
2. A and D only
3. C and D only
4. C and B only

Question Number : 25 Question Id : 562954220 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

NO तथा NO_2 के बारे में निम्नलिखित कथनों पर विचार करें ।

A. अयुग्मित इलेक्ट्रॉन NO के π^* कक्षक में है जबकि यह NO_2 के σ_{nb} कक्षक में है।
B. NO द्विलकन को वरीयता नहीं देता है, जबकि NO_2 देता है।
C. NO का अपचयन NO_2 की तुलना में अपेक्षाकृत आसान है।
D. NO_2 में प्रतिलोमन केंद्र है।

सही कथनों वाला विकल्प है

1. केवल A तथा B
2. केवल A तथा D
3. केवल C तथा D
4. केवल C तथा B

Question Number : 26 Question Id : 562954221 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The numbers of metal-metal bonds in $[Os_4(CO)_{16}]$, is

1. 4
2. 5
3. 6
4. 3

Question Number : 26 Question Id : 562954221 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

$[Os_4(CO)_{16}]$ में धातु-धातु आबंधों की संख्या, है

1. 4
2. 5
3. 6
4. 3

Question Number : 27 Question Id : 562954222 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Nitramide (NH_2NO_2) decomposes under basic condition to generate

1. N_2O
2. HNO_3
3. NH_3
4. NO

Question Number : 27 Question Id : 562954222 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

क्षारीय दशा में जिसको उत्पन्न करने के लिए नाइट्रामाईड (NH_2NO_2) अपघटित होती है, वह है

1. N_2O
2. HNO_3
3. NH_3
4. NO

Question Number : 28 Question Id : 562954223 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The geometries of $[HgI_3]^-$ and $[SnCl_3]^-$, respectively, are

1. trigonal planar and trigonal pyramidal
2. trigonal pyramidal and trigonal planar
3. trigonal planar and tetrahedral
4. tetrahedral and trigonal pyramidal

Question Number : 28 Question Id : 562954223 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

$[HgI_3]^-$ तथा $[SnCl_3]^-$ की ज्यामितियाँ, हैं, क्रमशः

1. त्रिसमनताक्ष तली तथा त्रिसमनताक्ष पिरैमिडी
2. त्रिसमनताक्ष पिरैमिडी तथा त्रिसमनताक्ष तली
3. त्रिसमनताक्ष तली तथा चतुष्फलकीय
4. चतुष्फलकीय तथा त्रिसमनताक्ष पिरैमिडी

Question Number : 29 Question Id : 562954224 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The correct statements about $SnCl_4$ and $SnMe_4$.

A. $SnCl_4$ forms $SnCl_6^{2-}$.

B. $SnMe_4$ does not form $SnMe_6^{2-}$.

C. $SnCl_4$ does not undergo hydrolysis.

D. $SnMe_4$ readily hydrolyses.

Are

1. A and B only
2. B and C only
3. A and D only
4. B and D only

Question Number : 29 Question Id : 562954224 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

$SnCl_4$ तथा $SnMe_4$ के बारे में सही कथन

A. $SnCl_4$, $SnCl_6^{2-}$ बनाता है।

B. $SnMe_4$, $SnMe_6^{2-}$ नहीं बनाता है।

C. $SnCl_4$ का जल अपघटन नहीं होता है।

D. $SnMe_4$ शीघ्र जल अपघटित होता है।

हैं।

1. केवल A तथा B
2. केवल B तथा C
3. केवल A तथा D
4. केवल B तथा D

Question Number : 30 Question Id : 562954225 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The correct statements about C_{60} from the following

A. it exhibits greater degree of delocalization than benzene.
B. it is susceptible towards addition reactions than substitution reactions.
C. the spherical structure of C_{60} makes the C=C bonds more reactive.
D. its overall reactivity is more like cycloalkenes than benzene.

are

1. B, C and D only
2. A, B and C only
3. A, B and D only
4. C and D only

Question Number : 30 Question Id : 562954225 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित में से C_{60} के बारे में सही कथन

A. बेंजीन की तुलना में यह विस्थानन का अधिक परिमाण दिखाता है।
B. यह प्रतिस्थापन अभिक्रियाओं की तुलना में योगात्मक अभिक्रियाओं की ओर सुग्राही है।
C. C_{60} की गोलीय संरचना C=C आबंधों को अधिक क्रियाशील बनाती है।
D. इसकी समग्र क्रियाशीलता बेन्ज़ीन की अपेक्षा साईक्लोऐल्कीन की तरह अधिक है।

हैं

1. केवल B, C तथा D
2. केवल A, B तथा C
3. केवल A, B तथा D
4. केवल C तथा D

Question Number : 31 Question Id : 562954226 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The correct option with respect to $Cs_2[XeF_8]$, is

1. square antiprismatic with stereochemically inactive lone pair
2. square antiprismatic with stereochemically active lone pair
3. capped square antiprismatic with stereochemically active lone pair
4. capped square antiprismatic with no lone pair

Question Number : 31 Question Id : 562954226 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

$Cs_2[XeF_8]$ के संबंध में सही विकल्प, है

1. त्रिविम रासायनिक रूप से निष्क्रिय एकाकी युग्म के साथ वर्ग प्रतिप्रिज्मी
2. त्रिविम रासायनिक रूप से सक्रिय एकाकी युग्म के साथ वर्ग प्रतिप्रिज्मी
3. त्रिविम रासायनिक रूप से सक्रिय एकाकी युग्म के साथ टोपीकृत वर्ग प्रतिप्रिज्मी
4. बिना एकाकी युग्म के साथ टोपीकृत वर्ग प्रतिप्रिज्मी

Question Number : 32 Question Id : 562954227 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The pair of electronic configurations representing ground term $^3F_2$ is

1. p^1d^1 and s^1d^1
2. s^1f^1 and d^1f^1
3. d^1f^1 and p^1d^1
4. p^1d^1 and s^1f^1

Question Number : 32 Question Id : 562954227 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

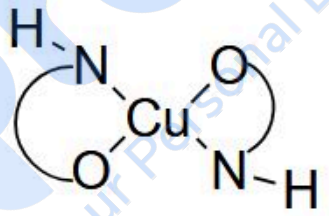
मूल पद (ground term) $^3F_2$ को निरूपित करने वाले इलेक्ट्रॉनिक विन्यासों का युग्म है

1. p^1d^1 तथा s^1d^1
2. s^1f^1 तथा d^1f^1
3. d^1f^1 तथा p^1d^1
4. p^1d^1 तथा s^1f^1

Question Number : 33 Question Id : 562954228 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The total number of lines expected in the EPR spectrum of the Cu(II) complex [Given: Cu (I=3/2); N (I=1)] shown below



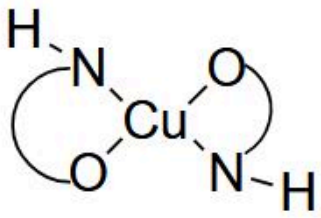
Is

1. 4
2. 40
3. 12
4. 20

Question Number : 33 Question Id : 562954228 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

नीचे दर्शित Cu(II) संकुल [दिया है: Cu (I=3/2); N (I=1)] के EPR स्पेक्ट्रम में प्रत्याशित लाइनों की कुल संख्या



है

1. 4
2. 40
3. 12
4. 20

Question Number : 34 Question Id : 562954229 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The complete combustion of 9.83 mg of an organic compound ($C_xH_yO_z$) gives 23.26 mg of CO_2 and 9.52 mg of H_2O. The ESI-MS analysis of this compound gave a molecular ion peak at 130 (*m/z*). The value of X is
[Given: Atomic weight: C = 12; H = 1; O = 16]

1. 7
2. 3
3. 4
4. 8

Question Number : 34 Question Id : 562954229 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

एक कार्बनिक यौगिक ($C_XH_YO_Z$) का 9.83 mg पूर्ण दहन पर CO_2 का 23.26 mg तथा H_2O का 9.52 mg देता है। इस यौगिक के ESI-MS विश्लेषण ने 130 (m/z) पर आण्विक आयन शिखर दिया। X का मान है

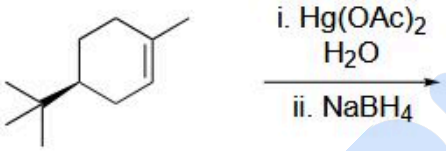
[दिया है: परमाणु भार: C = 12; H = 1; O = 16]

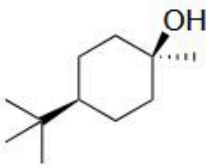
1. 7
2. 3
3. 4
4. 8

Question Number : 35 Question Id : 562954230 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The major product formed in the following reaction is



1.


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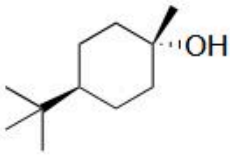

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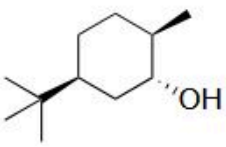

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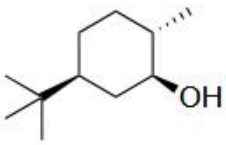
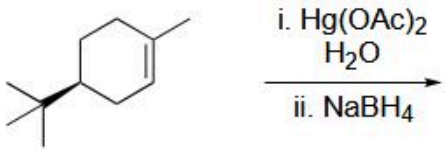


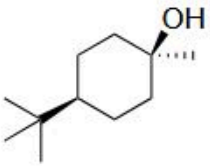
Question Number : 35 Question Id : 562954230 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

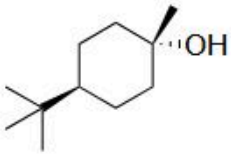
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



1.



2.



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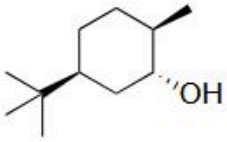

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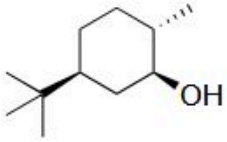
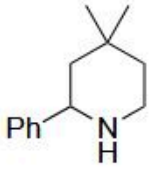


Question Number : 36 Question Id : 562954231 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Compound **A** on Hofmann exhaustive N-methylation procedure (involving two cycles), followed by ozonolysis (i. O_3; ii. Me_2S) gives benzaldehyde, formaldehyde and 2,2-dimethylpropanedial. The structure of **A** is

1.



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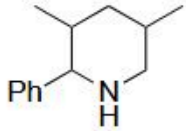

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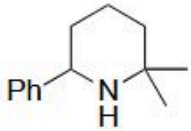

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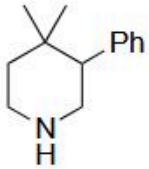
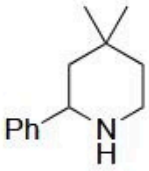


Question Number : 36 Question Id : 562954231 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

यौगिक **A** हॉफमान रेचकीय (Hofmann exhaustive) N-मेथिलन प्रक्रिया (दो चक्रों से युक्त), उसके उपरांत ओजोनीकरण (i. O_3; ii. Me_2S) पर बेन्जैल्डिहाइड, फॉर्मेल्डिहाइड तथा 2,2-डाइ मेथिलप्रोपेनडाईअल देता है । **A** की संरचना है

1.


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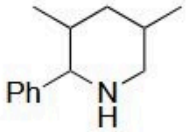

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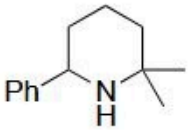

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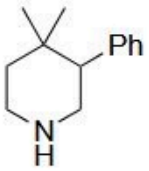
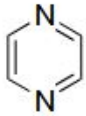


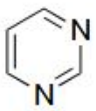
Question Number : 37 Question Id : 562954232 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

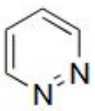
The correct order of basicity for the following compounds is



I



II



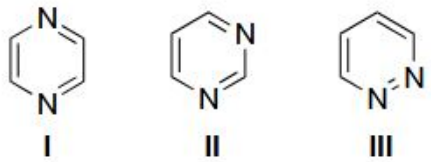
III

1. I > III > II
2. II > I > III
3. III > I > II
4. III > II > I

Question Number : 37 Question Id : 562954232 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित यौगिकों की क्षारीयता का सही क्रम है



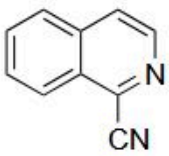
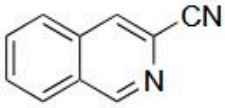
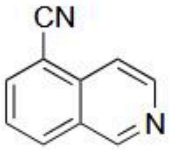
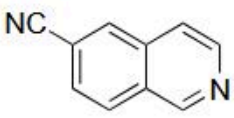
I II III

1. I > III > II
2. II > I > III
3. III > I > II
4. III > II > I

Question Number : 38 Question Id : 562954233 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

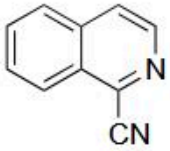
Isoquinoline on sequential reaction with benzoyl chloride and KCN followed by heating with aq. NaOH gives

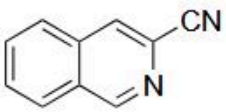
1. 
2. 
3. 
4. 

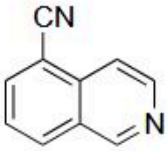
Question Number : 38 Question Id : 562954233 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

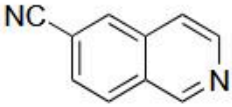
Correct Marks : 2 Wrong Marks : 0.5

बेंजोयल क्लोराइड तथा KCN के साथ अनुक्रमिक अभिक्रिया तथा तत्पश्चात aq.NaOH के साथ गर्म करने पर आइसोक्विनोलिन देता है

1. 

2. 

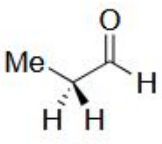
3. 

4. 

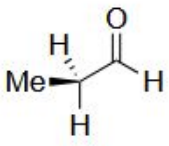
Question Number : 39 Question Id : 562954234 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

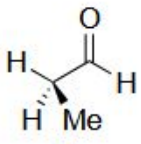
The correct order of stability for the following conformations of propanal is



A



B



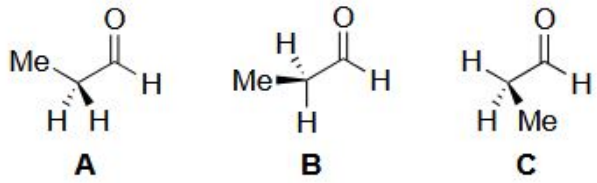
C

1. A > C > B
2. A > B > C
3. B > A > C
4. C > B > A

Question Number : 39 Question Id : 562954234 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

प्रोपेनल के निम्नलिखित संरूपणों के स्थायित्व का सही क्रम है

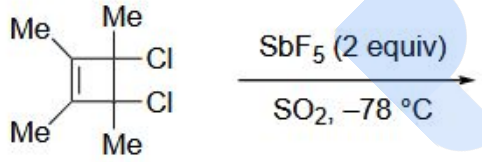


1. **A > C > B**
2. **A > B > C**
3. **B > A > C**
4. **C > B > A**

Question Number : 40 Question Id : 562954235 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The major product formed in the following reaction is

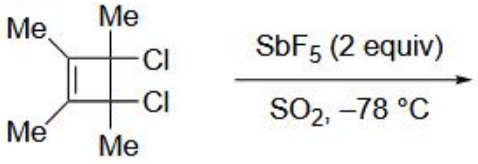


1. aromatic
2. nonaromatic
3. antiaromatic
4. homoaromatic

Question Number : 40 Question Id : 562954235 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है

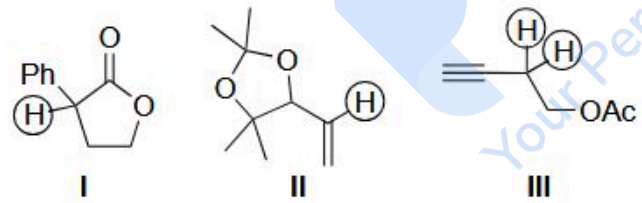


1. ऐरोमैटिक
2. अन्-ऐरोमैटिक
3. प्रति-ऐरोमैटिक
4. सम-ऐरोमैटिक

Question Number : 41 Question Id : 562954236 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

In ^1H NMR, the multiplicity pattern expected for the highlighted protons in the following compounds is

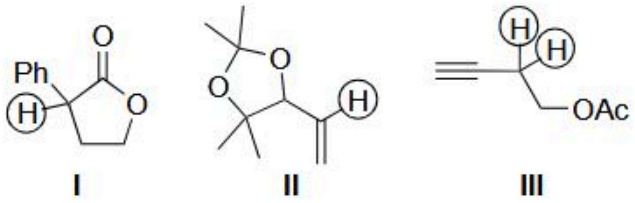


1. **I** = dd, **II** = ddd, **III** = td
2. **I** = dd, **II** = dt, **III** = dt
3. **I** = t, **II** = ddd, **III** = dt
4. **I** = t, **II** = dt, **III** = td

Question Number : 41 Question Id : 562954236 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

^{1}H NMR में, निम्नलिखित यौगिकों के हाइलाइटेड (highlighted) प्रोटॉनों के लिए प्रत्याशित बहुकता प्रतिरूप है



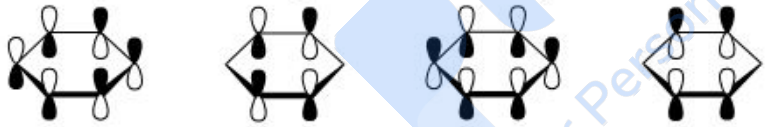
I II III

1. I = dd, II = ddd, III = td
2. I = dd, II = dt, III = dt
3. I = t, II = ddd, III = dt
4. I = t, II = dt, III = td

Question Number : 42 Question Id : 562954237 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Among the following, the correct representation for the LUMO of benzene is



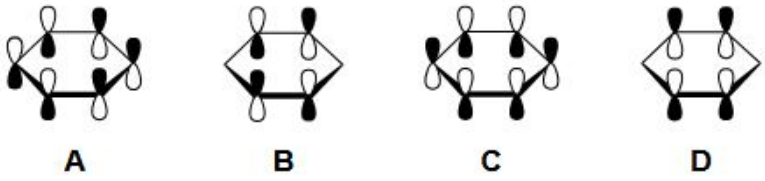
A B C D

1. **A** and **D**
2. **A** and **C**
3. **B** and **C**
4. **B** and **D**

Question Number : 42 Question Id : 562954237 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित में से, बेन्ज़ीन के LUMO का सही निरूपण है



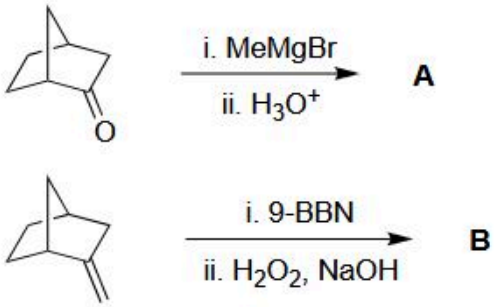
A B C D

1. A तथा D
2. A तथा C
3. B तथा C
4. B तथा D

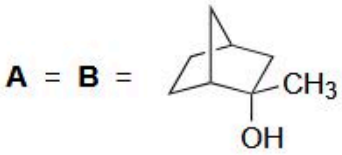
Question Number : 43 Question Id : 562954238 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

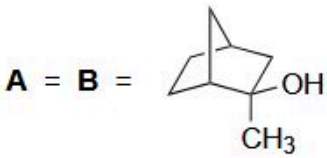
The major products **A** and **B** formed in the following reactions are



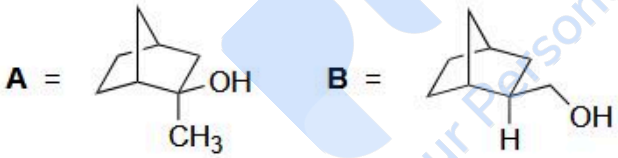
1.



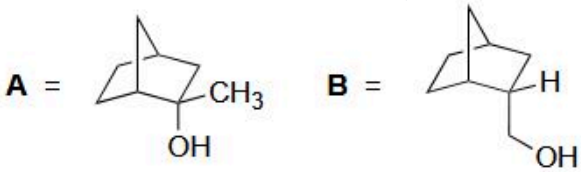
2.



3.



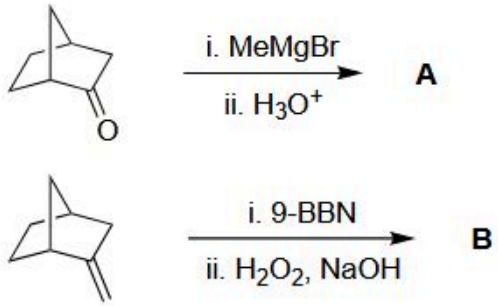
4.



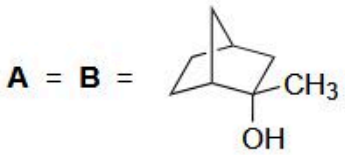
Question Number : 43 Question Id : 562954238 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

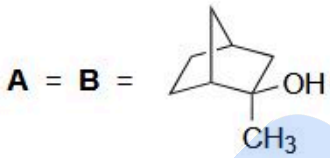
निम्नलिखित अभिक्रियाओं में विरचित मुख्य उत्पाद **A** तथा **B** हैं



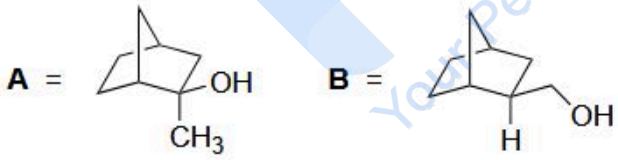
1.



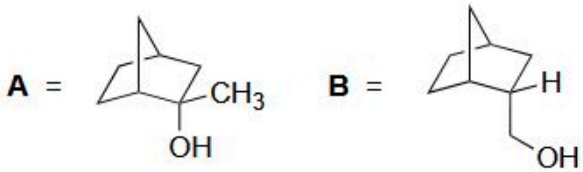
2.



3.



4.



Question Number : 44 Question Id : 562954239 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

According to Karplus equation, the vicinal proton-proton coupling constant is minimum when the value of dihedral angle is

1. 0°
2. 60° and 120°
3. 90°
4. 180°

Question Number : 44 Question Id : 562954239 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

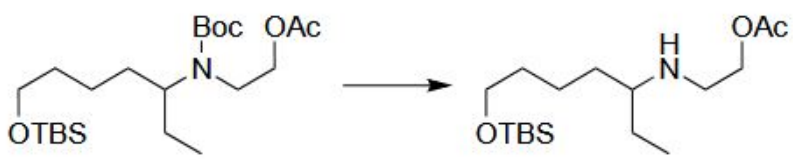
कारप्लस समीकरण के अनुसार, संनिधि प्रोटॉन-प्रोटॉन युग्मन स्थिरांक न्यूनतम होता है जब द्वितल कोण का मान होता है

1. 0°
2. 60° तथा 120°
3. 90°
4. 180°

Question Number : 45 Question Id : 562954240 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The reagent that would effect the following transformation is

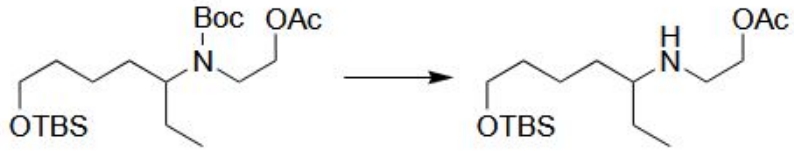


1. H_2, Pd-C, EtOAc
2. TBAF, THF
3. $AlCl_3$, CH_2Cl_2
4. K_2CO_3, MeOH

Question Number : 45 Question Id : 562954240 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

अभिकर्मक जो निम्नलिखित रूपांतरण को प्रभावित करेगा, वह है

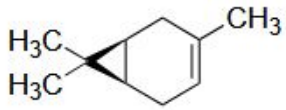


1. H_2, Pd-C, EtOAc
2. TBAF, THF
3. $AlCl_3$, CH_2Cl_2
4. K_2CO_3, MeOH

Question Number : 46 Question Id : 562954241 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The correct IUPAC name for the following compound is

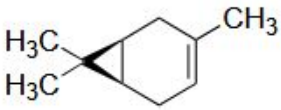


1. (1*S*,6*R*)-3,7,7-trimethylbicyclo[4.1.0]hept-3-ene
2. (1*R*,6*S*)-3,7,7-trimethylbicyclo[4.1.0]hept-3-ene
3. (1*R*,6*S*)-4,7,7-trimethylbicyclo[4.1.0]hept-3-ene
4. (1*S*,6*R*)-4,7,7-trimethylbicyclo[4.1.0]hept-3-ene

Question Number : 46 Question Id : 562954241 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित यौगिक का सही IUPAC नाम है

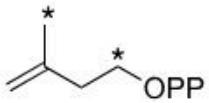


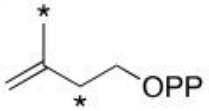
1. (1*S*,6*R*)-3,7,7-ट्राइमेथिलबाइसाइक्लो [4.1.0] हेप्ट-3-ईन
2. (1*R*,6*S*)-3,7,7-ट्राइमेथिलबाइसाइक्लो [4.1.0] हेप्ट-3-ईन
3. (1*R*,6*S*)-4,7,7-ट्राइमेथिलबाइसाइक्लो [4.1.0] हेप्ट-3-ईन
4. (1*S*,6*R*)-4,7,7-ट्राइमेथिलबाइसाइक्लो [4.1.0] हेप्ट-3-ईन

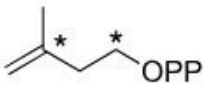
Question Number : 47 Question Id : 562954242 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

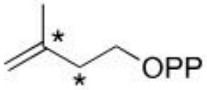
Correct Marks : 2 Wrong Marks : 0.5

The isopentenyl pyrophosphate formed through mevalonate pathway using acetyl CoA containing a ^{14}C labelled (*) carbonyl carbon is

1. 

2. 

3. 

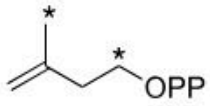
4. 

Question Number : 47 Question Id : 562954242 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

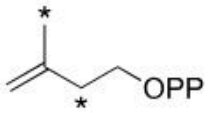
Correct Marks : 2 Wrong Marks : 0.5

^{14}C लेबलित (*) कार्बोनिल कार्बन युक्त ऐसीटिल CoA का उपयोग करके मेवालोनेट पथ से विरचित आइसोपेंटेनिल पायरोफॉस्फेट है

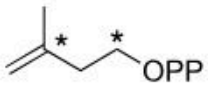
1.



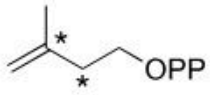
2.



3.



4.



Question Number : 48 Question Id : 562954243 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The wavefunction, $\Psi(x)$, of a one-dimensional quantum system is given by

$$\Psi(x) = A\, x \exp(-x^2 / a^2)$$

The dimension of A is
[L is the dimension of length]

1. $L^{-1/2}$
2. L^{-3}
3. $L^{-3/2}$
4. L^0 (dimensionless)

Question Number : 48 Question Id : 562954243 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

किसी एक-विमीय क्वांटम निकाय का, तरंगफलन, $\Psi(x)$,

$$\Psi(x) = A\, x \exp(-x^2 / a^2)$$ से दिया गया है

A की विमा है

[L लंबाई की विमा है]

1. $L^{-1/2}$
2. L^{-3}
3. $L^{-3/2}$
4. L^0 (विमाहीन)

Question Number : 49 Question Id : 562954244 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

For an eigenstate ψ of a time-independent Hamiltonian

1. Both ψ and $\psi^*\psi$ are time-independent
2. ψ is time-dependent, but $\psi^*\psi$ is time-independent
3. ψ is time-independent, but $\psi^*\psi$ is time-dependent
4. Both ψ and $\psi^*\psi$ are time-dependent

Question Number : 49 Question Id : 562954244 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

किसी काल-अनाश्रित हैमिल्टनी के अभिलक्षणिक अवस्था ψ के लिए

1. ψ तथा $\psi^*\psi$ दोनों काल-अनाश्रित हैं
2. ψ काल-आश्रित है, परंतु $\psi^*\psi$ काल-अनाश्रित है
3. ψ काल-अनाश्रित है, परंतु $\psi^*\psi$ काल-आश्रित है
4. ψ तथा $\psi^*\psi$ दोनों काल-आश्रित हैं

Question Number : 50 Question Id : 562954245 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Among the following linear combinations of determinants (written with the spatial wavefunctions 1s and 2s and electronic spin wavefunctions α and β, using 1 and 2 as labels of the two electrons), the one that denotes the un-normalized wavefunction of a triplet excited state ($1s^1\ 2s^1$) of He, is

1. $\begin{vmatrix} 1s\alpha(1) & 2s\beta(1) \\ 1s\alpha(2) & 2s\beta(2) \end{vmatrix} + \begin{vmatrix} 2s\alpha(1) & 1s\beta(1) \\ 2s\alpha(2) & 1s\beta(2) \end{vmatrix}$

2. $\begin{vmatrix} 1s\alpha(1) & 2s\beta(1) \\ 1s\alpha(2) & 2s\beta(2) \end{vmatrix} - \begin{vmatrix} 2s\alpha(1) & 1s\beta(1) \\ 2s\alpha(2) & 1s\beta(2) \end{vmatrix}$

3. $\begin{vmatrix} 1s\alpha(1) & 1s\alpha(2) \\ 2s\beta(1) & 2s\beta(2) \end{vmatrix} + \begin{vmatrix} 2s\alpha(1) & 2s\alpha(2)) \\ 1s\beta(1) & 1s\beta(2) \end{vmatrix}$

4. $\begin{vmatrix} 1s\beta(1) & 2s\alpha(1) \\ 1s\beta(2) & 2s\alpha(2) \end{vmatrix} - \begin{vmatrix} 1s\alpha(1) & 2s\beta(1) \\ 1s\alpha(2) & 2s\beta(2) \end{vmatrix}$

Question Number : 50 Question Id : 562954245 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

निर्धारकों के निम्नलिखित रैखिक संयोजनों में से (1 तथा 2 को दो इलेक्ट्रॉनों के लेबल के रूप मे प्रयुक्त करते हुए, स्थानिक तरंग फलन 1s तथा 2s तथा इलेक्ट्रॉनिक स्पिन तरंग फलन α तथा β के साथ लिखा गया है), He की त्रिक उत्तेजित अवस्था ($1s^1\ 2s^1$) की अप्रसामान्यीकृत तरंग फलन को जो एक दर्शाता है, वह है

1. $\begin{vmatrix} 1s\alpha(1) & 2s\beta(1) \\ 1s\alpha(2) & 2s\beta(2) \end{vmatrix} + \begin{vmatrix} 2s\alpha(1) & 1s\beta(1) \\ 2s\alpha(2) & 1s\beta(2) \end{vmatrix}$

2. $\begin{vmatrix} 1s\alpha(1) & 2s\beta(1) \\ 1s\alpha(2) & 2s\beta(2) \end{vmatrix} - \begin{vmatrix} 2s\alpha(1) & 1s\beta(1) \\ 2s\alpha(2) & 1s\beta(2) \end{vmatrix}$

3. $\begin{vmatrix} 1s\alpha(1) & 1s\alpha(2) \\ 2s\beta(1) & 2s\beta(2) \end{vmatrix} + \begin{vmatrix} 2s\alpha(1) & 2s\alpha(2)) \\ 1s\beta(1) & 1s\beta(2) \end{vmatrix}$

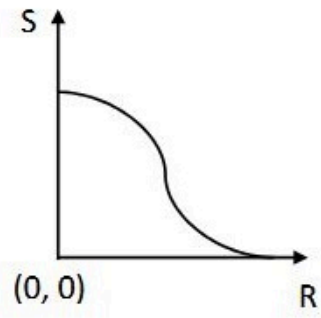
4. $\begin{vmatrix} 1s\beta(1) & 2s\alpha(1) \\ 1s\beta(2) & 2s\alpha(2) \end{vmatrix} - \begin{vmatrix} 1s\alpha(1) & 2s\beta(1) \\ 1s\alpha(2) & 2s\beta(2) \end{vmatrix}$

Question Number : 51 Question Id : 562954246 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

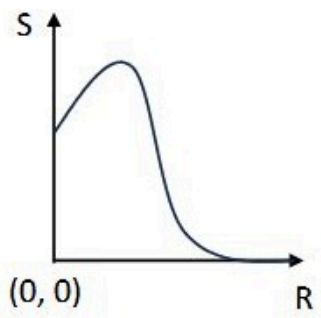
Correct Marks : 2 Wrong Marks : 0.5

For a diatomic molecule AB, the internuclear distance is R and the internuclear axis is along the z-direction. The plot of the overlap integral S for the p_x orbital of A and d_{zx} orbital of B, against R, is

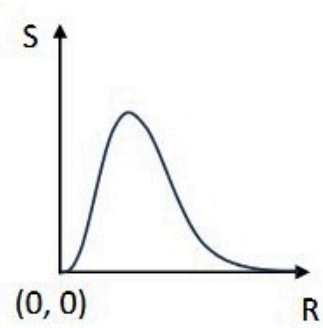
1.



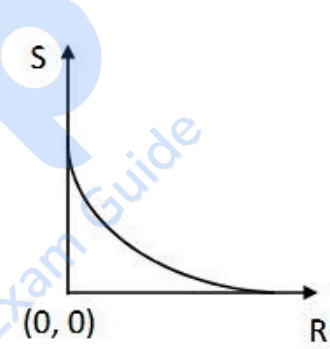
2.



3.



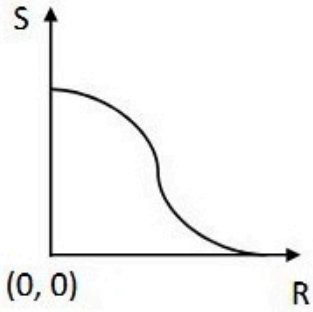
4.

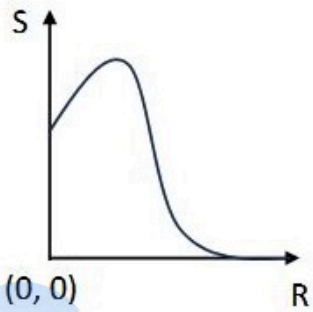


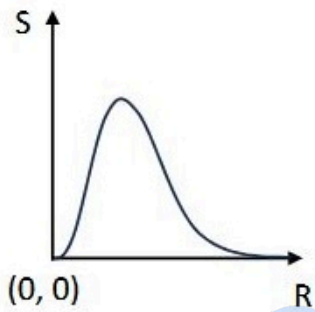
Question Number : 51 Question Id : 562954246 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

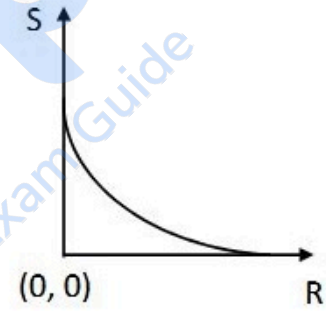
Correct Marks : 2 Wrong Marks : 0.5

द्विपरमाण्विक अणु AB के लिए, अंतरानाभिक दूरी R है तथा अंतरानाभिक अक्ष z-दिशा में है। R के विरुद्ध, A के p_x कक्षक के अतिव्यापन समाकल S तथा B के d_{zx} कक्षक का आरेख, है

1.


2.


3.


4.


Question Number : 52 Question Id : 562954247 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Considering the potential energy at the equilibrium position (x_e) to be zero, the internuclear potential, $V(x)$ as a function of distance, x between two atoms in a diatomic molecule is given by

$$V(x) = D_e\left[1 - e^{-\alpha(x-x_e)}\right]^2$$

where D_e and α are two constants.

The force constant of the bond between the two atoms is

1. $D_e\alpha^2$
2. $2D_e\alpha^2$
3. $\frac{1}{2}D_e\alpha^2$
4. $2D_e\alpha$

Question Number : 52 Question Id : 562954247 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

साम्यावस्था की स्थिति (x_e) पर विभव ऊर्जा शून्य मानते हुए, किसी द्विपरमाण्विक अणु में दो परमाणुओं के मध्य अंतरानाभिक विभव,$V(x)$ दूरी, x के फलन के रूप में

$$V(x) = D_e\left[1 - e^{-\alpha(x-x_e)}\right]^2$$ से दिया गया है

जहाँ D_e तथा α दो स्थिरांक हैं।

दो परमाणुओं के मध्य आबन्ध का बल स्थिरांक है

1. $D_e\alpha^2$
2. $2D_e\alpha^2$
3. $\frac{1}{2}D_e\alpha^2$
4. $2D_e\alpha$

Question Number : 53 Question Id : 562954248 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The standard Gibbs energy of a substance refers to the Gibbs free energy of its pure form at

1. temperature = 25 °C *only* and pressure = 1 atm
2. temperature = 25 °C *only* and pressure = 1 bar
3. any temperature and pressure = 1 bar
4. any temperature and pressure = 1 atm

Question Number : 53 Question Id : 562954248 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

किसी पदार्थ की मानक गिब्स ऊर्जा जहाँ पर अपने शुद्ध रूप की गिब्स मुक्त ऊर्जा को संदर्भित करती है, वह है

1. तापमान = 25 °C *केवल* तथा दाब = 1 atm
2. तापमान = 25 °C *केवल* तथा दाब = 1 bar
3. किसी भी तापमान तथा दाब = 1 bar
4. किसी भी तापमान तथा दाब = 1 atm

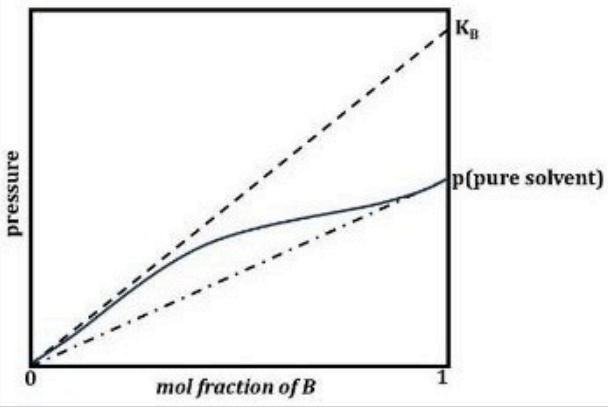
Question Number : 54 Question Id : 562954249 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

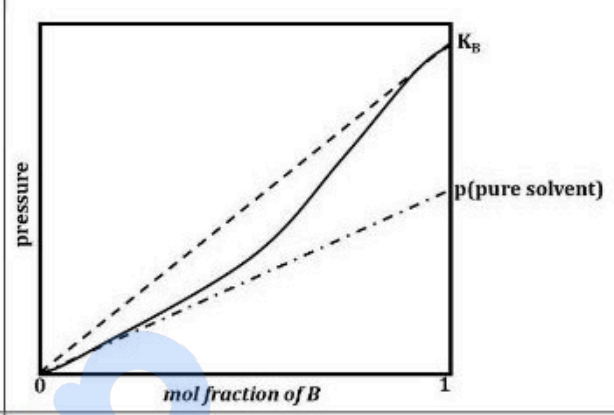
The correct option for a real solution formed by mixing liquid A with liquid B is

[Here K_B is Henry's law constant and solid line represents real solution]

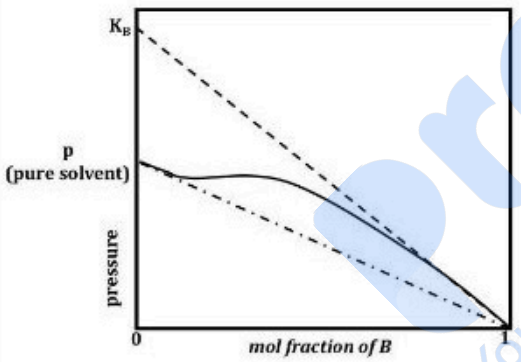
1.



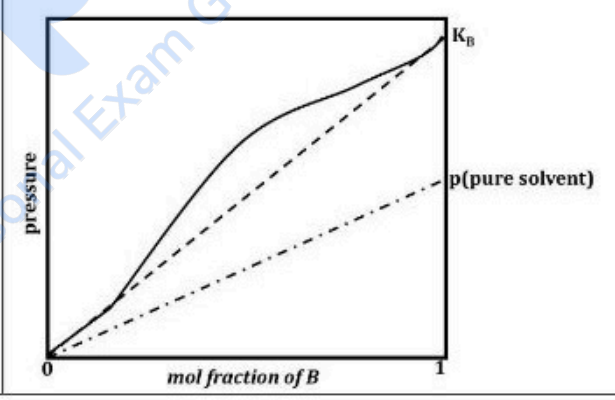
2.



3.



4.



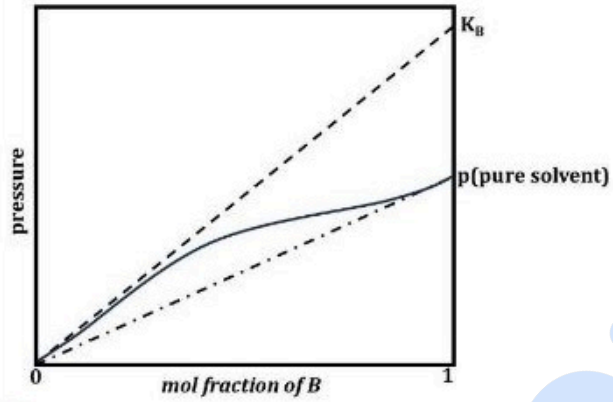
Question Number : 54 Question Id : 562954249 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

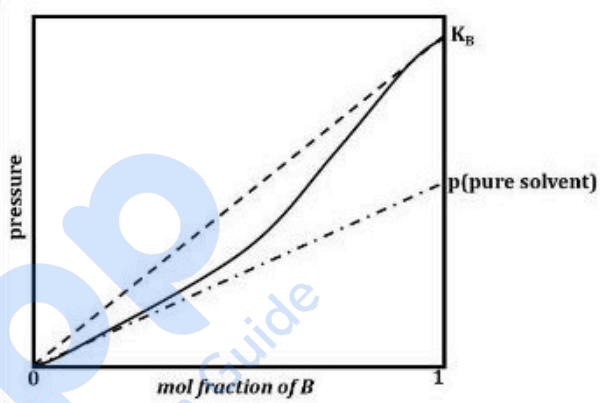
द्रव B के साथ द्रव A के मिश्रण से विरचित किसी आदर्श विलयन के लिए सही विकल्प है

[यहाँ K_B हेनरी नियम स्थिरांक है तथा ठोस रेखा आदर्श विलयन को निरूपित करती है]

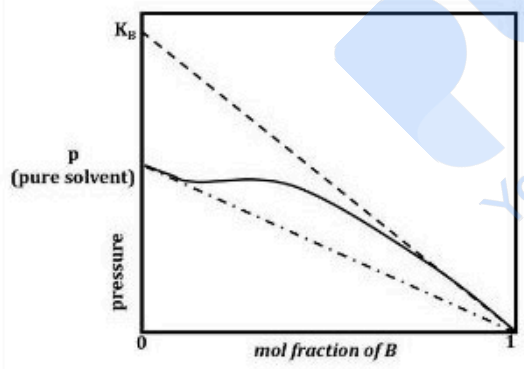
1.



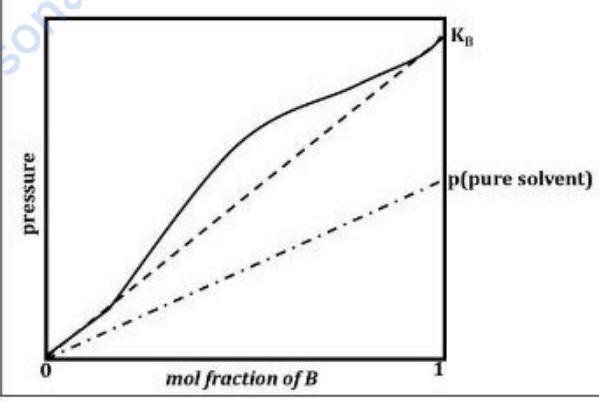
2.



3.



4.



Question Number : 55 Question Id : 562954250 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Two conformations, A and B, of a single molecule have energies $5k_BT$ and $9k_BT$, respectively, at a temperature T. The fraction of molecules in conformation B is

1. $e^{-9}/(1+e^{-9})$
2. $e^{-5}/(1+e^{-5})$
3. $1/(1+e^{-4})$
4. $1/(1+e^{4})$

Question Number : 55 Question Id : 562954250 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

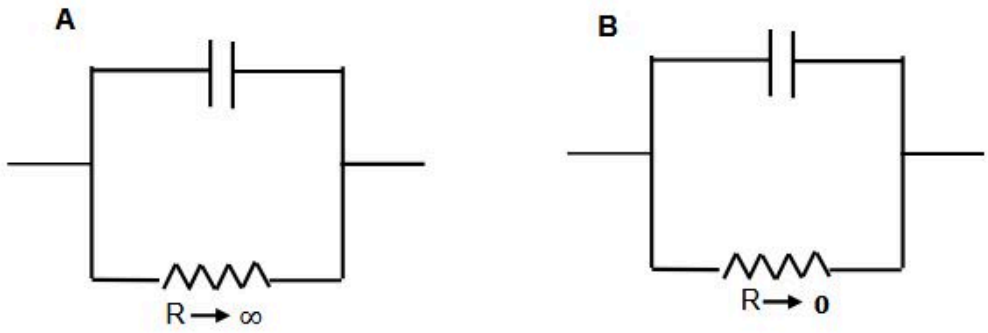
तापमन T पर, किसी एकल अणु के दो संरूपण, A तथा B, की ऊर्जाएँ क्रमशः, $5k_BT$ तथा $9k_BT$ हैं। संरूपण B में अणुओं का अंश है

1. $e^{-9}/(1+e^{-9})$
2. $e^{-5}/(1+e^{-5})$
3. $1/(1+e^{-4})$
4. $1/(1+e^{4})$

Question Number : 56 Question Id : 562954251 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

Among the following equivalent circuits A and B for an electrode / electrolyte interface, the correct option is

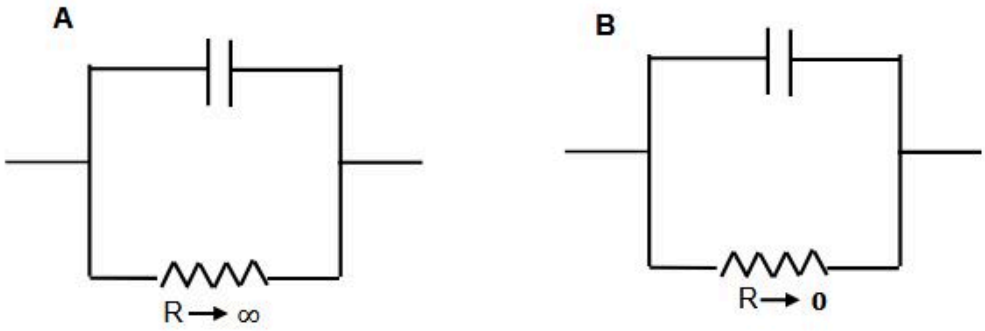


1. Both A and B are ideally polarizable
2. A is ideally non-polarizable, B is ideally polarizable
3. A is ideally polarizable, B is ideally non-polarizable
4. Both A and B are ideally non-polarizable

Question Number : 56 Question Id : 562954251 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

इलेक्ट्रोड / वैद्युतअपघट्य अन्तरापृष्ठ के लिए निम्नलिखित साम्य परिपथों A तथा B में से, सही विकल्प है



1. A तथा B दोनों आदर्श रूप से ध्रुवणीय हैं
2. A आदर्श रूप से अध्रुवणीय हैं, B आदर्श रूप से ध्रुवणीय हैं
3. A आदर्श रूप से ध्रुवणीय हैं, B आदर्श रूप से अध्रुवणीय हैं
4. A तथा B दोनों आदर्श रूप से अध्रुवणीय हैं

Question Number : 57 Question Id : 562954252 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The activation energy and enthalpy change in the reaction $H_2 + I_2 \rightarrow 2HI$, respectively, are $167\ kJ\ mol^{-1}$ and $-8\ kJ\ mol^{-1}$. Assuming the pre-exponential factors for production and decomposition of HI to be same at all temperatures, the correct option is
[k_p and k_d are the rate constants for production and decomposition of HI, respectively]

1. k_p and k_d have the same temperature dependence.
2. k_d changes more rapidly with temperature than k_p
3. k_p changes more rapidly with temperature than k_d
4. The activation energies of production and decomposition reaction of HI are same.

Question Number : 57 Question Id : 562954252 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

अभिक्रिया $H_2 + I_2 \rightarrow 2HI$ में सक्रियण ऊर्जा तथा एन्थैल्पी में परिवर्तन, क्रमशः, $167\ kJ\ mol^{-1}$ तथा $-8\ kJ\ mol^{-1}$ हैं । सभी तापमानों पर HI के विरचन तथा अपघटन के लिए पूर्व-चरघातांकी कारकों को समान मानते हुए, सही कथन है

[k_p तथा k_d क्रमशः, HI के विरचन तथा अपघटन के लिए दर स्थिरांक हैं]

1. k_p तथा k_d समान तापाश्रित हैं।
2. k_p की तुलना में तापमान के साथ k_d अधिक तेजी से बदलता है
3. k_d की तुलना में तापमान के साथ k_p अधिक तेजी से बदलता है
4. HI के विरचन तथा अपघटन अभिक्रिया की सक्रियण ऊर्जाएँ समान हैं।

Question Number : 58 Question Id : 562954253 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

For the reaction $K + Br_2 \rightarrow KBr + Br$, the rate constant can be described as $k = A\ exp\left(-\frac{E_a}{RT}\right)$. Choose the correct option regarding activation energy (E_a) and pre-exponential factor (A_E: obtained from experiment and A_T: estimated using collision theory)

1. $E_a > 0; A_T > A_E$
2. $E_a < 0; A_T < A_E$
3. $E_a = 0; A_T < A_E$
4. $E_a \geq 0; A_T > A_E$

Question Number : 58 Question Id : 562954253 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

अभिक्रिया $K + Br_2 \rightarrow KBr + Br$ के लिए, दर स्थिरांक $k = A\,exp\left(-\frac{E_a}{RT}\right)$ के रूप में वर्णित की जा सकती है। सक्रियण ऊर्जा (E_a) तथा पूर्व-चरघातांकी कारक के संबंध में सही कथन चुनें (A_E: प्रयोग से प्राप्त तथा A_T: संघट्ट सिद्धांत का उपयोग करके आकलित)

1. $E_a > 0; A_T > A_E$
2. $E_a < 0; A_T < A_E$
3. $E_a = 0; A_T < A_E$
4. $E_a \geq 0; A_T > A_E$

Question Number : 59 Question Id : 562954254 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

In a colloidal solution, the zeta potential is the electric potential at the

1. radius of the colloid particle
2. radius of Stern layer
3. radius of shear surface
4. outer radius of diffuse ion layer

Question Number : 59 Question Id : 562954254 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

कोलॉइडी विलयन में, जीटा विभव जिस पर वैद्युत विभव है, वह है

1. कोलॉइडी कण की त्रिज्या
2. स्टर्न (Stern) परत की त्रिज्या
3. अपरूपण (shear) सतह की त्रिज्या
4. विसरित आयन (ion) परत की वाह्य त्रिज्या

Question Number : 60 Question Id : 562954255 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

The density, mass and unit cell edge length of a crystalline solid X are $2.7\ g\ cm^{-3}$, $27\ g\ mol^{-1}$ and 400 pm, respectively. The crystal lattice of X is

1. FCC
2. BCC
3. Simple cubic
4. Tetragonal

Question Number : 60 Question Id : 562954255 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 2 Wrong Marks : 0.5

किसी क्रिस्टलीय ठोस X का घनत्व, द्रव्यमान तथा एकक सेल कोर लंबाई क्रमशः, $2.7\ g\ cm^{-3}$, $27\ g\ mol^{-1}$ तथा 400 pm हैं। X का क्रिस्टल जालक है

1. FCC
2. BCC
3. सरल घनीय
4. द्विसमलंबाक्ष

PART - C

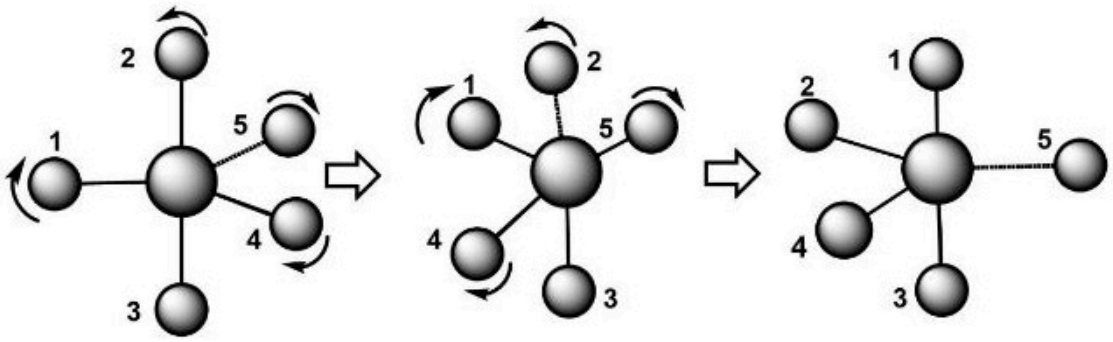
Section Id :	5629549
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	60
Number of Questions to be attempted :	25
Section Marks :	100
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	5629549
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 562954256 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

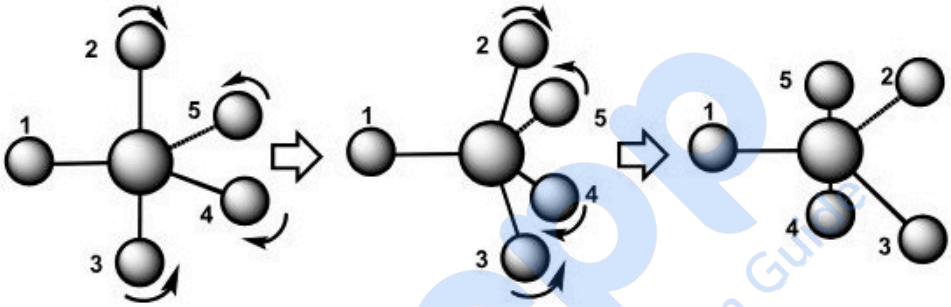
Correct Marks : 4 Wrong Marks : 1

The option showing the correct Berry-pseudo rotation is

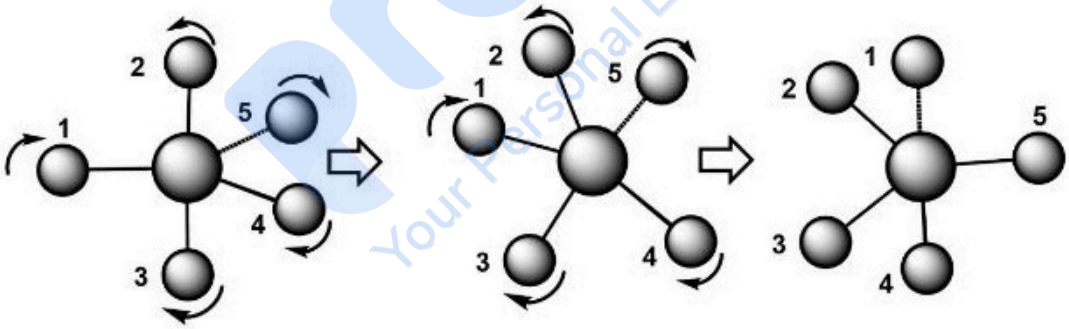
1



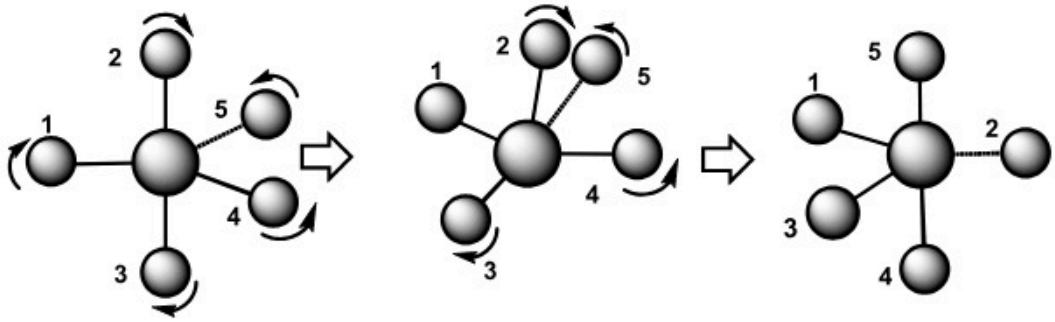
2



3



4

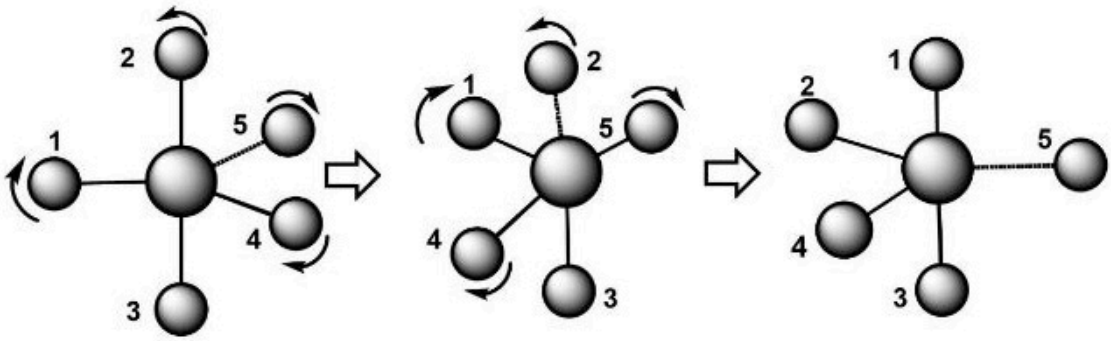


Question Number : 61 Question Id : 562954256 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

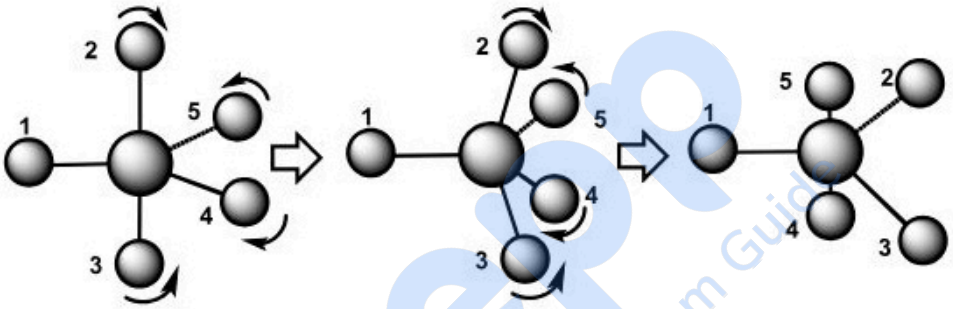
Correct Marks : 4 Wrong Marks : 1

बेरी-स्यूडो (Berry-pseudo) घूर्णन दिखाने वाला सही विकल्प है

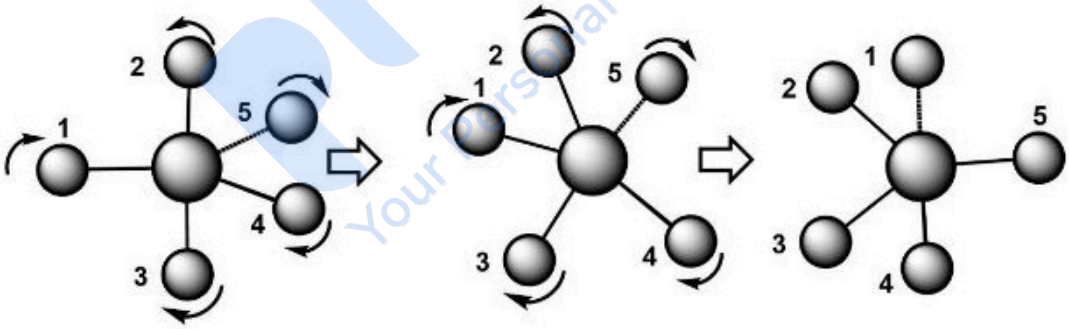
1



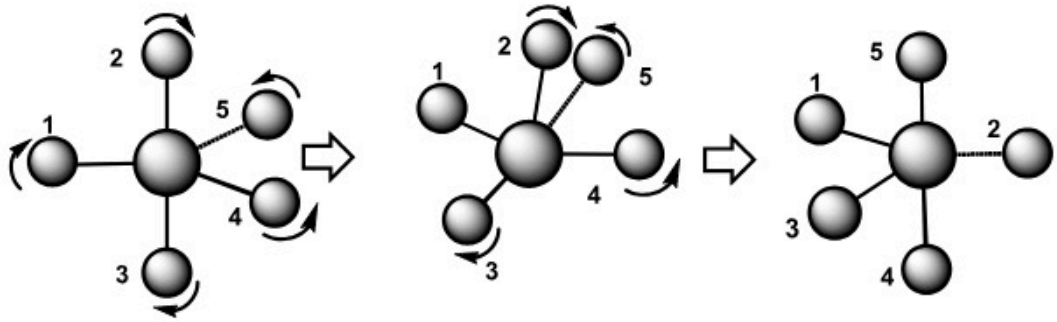
2



3



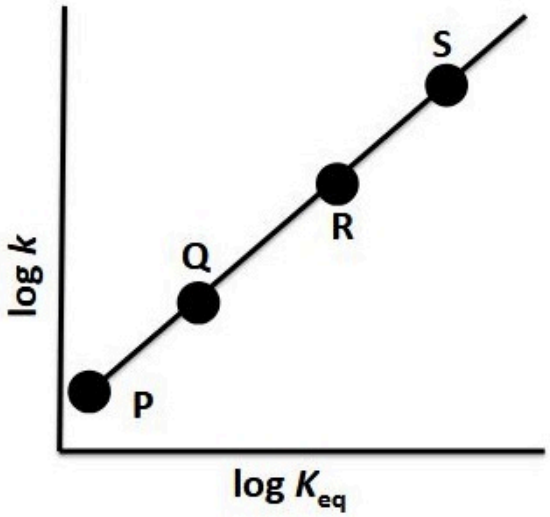
4



Question Number : 62 Question Id : 562954257 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The plot shown below is for the rate of acid hydrolysis reaction of $[Co(NH_3)_5X]^{2+}$ at 25 °C, where X is an anionic ligand (F^-, Cl^-, NO_3^-, $H_2PO_4^-$).



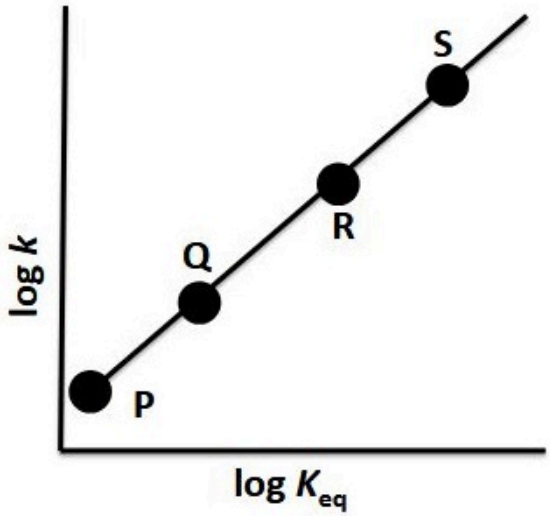
The correct option is

1. P = F^-, Q = $H_2PO_4^-$, R = Cl^-, S = NO_3^-
2. P = Cl^-, Q = $H_2PO_4^-$, R = F^-, S = NO_3^-
3. P = $H_2PO_4^-$, Q = Cl^-, R = F^-, S = NO_3^-
4. P = NO_3^-, Q = Cl^-, R = $H_2PO_4^-$, S = F^-

Question Number : 62 Question Id : 562954257 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

नीचे दर्शित आलेख (plot) 25 °C पर $[Co(NH_3)_5X]^{2+}$ के अम्लिय जल अपघटन अभिक्रिया की दर के लिए है, जहाँ X एक ऋणायनी लिगन्ड है (F^-, Cl^-, NO_3^-, H_2PO_4).



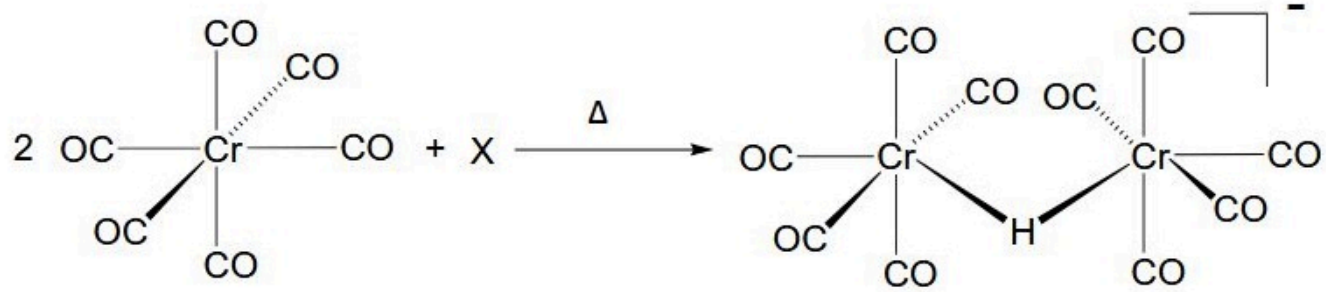
सही विकल्प है

1. $P = F^-, Q = H_2PO_4^-, R = Cl^-, S = NO_3^-$
2. $P = Cl^-, Q = H_2PO_4^-, R = F^-, S = NO_3^-$
3. $P = H_2PO_4^-, Q = Cl^-, R = F^-, S = NO_3^-$
4. $P = NO_3^-, Q = Cl^-, R = H_2PO_4^-, S = F^-$

Question Number : 63 Question Id : 562954258 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

Consider the following reaction.



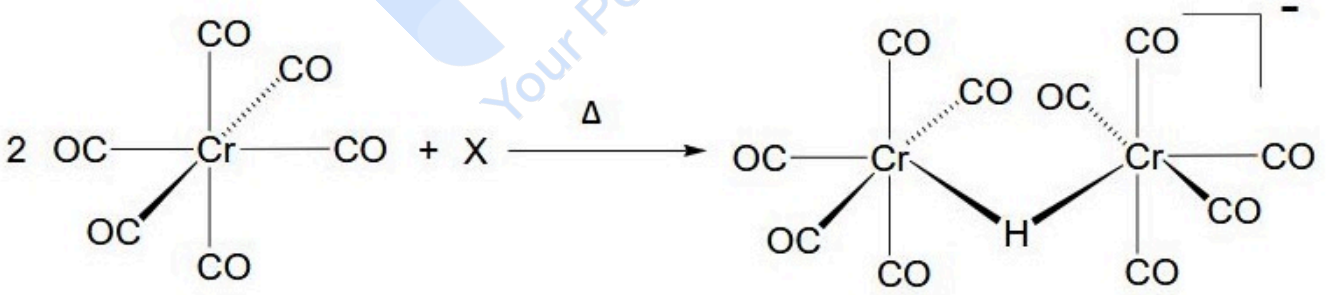
X is

1. H^+
2. H^-
3. HO^-
4. H_2O

Question Number : 63 Question Id : 562954258 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया पर विचार करें।



X है

1. H^+
2. H^-
3. HO^-
4. H_2O

Question Number : 64 Question Id : 562954259 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct statements regarding olefin polymerization involving metallocene and alkyl aluminum species, from the following

A. Trace amounts of water cause a significant increase in the rates of ethylene polymerization by the $Cp_2TiEtCl/AlEt_2Cl$ system
B. Methylaluminoxane (MAO) is employed as an activator for the catalyst, Cp_2ZrMe_2.
C. $B(C_6F_5)_3$ is an activator for Cp_2ZrMe_2.
D. The termination step of the polymerization reaction is β-hydride elimination.

are,

1. A, B, C and D
2. A, B and C only
3. A, B and D only
4. B, C and D only

Question Number : 64 Question Id : 562954259 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से, मेटैलोसीन तथा ऐल्किल एलुमिनियम स्पीशीज़ से सम्मिलित ओलिफ़िन बहुलकन के संबंध में सही कथन

A. जल की सूक्ष्म मात्रा $Cp_2TiEtCl/AlEt_2Cl$ तंत्र द्वारा एथिलीन बहुलकन की दरों में महत्वपूर्ण वृद्धि करती है
B. उत्प्रेरक Cp_2ZrMe_2 के लिए मेथिलएलुमिनोक्सेन (MAO) एक सक्रियक के रूप में प्रयुक्त किया जाता है
C. Cp_2ZrMe_2 के लिए $B(C_6F_5)_3$ एक सक्रियक है।
D. बहुलकन अभिक्रिया का समापन पद β-हाइड्राईड विलोपन है।

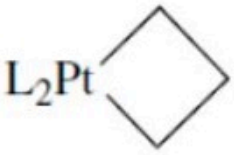
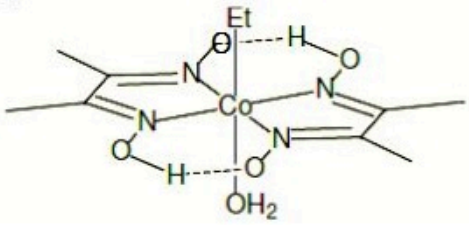
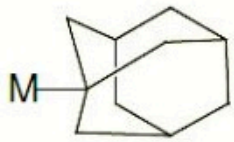
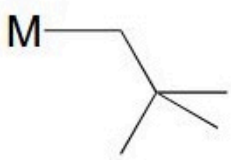
हैं,

1. A, B, C तथा D
2. केवल A, B तथा C
3. केवल A, B तथा D
4. केवल B, C तथा D

Question Number : 65 Question Id : 562954260 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

List I contains metal-alkyl compounds which do not undergo β-hydride elimination step and LIST II gives the reasons.

LIST I	LIST II
A. 	P. A planar transition state is not accessible
B. 	Q. No vacant coordination site on the metal center
C. 	R. Leads to a bridgehead olefin
D. 	S. Lacks β-hydrogen

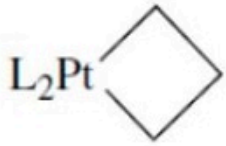
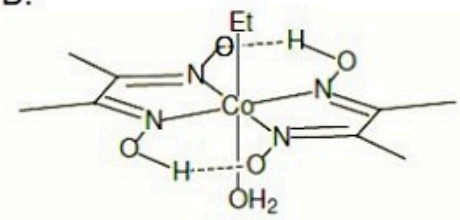
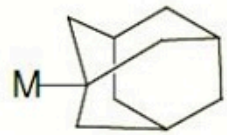
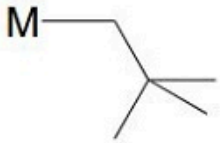
The option containing the correct match is

1. A-P, B-Q, C-R, D-S
2. A-Q, B-R, C-S, D-P
3. A-R, B-S, C-P, D-Q
4. A-S, B-P, C-R, D-Q

Question Number : 65 Question Id : 562954260 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

सूची I में धातु-ऐल्किल यौगिक हैं जो हाइड्राइड विलोपन पद नहीं देते हैं तथा सूची II कारण देती है।

सूची I	सूची II
A. 	P. तली संक्रमण अवस्था सुगम्य नहीं है
B. 	Q. धातु केंद्र पर कोई रिक्त उपसहसंयोजन स्थल नहीं
C. 	R. एक सेतुशीर्ष ओलिफ़िन देता है
D. 	S. β-हाइड्रोजन की कमी

सही मिलान वाला विकल्प है

1. A-P, B-Q, C-R, D-S
2. A-Q, B-R, C-S, D-P
3. A-R, B-S, C-P, D-Q
4. A-S, B-P, C-R, D-Q

Question Number : 66 Question Id : 562954261 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct number of stereoisomers and the correct number of enantiomeric pairs of $[Co(trien)Br_2]^+$ (trien = triethylenetetraamine), respectively, are

1. 5 and 2
2. 4 and 2
3. 5 and 4
4. 6 and 4

Question Number : 66 Question Id : 562954261 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

$[Co(trien)Br_2]^+$ (trien = ट्राईऐथिलीनटेट्राएमीन) के त्रिविम समवायवों की सही संख्या तथा प्रतिबिंबरूपी युग्मों की सही संख्या, हैं, क्रमशः

1. 5 तथा 2
2. 4 तथा 2
3. 5 तथा 4
4. 6 तथा 4

Question Number : 67 Question Id : 562954262 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

For complex $[Ni(RNH_2)_6]^{2+}$ (R = alkyl), Δ_o is 12,600 cm^{-1}. The spin-orbit coupling constant (λ) for Ni^{2+} ion is -315 cm^{-1}. The μ_{eff} (in BM) for the complex is closest to

1. 3.11
2. 2.97
3. 2.83
4. 2.55

Question Number : 67 Question Id : 562954262 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

संकुल $[Ni(RNH_2)_6]^{2+}$ (R = ऐल्किल) के लिए, Δ_o 12,600 cm^{-1} है। Ni^{2+} आयन के लिए स्पिन-कक्ष युग्मन स्थिरांक (λ) -315 cm^{-1} है। संकुल के लिए μ_{eff} (BM में) जिसके निकटतम है, वह है

1. 3.11
2. 2.97
3. 2.83
4. 2.55

Question Number : 68 Question Id : 562954263 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The self-exchange rate and the reduction potential for the following redox couples are given below. (R = 8.314 J K^{-1} mol^{-1}, Faraday constant = 96485 C mol^{-1})

	self-exchange rate ($M^{-1}s^{-1}$)	E^O (V)
$Ce^{4+/3+}$	4.0	1.70
$[Fe(phen)]^{3+/2+}$	3×10^7	1.00

$$Ce^{4+} + [Fe(phen)]^{2+} \longrightarrow Ce^{3+} + [Fe(phen)]^{3+}$$

For the above reaction, the approximate rate constant (in $M^{-1}s^{-1}$) at 25 °C is

1. 1.1×10^{10}
2. 1.1×10^{5}
3. 1.2×10^{20}
4. 3.5×10^{26}

Question Number : 68 Question Id : 562954263 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित रेडॉक्स युग्मों के लिए स्व-विनिमय दर तथा अपचयन विभव नीचे दिए गए हैं। ($R = 8.314\ J\ K^{-1}\ mol^{-1}$, फैराडे स्थिरांक $= 96485\ C\ mol^{-1}$)

	स्व-विनिमय दर ($M^{-1}s^{-1}$)	E^O (V)
$Ce^{4+/3+}$	4.0	1.70
$[Fe(phen)]^{3+/2+}$	3×10^7	1.00

$$Ce^{4+} + [Fe(phen)]^{2+} \longrightarrow Ce^{3+} + [Fe(phen)]^{3+}$$

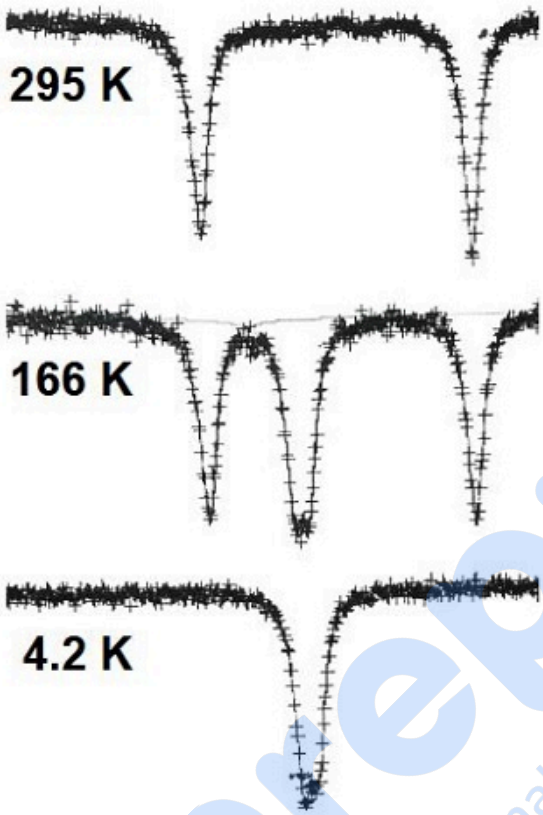
उपरोक्त अभिक्रिया के लिए, 25 °C पर अनुमानित दर स्थिरांक ($M^{-1}s^{-1}$ में) है

1. 1.1×10^{10}
2. 1.1×10^{5}
3. 1.2×10^{20}
4. 3.5×10^{26}

Question Number : 69 Question Id : 562954264 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The Mössbauer spectra of $[Fe(L)_2]I_2$ (L = 3,5-dimethyl-tris-pyrazolylborate), shown below, exhibit temperature-dependent spin-transition behaviour.



The correct statements from the following

A. At 295 K, the Fe(II) center is high-spin.
B. At 4.2 K, the Fe(II) center is low-spin.
C. At 295 K, the Fe(II) center is low-spin.
D. At 4.2 K, the Fe(II) center is high-spin.
E. At 166 K, it represents a mixture of low-spin and high-spin Fe(II) complexes.

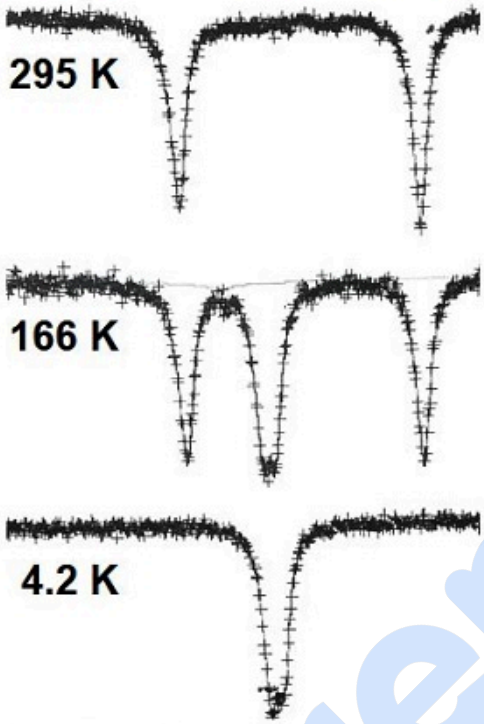
are

1. A, B and C only
2. B, C and E only
3. C, D and E only
4. A, B and E only

Question Number : 69 Question Id : 562954264 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

नीचे दर्शित, $[Fe(L)_2]I_2$ (L = 3,5-डाईमेथिल-ट्रिस-पायराजोलील बोरेट) का मॉसबौर स्पेक्ट्रा, तापाश्रित स्पिन-संक्रमण व्यवहार प्रदर्शित करता है।



निम्नलिखित में से सही कथन

A. 295 K पर, Fe(II) केंद्र उच्च-प्रचक्रण है।

B. 4.2 K पर, Fe(II) केंद्र निम्न-प्रचक्रण है।

C. 295 K पर, Fe(II) केंद्र निम्न-प्रचक्रण है।

D. 4.2 K पर, Fe(II) केंद्र उच्च-प्रचक्रण है।

E. 166 K पर, यह निम्न-प्रचक्रण तथा उच्च-प्रचक्रण Fe(II) संकुलों का मिश्रण निरूपित करता है।

हैं

1. केवल A, B तथा C
2. केवल B, C तथा E
3. केवल C, D तथा E
4. केवल A, B तथा E

Question Number : 70 Question Id : 562954265 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The electronic configurations showing tetragonal compression and elongation in their octahedral complexes, respectively, are

1. d^1 and low-spin d^4
2. d^1 and d^9
3. d^9 and d^3
4. low-spin d^4 and high-spin d^5

Question Number : 70 Question Id : 562954265 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

अपने अष्टफलकीय संकुलों में द्विसमलंबाक्ष संपीडन तथा दीर्घन प्रदर्शित करने वाले इलेक्ट्रॉनिक विन्यास, हैं, क्रमशः

1. d^1 तथा निम्न-प्रचक्रण d^4
2. d^1 तथा d^9
3. d^9 तथा d^3
4. निम्न-प्रचक्रण d^4 तथा उच्च-प्रचक्रण d^5

Question Number : 71 Question Id : 562954266 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct match between the enzymes (Column **P**) and the biological functions (Column **Q**) from the table below

Column **P**	Column **Q**
(a) Cytochrome C Oxidase	(i) DNA biosynthesis
(b) Tyrosinase	(ii) Hydrolysis
(c) Purple acid phosphatase	(iii) Oxidation of phenols
(d) Galactose oxidase	(iv) Oxidation of alcohols
(e) Ribonucleotide reductase	(v) Reduction of O_2 to water

is

1. a-iii, b-i, c-iv, d-ii, e-v
2. a-i, b-ii, c-iii, d-iv, e-v
3. a-v, b-iii, c-ii, d-iv, e-i
4. a-ii, b-iv, c-v, d-i, e-iii

Question Number : 71 Question Id : 562954266 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्न सारणी में एन्ज़ाइमों (कॉलम **P**) तथा जैविक कार्यों के मध्य (कॉलम **Q**) सही मिलान

कॉलम **P**	कॉलम **Q**
(a) साइटोक्रोम C ऑक्सीडेज	(i) DNA जैवसंश्लेषण
(b) टाइरोसिनेज	(ii) जल अपघटन
(c) बैंगनी अम्ल फॉस्फेटेज	(iii) फिनॉलों का ऑक्सीकरण
(d) गैलेक्टोज ऑक्सीडेज	(iv) ऐल्कोहॉलों का ऑक्सीकरण
(v) राइबोन्यूक्लियोटाइड रेडक्टेज	(vi) O_2 का जल में अपचयन

है

1. a-iii, b-i, c-iv, d-ii, e-v
2. a-i, b-ii, c-iii, d-iv, e-v
3. a-v, b-iii, c-ii, d-iv, e-i
4. a-ii, b-iv, c-v, d-i, e-iii

Question Number : 72 Question Id : 562954267 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

Consider the following statements regarding corrin ring (P) and porphyrin ring (Q)

A. P is fully conjugated, rigid and bigger in size than Q.
B. P is fully conjugated, more flexible and ring size is same as Q.
C. P is partially reduced, more flexible and smaller in size than Q.
D. The flexibility of P supports multiple oxidation states of cobalt.

The correct statements are:

1. A and B only
2. C and D only
3. A and D only
4. B and D only

Question Number : 72 Question Id : 562954267 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

कॉरिन वलय (P) तथा पॉरफाइरिन वलय (Q) के संबंध में निम्नलिखित कथनों पर विचार करें

A. P पूर्ण रूप से संयुग्मित है, Q की तुलना में दृढ़ तथा आकार में बड़ा है।

B. P पूर्ण रूप से संयुग्मित, अधिक लचीला है तथा वलय आकार Q के समान है।

C. P आंशिक अपचयित, अधिक लचीला है तथा Q से आकार में छोटा है।

D. P का लचीलापन कोबाल्ट के विविध ऑक्सीकरण अवस्थाओं का समर्थन करता है।

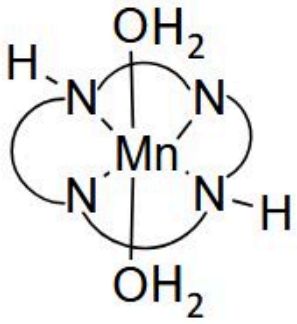
सही कथन हैं:

1. केवल A तथा B
2. केवल C तथा D
3. केवल A तथा D
4. केवल B तथा D

Question Number : 73 Question Id : 562954268 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The total number of lines expected in the EPR spectrum of a high-spin Mn(II) complex [Given; $I_{Mn} = 5/2$; $I_N = 1$], for which the schematic diagram is shown below



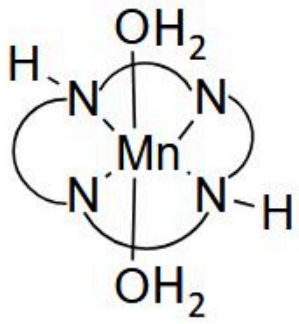
is

1. 6
2. 54
3. 270
4. 30

Question Number : 73 Question Id : 562954268 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

एक उच्च-स्पिन Mn(II) संकुल [दिया है; $I_{Mn} = 5/2$; $I_N = 1$], जिसके लिए आरेखित चित्र नीचे दर्शाया गया है, के EPR स्पेक्ट्रम में प्रत्याशित लाइनों की कुल संख्या



है

1. 6
2. 54
3. 270
4. 30

Question Number : 74 Question Id : 562954269 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct statements regarding the inner-transition elements from the following

A. The absorptions in the electronic spectra involve 4f→4f and 4f→5d transitions.
B. The experimental magnetic moment of Eu^{3+} ion is greater than the calculated spin-only magnetic moment.
C. The 4f→4f transitions are sharp while 4f→5d transitions are broad.
D. The peak positions for the 4f→4f transitions are marginally affected by the ligand environment.

are

1. A, B and C only
2. B, C and D only
3. A, C and D only
4. A, B, C and D

Question Number : 74 Question Id : 562954269 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से आंतर-संक्रमण तत्वों के संबंध में सही कथन

A. इलेक्ट्रॉनिक स्पेक्ट्रा के अवशोषणों में 4f→4f तथा 4f→5d संक्रमण सम्मिलित हैं।

B. Eu^{3+} आयन का प्रायोगिक चुंबकीय आघूर्ण परिकलित प्रचक्रण-मात्र चुंबकीय आघूर्ण की तुलना मे अधिक है।

C. 4f→4f संक्रमण तीव्र हैं जबकि 4f→5d संक्रमण वृहत हैं।

D. 4f→4f संक्रमणों के लिए शिखर स्थितियां लिगन्ड परिस्थिति (ligand environment) से मामूली रूप से प्रभावित होती है

हैं

1. केवल A, B तथा C
2. केवल B, C तथा D
3. केवल A, C तथा D
4. A, B, C तथा D

Question Number : 75 Question Id : 562954270 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The mass spectra of $Pd(PPh_3)_4$ alone and a mixture of $Pd(PPh_3)_4$ and sulfonated triphenylphosphine, $[L]^-$, are recorded on two different machines. The relevant data is given below.

Species	Machine	Mode		Relative intensity of the corresponding mass signal			
			n=0	n=1	n=2	n=3	n=4
$[Pd(PPh_3)_n]^+$	Machine I	(+)-ion	-	1%	22%	100%	8%
$[Pd(L)(PPh_3)_n]^-$	Machine I	(-)-ion	2%	35%	100%	-	-
$[Pd(L)(PPh_3)_n]^-$	Machine II	(-)-ion	12%	100%	1%	-	-

Consider the following statements based on the above data:

A. Machine I provides a softer ionization conditions than Machine II.
B. In Machine I, the stable species under the MS conditions contain three phosphine ligands.
C. Mass data reveal ligand exchange reaction.
D. The increased prevalence of monophosphine ion, $[Pd(L)]^-$, in Machine II is attributed to ion fragmentation.

The option containing the correct statements is
1. A, B, C and D
2. A, B and C only
3. B, C and D only
4. A, C and D only

Question Number : 75 Question Id : 562954270 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

$Pd(PPh_3)_4$ का अकेले तथा $Pd(PPh_3)_4$ तथा सल्फोनिकृत ट्राइफेनिलफॉस्फीन, $[L]^-$, के मिश्रण का द्रव्यमान स्पेक्ट्रा, दो भिन्न मशीनों में अभिलेखित किया गया है। उपयुक्त आँकड़े नीचे दिए है।

स्पीशीज़	मशीन	मोड		संगत द्रव्यमान सिग्नल की सापेक्षिक तीव्रता			
			n=0	n=1	n=2	n=3	n=4
$[Pd(PPh_3)_n]^+$	मशीन I	(+)-आयन	-	1%	22%	100%	8%
$[Pd(L)(PPh_3)_n]^-$	मशीन I	(-)-आयन	2%	35%	100%	-	-
$[Pd(L)(PPh_3)_n]^-$	मशीन II	(-)-आयन	12%	100%	1%	-	-

उपरोक्त आंकड़ों पर आधारित निम्नलिखित कथनों पर विचार करें:

A. मशीन II की तुलना में मशीन I नरम आयनीकरण स्थितियों को प्रदान करती है।

B. मशीन I में , MS परिस्थितियों में स्थायी स्पीशीज़ में तीन फॉस्फीन लिगन्ड होते है

C. द्रव्यमान आँकड़े लिगन्ड विनिमय अभिक्रिया दिखातें हैं।

D. मशीन II में मोनोफॉस्फीन आयन, $[Pd(L)]^-$, की व्यापकता में वृद्धि आयन विखंडन का कारण मानी जाती है।

सही कथनों वाला विकल्प है

1. A, B, C तथा D
2. केवल A, B तथा C
3. केवल B, C तथा D
4. केवल A, C तथा D

Question Number : 76 Question Id : 562954271 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The number of microstates, the ground term, the energy separation between the ground term and the next excited state term of identical multiplicity, and the j value for the lowest energy spin-orbit state for the ground state for a d^3 configuration, respectively, are

1. 120, ^4F, 15B, 3/2
2. 120, ^4F, 15B, 9/2
3. 156, ^4F, 15B+C, 3/2
4. 156, ^4F, 15B, 9/2

Question Number : 76 Question Id : 562954271 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

d^3 विन्यास के लिए सूक्ष्म अवस्थाओं की संख्या, मूल पद, समान बहुकता के मूल पद तथा अगले उत्तेजित अवस्था पद के मध्य ऊर्जा का अंतर, तथा मूल अवस्था के निम्नतम ऊर्जा प्रचक्रण-कक्ष अवस्था j का मान, हैं, क्रमशः

1. 120, ^4F, 15B, 3/2
2. 120, ^4F, 15B, 9/2
3. 156, ^4F, 15B+C, 3/2
4. 156, ^4F, 15B, 9/2

Question Number : 77 Question Id : 562954272 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The free ion ground term, the calculated spin plus orbital magnetic moment value, the calculated spin-orbit magnetic moment value and the observed magnetic moment value (300 K), for a gaseous $3d^5$ ion, respectively, are

1. $^6S_{5/2}$, 5.92 BM, 5.92 BM, 5.8-6.0 BM
2. $^6S_{5/2}$, 5.92 BM, 6.70 BM, 5.8-6.0 BM
3. $^6S_{5/2}$, 5.92 BM, 5.92 BM, 4.8-5.0 BM
4. $^6S_{5/2}$, 5.59 BM, 6.70 BM, 5.8-6.0 BM

Question Number : 77 Question Id : 562954272 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

गैसीय $3d^5$ आयन के लिए, मुक्त आयन मूल पद, परिकलित प्रचक्रण प्लस कक्षक चुंबकीय आघूर्ण का मान, परिकलित प्रचक्रण-कक्ष चुंबकीय आघूर्ण मान तथा प्रेक्षित चुंबकीय आघूर्ण मान (300 K), हैं, क्रमशः

1. $^6S_{5/2}$, 5.92 BM, 5.92 BM, 5.8-6.0 BM
2. $^6S_{5/2}$, 5.92 BM, 6.70 BM, 5.8-6.0 BM
3. $^6S_{5/2}$, 5.92 BM, 5.92 BM, 4.8-5.0 BM
4. $^6S_{5/2}$, 5.59 BM, 6.70 BM, 5.8-6.0 BM

Question Number : 78 Question Id : 562954273 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The EPR spectrum of $[InH_3^{\bullet}]^-$ [Given: In (I = 9/2); H (I = ½)] is comprised of

1. 10 lines of equal intensity where each line further splits into 4 lines with intensity 1:3:3:1.
2. 4 lines with intensity 1:3:3:1 where each line further splits into 10 lines with equal intensity.
3. 10 lines with unequal intensity where each line further splits into 4 lines with intensity 1:3:3:1.
4. 4 lines with intensity 1:1:1:1 where each line further splits into 10 lines with unequal intensity.

Question Number : 78 Question Id : 562954273 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

$[InH_3^{\bullet}]^-$ का EPR स्पेक्ट्रम [दिया है: In (I = 9/2); H (I = ½)] जिससे बना है, वह है

1. समान तीव्रता की 10 लाईनें जहाँ प्रत्येक लाईन पुनः 1:3:3:1 तीव्रता की 4 लाइनों में विपाटित होती है
2. 1:3:3:1 तीव्रता की 4 लाईनें जहाँ प्रत्येक लाईन पुनः समान तीव्रता की 10 लाइनों में विपाटित होती है।
3. असमान तीव्रता की 10 लाईनें जहाँ प्रत्येक लाईन पुनः 1:3:3:1 तीव्रता की 4 लाइनों में विपाटित होती है।
4. 1:1:1:1 तीव्रता की 4 लाईनें जहाँ प्रत्येक लाईन पुनः असमान तीव्रता की 10 लाइनों में विपाटित होती है।

Question Number : 79 Question Id : 562954274 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct statements about agostic interactions from the following

A. It involves a three-center-two-electron interaction with a C-H bond of the ligand.
B. The C-H bond of the ligand involved in agostic interaction is lengthened.
C. Its presence is identified by an upfield chemical shift of the C-H bond of the ligand.
D. It lowers the pK_a of the C-H bond of the ligand.

are

1. A, B, C and D
2. A, B and C only
3. B, C and D only
4. A, C and D only

Question Number : 79 Question Id : 562954274 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में एगॉस्टिक अन्योन्यक्रियाओं (agostic interactions) के बारे में सही कथन

A. इसमें लिगन्ड के C-H आबन्ध के साथ तीन-केंद्र-दो-इलेक्ट्रॉन अन्योन्यक्रिया सम्मिलित है।

B. एगॉस्टिक अन्योन्यक्रिया में सम्मिलित लिगन्ड का C-H आबन्ध लंबा हो जाता है।

C. इसकी उपस्थिति लिगन्ड के C-H आबन्ध की ऊपरी क्षेत्र रासायनिक सृति द्वारा पहचानी जाती है।

D. यह लिगन्ड के C-H आबन्ध के pK_a को कम करता है।

हैं

1. A, B, C तथा D
2. केवल A, B तथा C
3. केवल B, C तथा D
4. केवल A, C तथा D

Question Number : 80 Question Id : 562954275 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

If the crystal field splitting energy of *d*-orbitals follows the order: $d_{z^2} < d_{xy} = d_{x^2-y^2} < d_{xz} = d_{yz}$, the ligand field is

1. square planar
2. trigonal bipyramidal
3. square antiprismatic
4. pentagonal bipyramidal

Question Number : 80 Question Id : 562954275 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

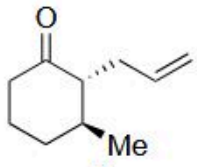
यदि *d*-कक्षकों की क्रिस्टल क्षेत्र विपाटन ऊर्जा: $d_{z^2} < d_{xy} = d_{x^2-y^2} < d_{xz} = d_{yz}$ क्रम का अनुसरण करती है, तो लिगन्ड क्षेत्र है

1. वर्ग समतली
2. त्रिसमनताक्ष द्विपिरैमिडी
3. वर्ग प्रतिप्रिज्मी
4. पंचकोणीय द्विपिरैमिडी

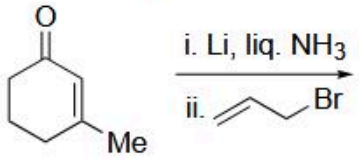
Question Number : 81 Question Id : 562954276 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

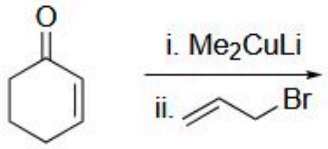
Correct Marks : 4 Wrong Marks : 1

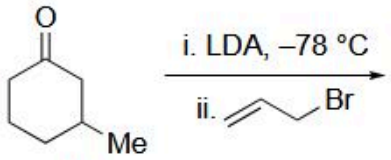
The reactions that give **A** as the major product are

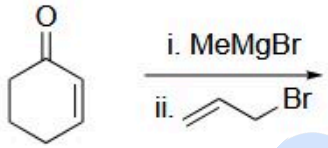


A

I. 

II. 

III. 

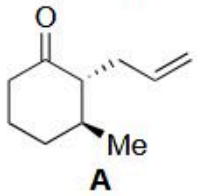
IV. 

1. **I and II**
2. **I and III**
3. **II and III**
4. **II and IV**

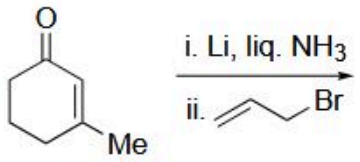
Question Number : 81 Question Id : 562954276 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

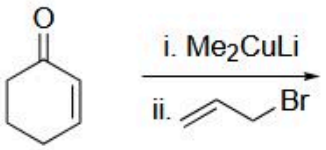
Correct Marks : 4 Wrong Marks : 1

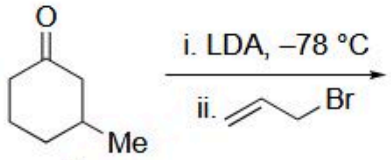
अभिक्रियाएं जो मुख्य उत्पाद के रूप में **A** देती है, वह हैं

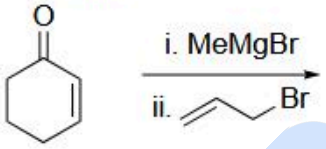


A

I. 

II. 

III. 

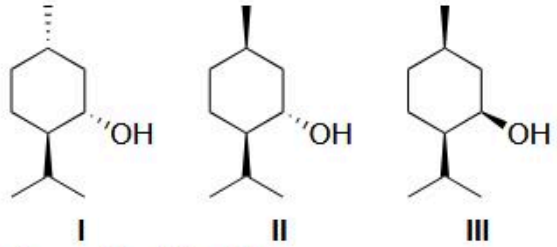
IV. 

1. I तथा II
2. I तथा III
3. II तथा III
4. II तथा IV

Question Number : 82 Question Id : 562954277 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct order for the relative rate of esterification of I, II, and III with *p*-nitrobenzoyl chloride is



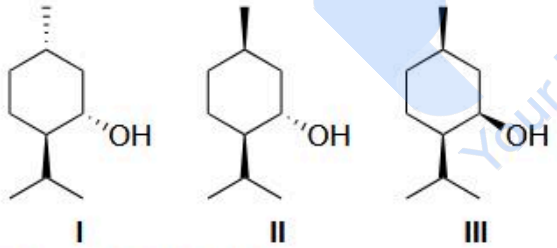
I II III

1. I > III > II
2. I > II > III
3. II > III > I
4. III > I > II

Question Number : 82 Question Id : 562954277 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

p-नाईट्रोबेंजोइल क्लोराइड के साथ I, II, तथा III के एस्टरीकरण की सापेक्षिक दर का सही क्रम है



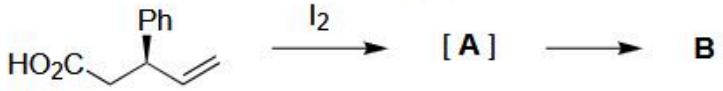
I II III

1. I > III > II
2. I > II > III
3. II > III > I
4. III > I > II

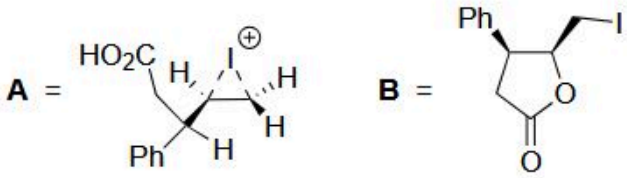
Question Number : 83 Question Id : 562954278 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The intermediate **A** and major product **B** formed in the following reaction are



1.



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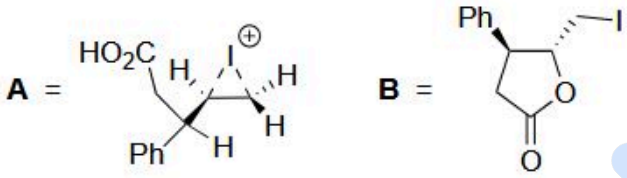

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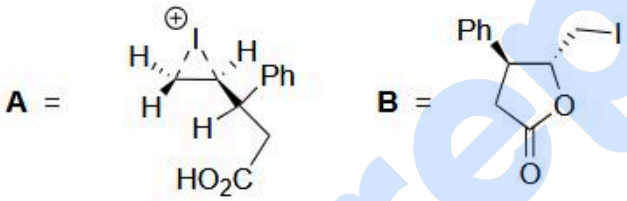

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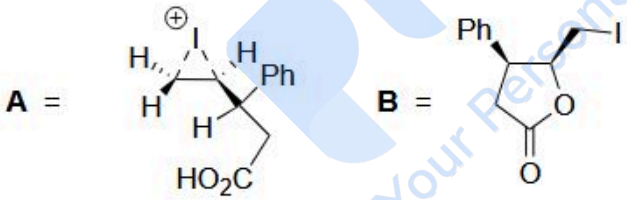
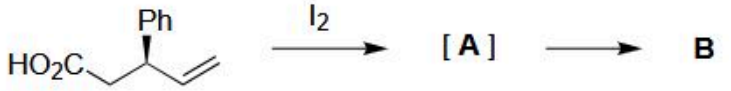


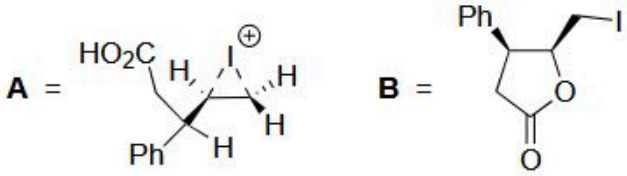
Question Number : 83 Question Id : 562954278 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में विरचित मध्यवर्ती **A** तथा मुख्य उत्पाद **B** हैं



1.



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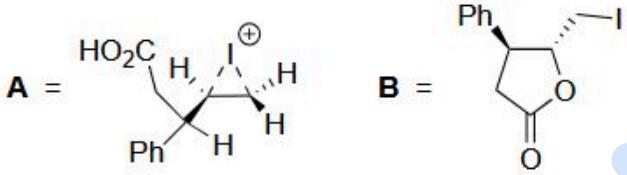

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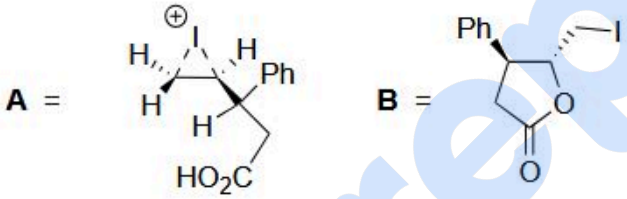

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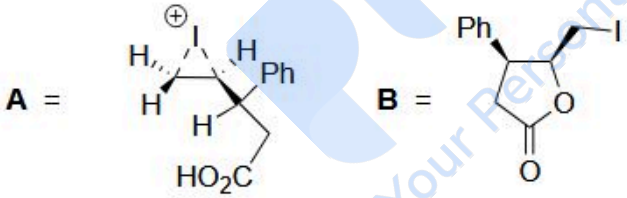
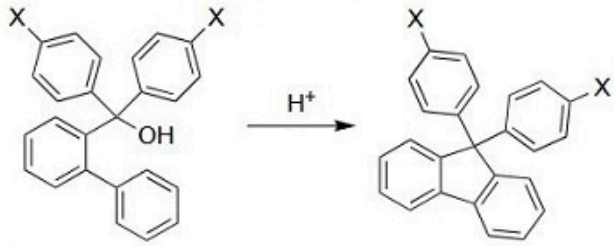


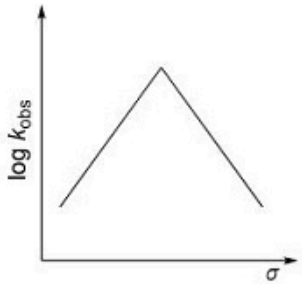
Question Number : 84 Question Id : 562954279 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The Hammett plot for the following transformation is



1.



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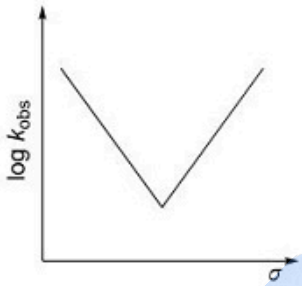
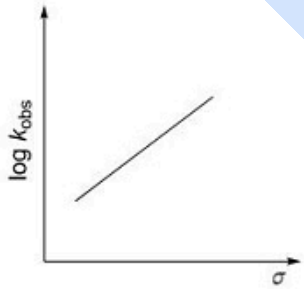
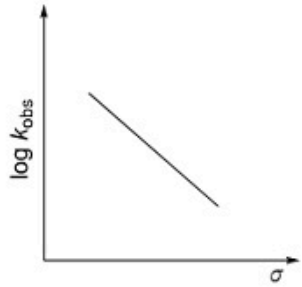


3.



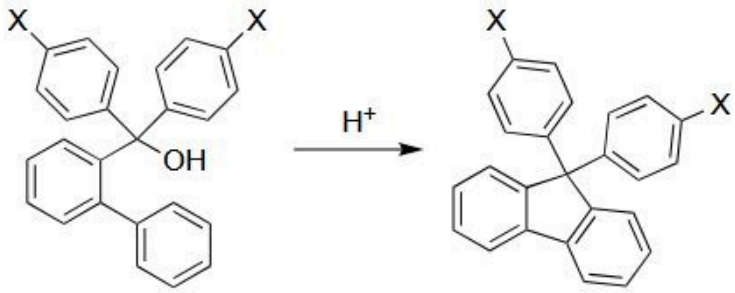
4.



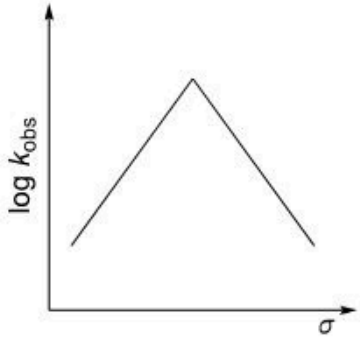
Question Number : 84 Question Id : 562954279 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित रूपांतरण के लिए हैमेट आलेख (Hammett plot) है



1.



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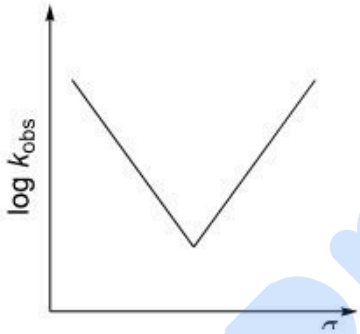

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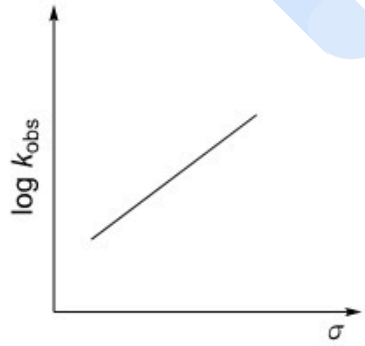

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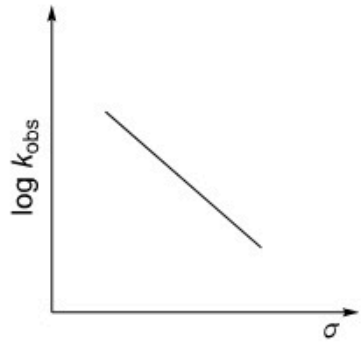
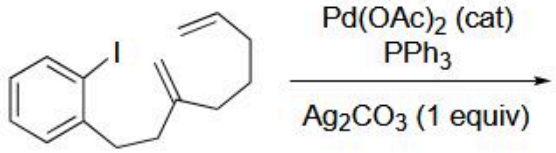


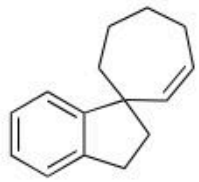
Question Number : 85 Question Id : 562954280 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The major product formed in the following reaction is



1.



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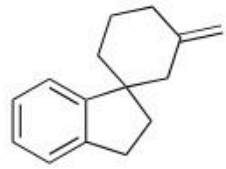

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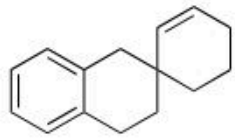

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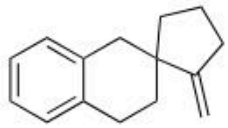
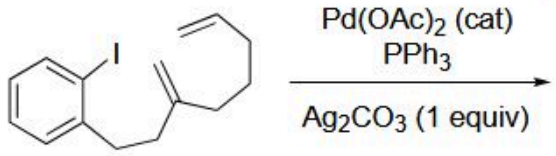


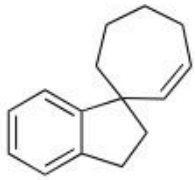
Question Number : 85 Question Id : 562954280 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



1.



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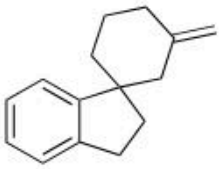

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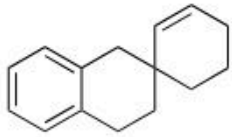

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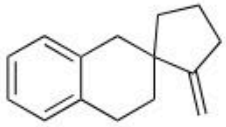
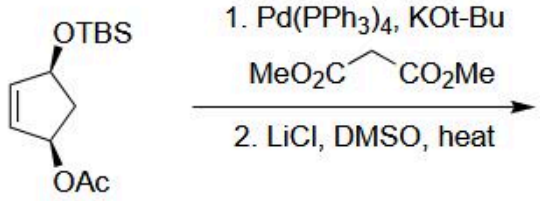


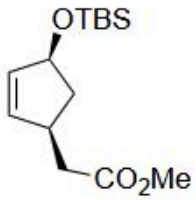
Question Number : 86 Question Id : 562954281 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The major product formed in the following reaction sequence is



1.



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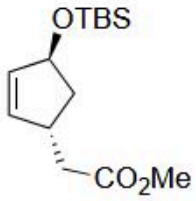

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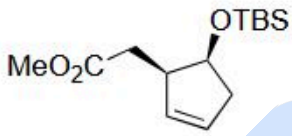

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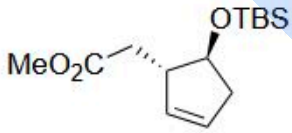
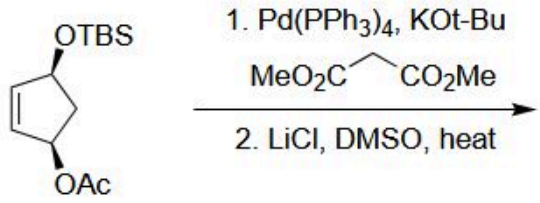


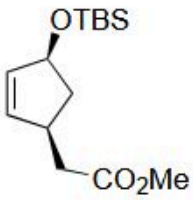
Question Number : 86 Question Id : 562954281 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

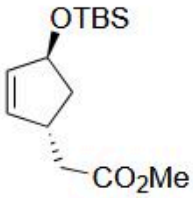
निम्नलिखित अभिक्रिया अनुक्रम में विरचित मुख्य उत्पाद है



1.



2.



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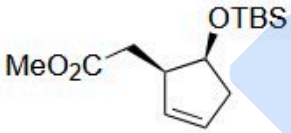

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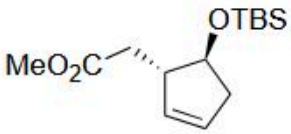
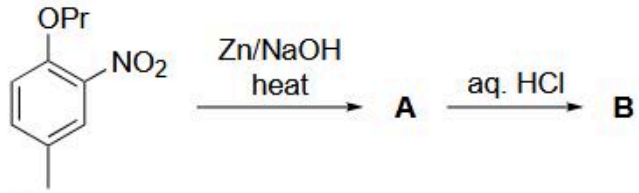


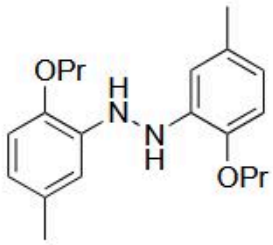
Question Number : 87 Question Id : 562954282 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

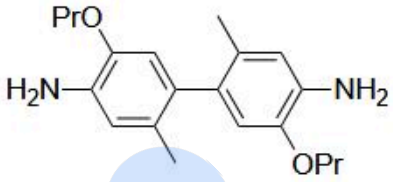
Correct Marks : 4 Wrong Marks : 1

The major products **A** and **B** formed in the following reaction sequence are



1.

A = 

B = 

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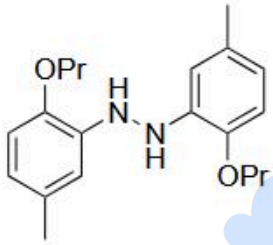
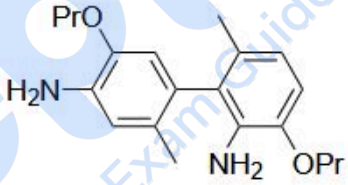
A = 

B = 

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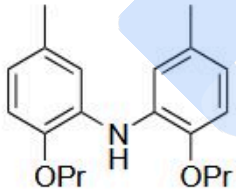
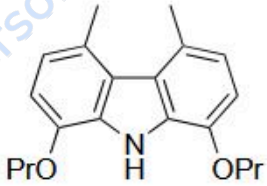
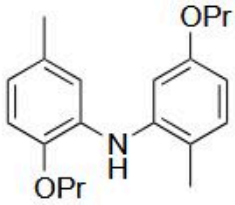
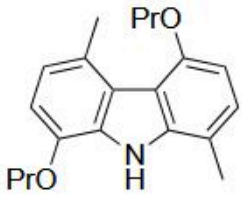
A = 

B = 

4.

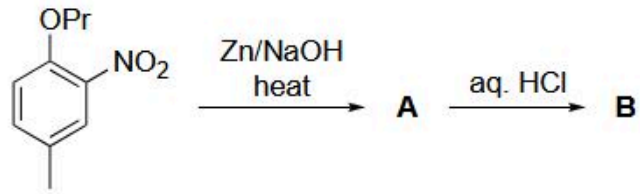
A = 

B = 

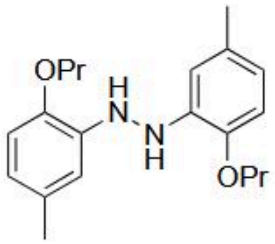
Question Number : 87 Question Id : 562954282 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

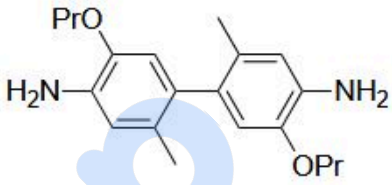
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया अनुक्रम में विरचित मुख्य उत्पाद **A** तथा **B** हैं

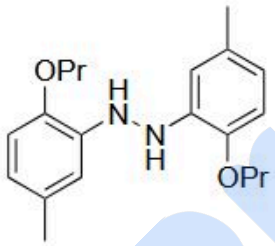


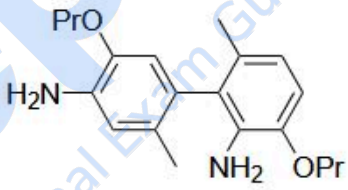
1.

A = 

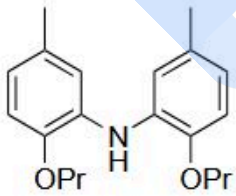
B = 

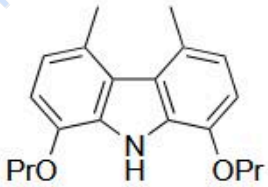
2.

A = 

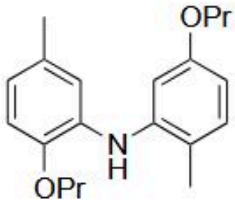
B = 

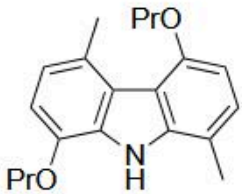
3.

A = 

B = 

4.

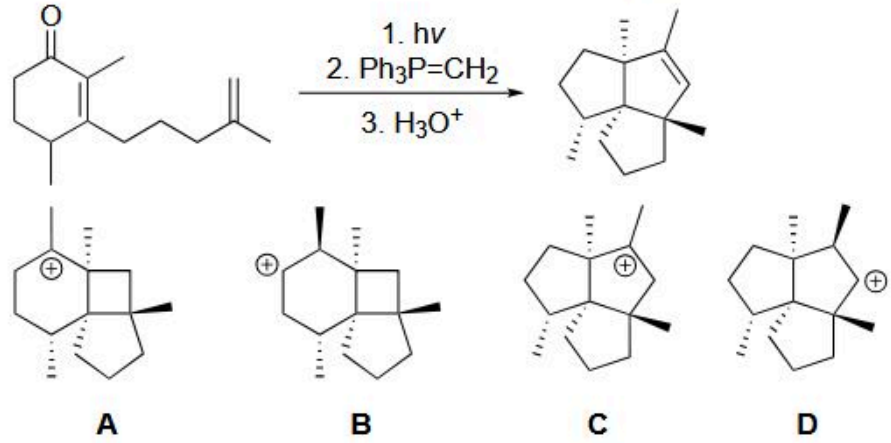
A = 

B = 

Question Number : 88 Question Id : 562954283 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The intermediates involved in the following reaction sequence are

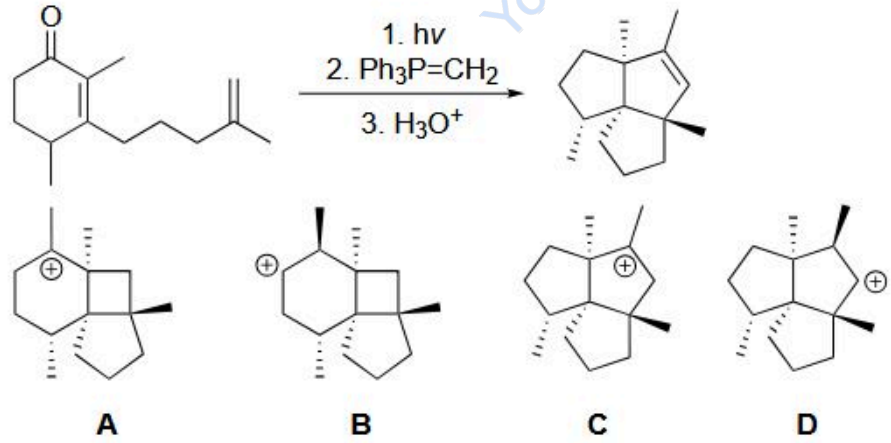


1. A and B
2. B and D
3. A and C
4. C and D

Question Number : 88 Question Id : 562954283 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया अनुक्रम में सम्मिलित मध्यवर्ती हैं

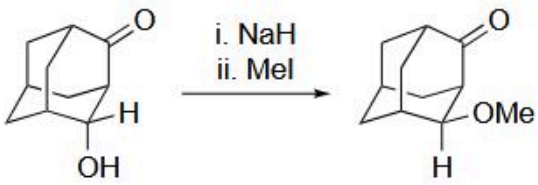


1. A तथा B
2. B तथा D
3. A तथा C
4. C तथा D

Question Number : 89 Question Id : 562954284 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct sequence of processes involved in the following transformation is

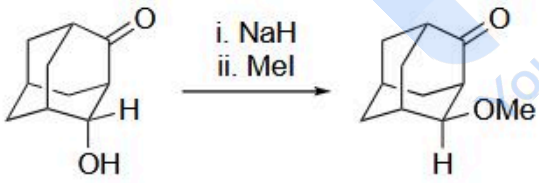


1. i. deprotonation, ii. O-methylation
2. i. enolate formation, ii. retro-aldol reaction, iii. O-methylation
3. i. deprotonation, ii. retro-aldol reaction, iii. O-methylation, iv. aldol reaction
4. i. deprotonation, ii. retro-aldol reaction, iii. aldol reaction, iv. O-methylation

Question Number : 89 Question Id : 562954284 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित रूपांतरण में सम्मिलित प्रक्रमों का सही अनुक्रम है



1. i. विप्रोटॉनन (deprotonation), ii. O-मेथिलन
2. i. ईनॉलेट विरचन, ii. पश्च-एल्डोल अभिक्रिया (retro-aldol reaction), iii. O-मेथिलन
3. i.विप्रोटॉनन (deprotonation), ii. पश्च-एल्डोल अभिक्रिया (retro-aldol reaction), iii. O-मेथिलन, iv. एल्डोल अभिक्रिया
4. i. विप्रोटॉनन (deprotonation), ii. पश्च-एल्डोल अभिक्रिया (retro-aldol reaction), iii. एल्डोल अभिक्रिया, iv. O- मेथिलन

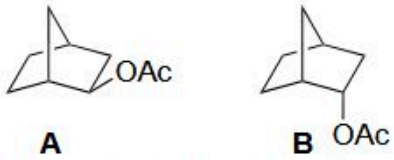
Question Number : 90 Question Id : 562954285 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct statement about the major product of the following reaction is

(enantiopure)

Bs = *p*-bromophenylsulfonyl



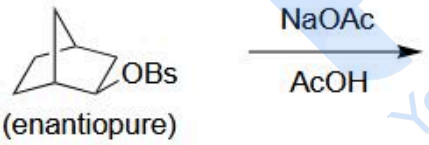
A **B**

1. **A** is formed and is optically active
2. **A** is formed and is racemic
3. **B** is formed and is optically active
4. **B** is formed and is racemic

Question Number : 90 Question Id : 562954285 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

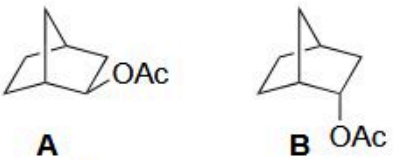
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया के मुख्य उत्पाद के बारे में सही कथन है



(enantiopure)

Bs = *p*-bromophenylsulfonyl



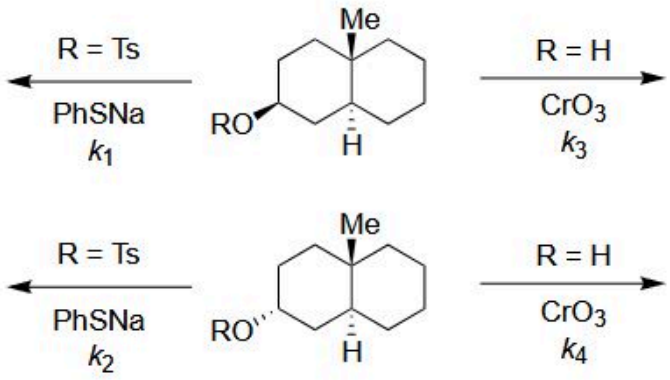
A **B**

1. **A** बनता है तथा ध्रुवण घूर्णक (optically active) है
2. **A** बनता है तथा रेसिमिक (racemic) है
3. **B** बनता है तथा ध्रुवण घूर्णक (optically active) है
4. **B** बनता है तथा रेसिमिक (racemic) है

Question Number : 91 Question Id : 562954286 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The relative order of rate constants in the following transformations are

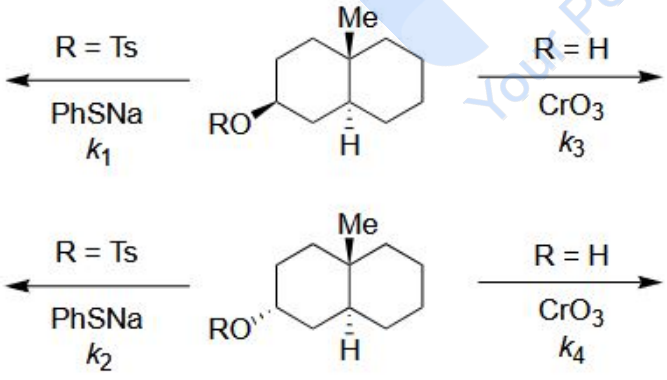


1. $k_2 > k_1; k_4 > k_3$
2. $k_2 > k_1; k_3 > k_4$
3. $k_1 > k_2; k_4 > k_3$
4. $k_1 > k_2; k_3 > k_4$

Question Number : 91 Question Id : 562954286 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित रूपांतरणों में दर स्थिरांकों का सापेक्षिक क्रम हैं



1. $k_2 > k_1; k_4 > k_3$
2. $k_2 > k_1; k_3 > k_4$
3. $k_1 > k_2; k_4 > k_3$
4. $k_1 > k_2; k_3 > k_4$

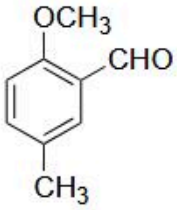
Question Number : 92 Question Id : 562954287 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

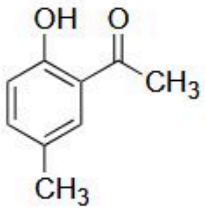
The compound that gives the following ^1H NMR spectral data is

^1H NMR ($CDCl_3$): δ 11.80 (s, 1H), 7.69 (d, J = 2.3 Hz, 1H), 7.35 (dd, J = 8.5, 2.3 Hz, 1H), 6.86 (d, J = 8.5 Hz, 1H), 2.63 (s, 3H), 2.28 (s, 3H) ppm.

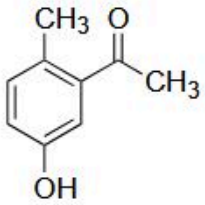
1.



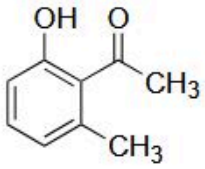
2.



3.



4.



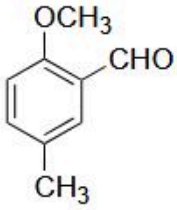
Question Number : 92 Question Id : 562954287 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

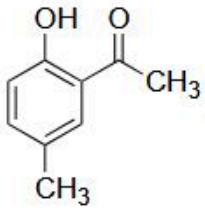
यौगिक जो निम्नलिखित ^{1}H NMR स्पेक्ट्रा के आँकड़े देता है, वह है

^{1}H NMR ($CDCl_3$): δ 11.80 (s, 1H), 7.69 (d, J = 2.3 Hz, 1H), 7.35 (dd, J = 8.5, 2.3 Hz, 1H), 6.86 (d, J = 8.5 Hz, 1H), 2.63 (s, 3H), 2.28 (s, 3H) ppm.

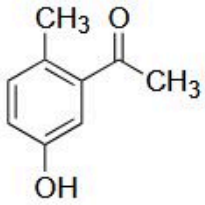
1.



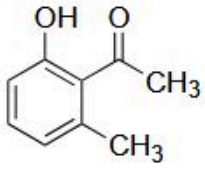
2.



3.



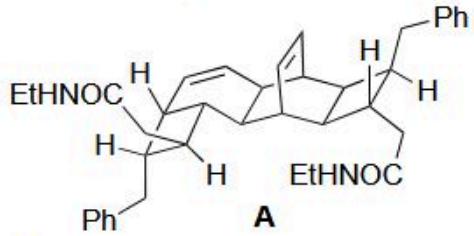
4.



Question Number : 93 Question Id : 562954288 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

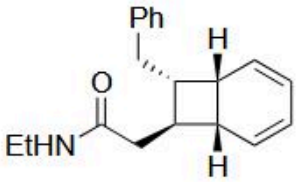
Correct Marks : 4 Wrong Marks : 1

The starting material that gives compound **A** on heating is

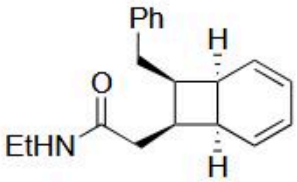


A

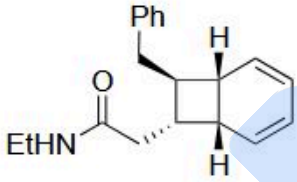
1.



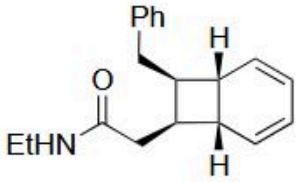
2.



3.



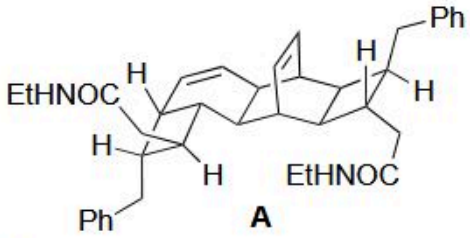
4.



Question Number : 93 Question Id : 562954288 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

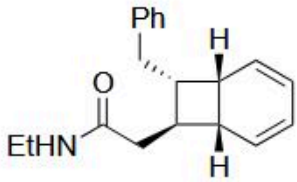
Correct Marks : 4 Wrong Marks : 1

आरंभिक पदार्थ (starting material) जो गर्म करने पर यौगिक **A** देता है, वह है

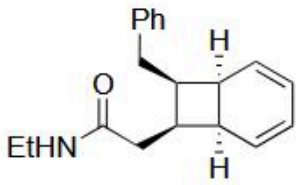


A

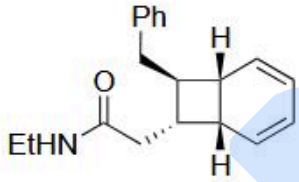
1.



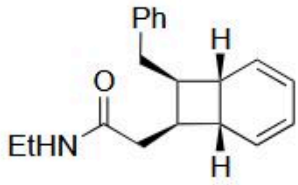
2.



3.



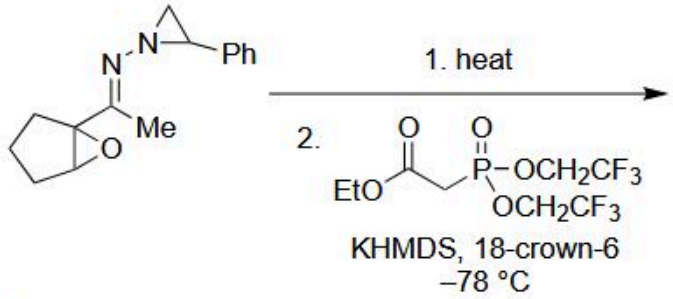
4.



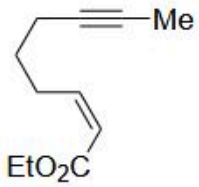
Question Number : 94 Question Id : 562954289 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The major product formed in the following reaction sequence is



1.



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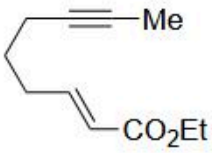

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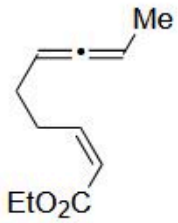
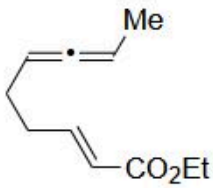


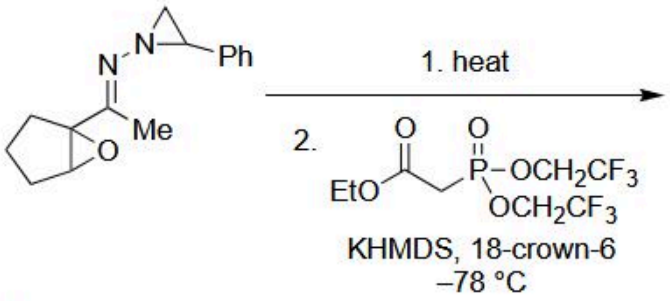
4.



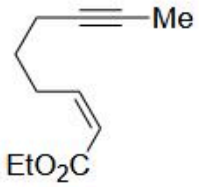
Question Number : 94 Question Id : 562954289 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया अनुक्रम में विरचित मुख्य उत्पाद हैं



1.



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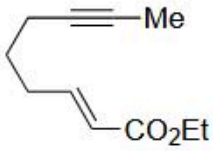

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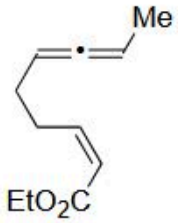
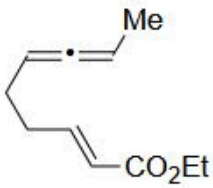


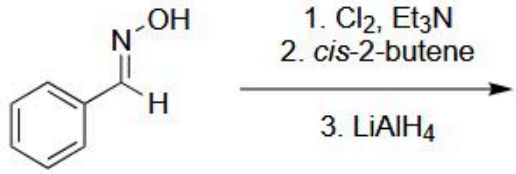
4.



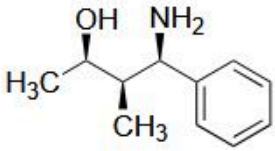
Question Number : 95 Question Id : 562954290 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The major product formed in the following reaction sequence is



1.



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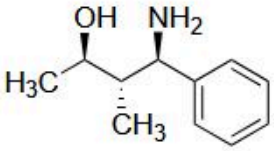

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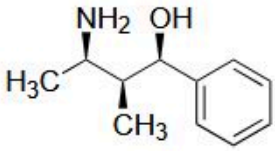
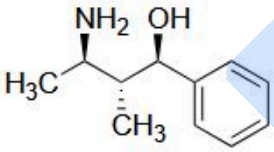


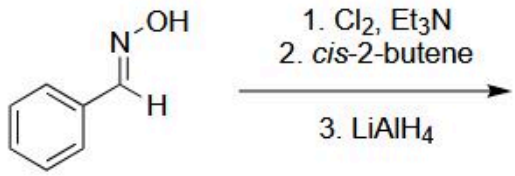
4.



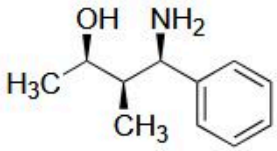
Question Number : 95 Question Id : 562954290 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया अनुक्रम में विरचित मुख्य उत्पाद हैं



1.



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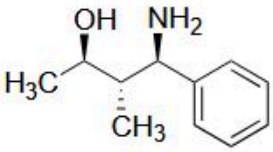

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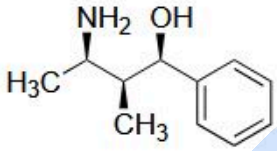
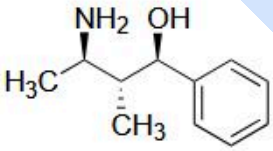


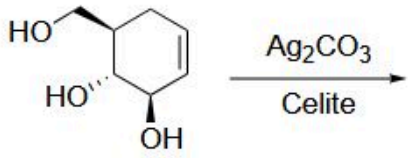
4.

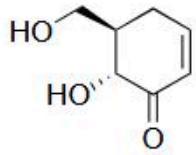


Question Number : 96 Question Id : 562954291 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The major product formed in the following reaction is



1.


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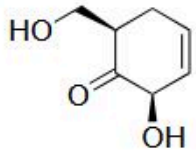
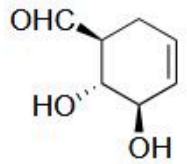
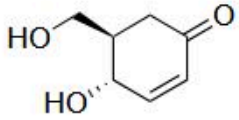


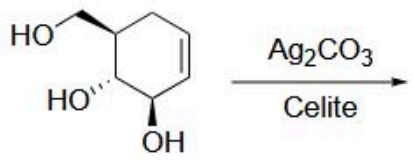
3.


4.


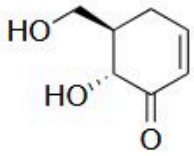
Question Number : 96 Question Id : 562954291 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद हैं



1.



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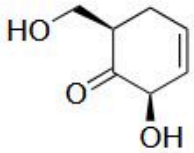

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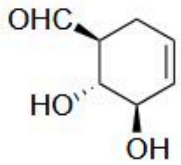

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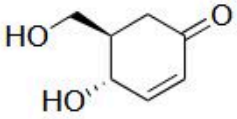
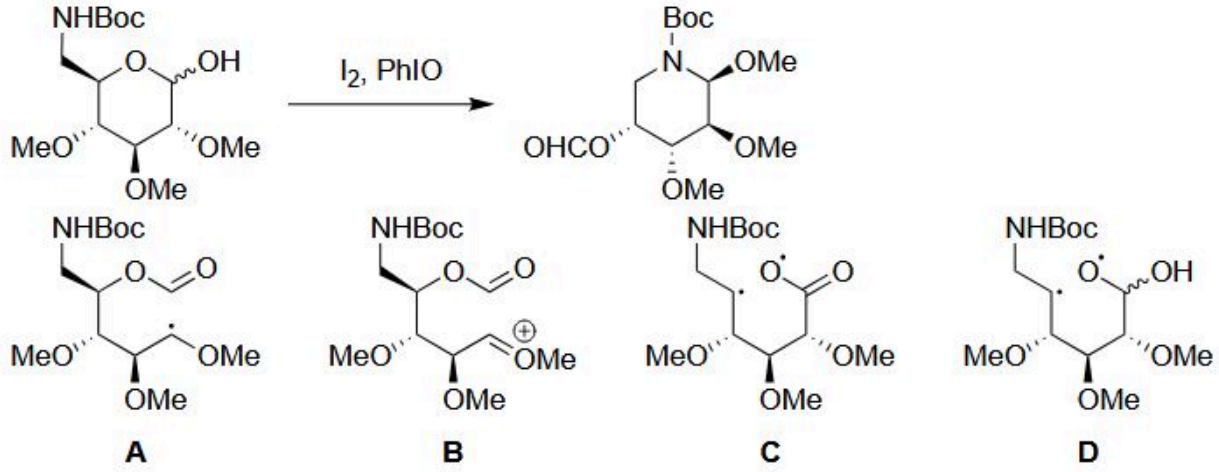


Question Number : 97 Question Id : 562954292 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The intermediates involved in the following reaction are



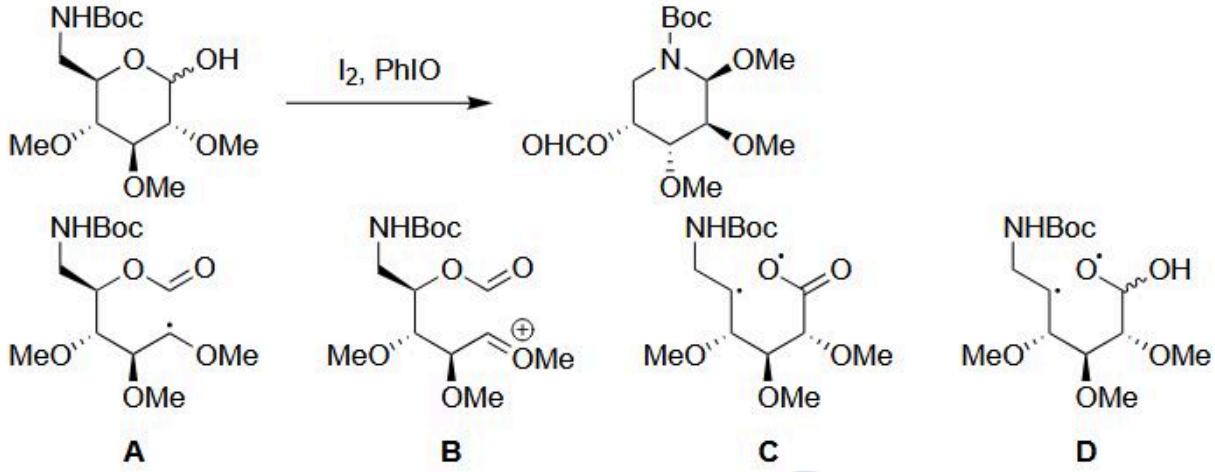
A **B** **C** **D**

1. **A** and **B**
2. **B** and **C**
3. **C** and **D**
4. **A** and **D**

Question Number : 97 Question Id : 562954292 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में सम्मिलित मध्यवर्ती हैं

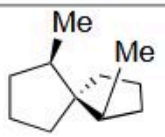
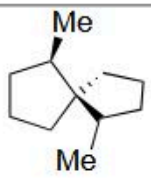
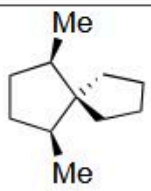


1. **A** तथा **B**
2. **B** तथा **C**
3. **C** तथा **D**
4. **A** तथा **D**

Question Number : 98 Question Id : 562954293 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The correct match for methyl groups of molecules in **Column P** with their topicity in **Column Q** is

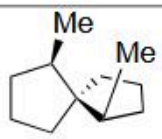
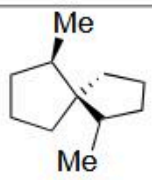
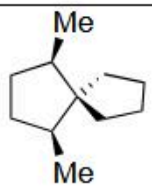
	Column P		**Column Q**
A.		**i.**	Enantiotopic
B.		**ii.**	Homotopic
C.		**iii.**	Diastereotopic

1. **A – i; B – ii; C – iii**
2. **A – ii; B – iii; C – i**
3. **A – ii; B – i; C – iii**
4. **A – iii; B – ii; C – i**

Question Number : 98 Question Id : 562954293 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

कॉलम **P** में अणुओं के मेथिल समूहों का कॉलम **Q** में उनकी टोपिसिटी (topicity) के साथ सही मिलान है

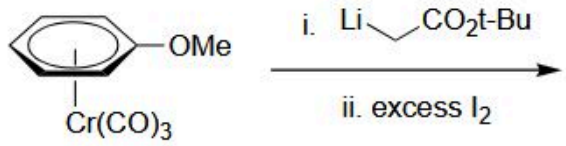
	कॉलम **P**		कॉलम **Q**
A.		**i.**	एनेंटिओटोपिक (Enantiotopic)
B.		**ii.**	होमोटोपिक (Homotopic)
C.		**iii.**	डायस्टीरियोटोपिक(Diastereotopic)

1. **A – i; B – ii; C – iii**
2. **A – ii; B – iii; C – i**
3. **A – ii; B – i; C – iii**
4. **A – iii; B – ii; C – i**

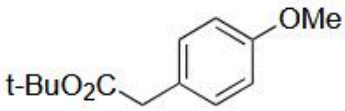
Question Number : 99 Question Id : 562954294 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

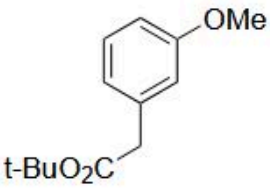
The major product formed in the following reaction is



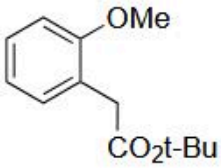
1.



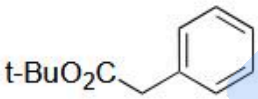
2.



3.



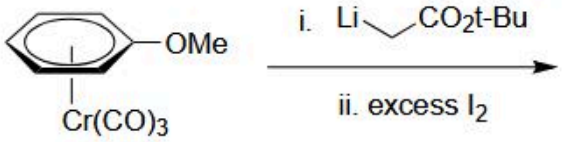
4.



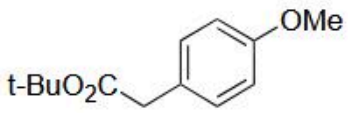
Question Number : 99 Question Id : 562954294 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

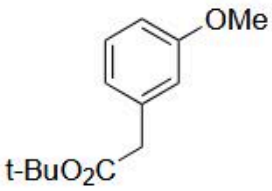
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद हैं



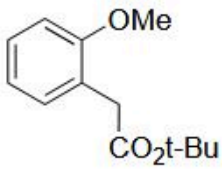
1.



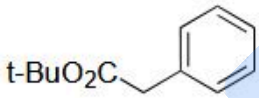
2.



3.



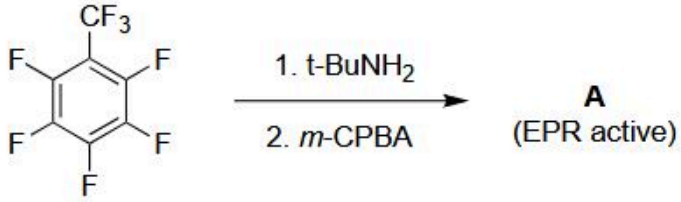
4.



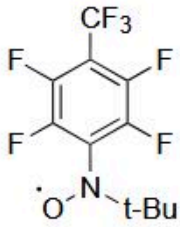
Question Number : 100 Question Id : 562954295 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

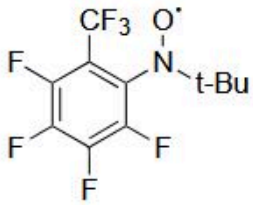
The major product **A** formed in the following reaction sequence is



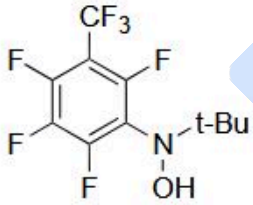
1.



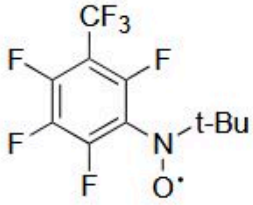
2.



3.



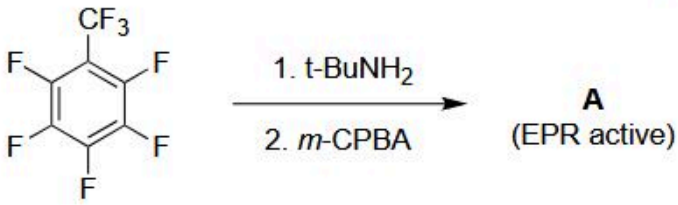
4.



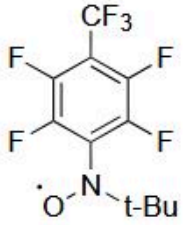
Question Number : 100 Question Id : 562954295 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

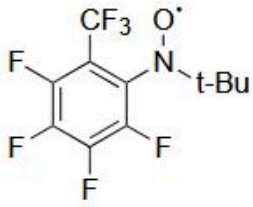
निम्नलिखित अभिक्रिया अनुक्रम में विरचित मुख्य उत्पाद **A** हैं



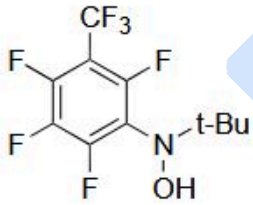
1.



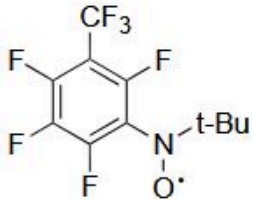
2.



3.



4.



Question Number : 101 Question Id : 562954296 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

A particle of mass m is confined to a one-dimensional box of unit length. The wave function of the system is $\Psi(x) = \sqrt{\frac{8}{5}}\sin(\pi x)\,[1+\cos(\pi x)]$ for $0 \le x \le 1$, and zero elsewhere. The average value of the energy in this state is

1. $h^2/5m$
2. $h^2/3m$
3. $h^2/8m$
4. $h^2/10m$

Question Number : 101 Question Id : 562954296 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

द्रव्यमान m का कोई कण एकांक लंबाई के एक-विमीय बॉक्स में सीमित है। $0 \le x \le 1$, के लिए निकाय का तरंगफलन $\Psi(x) = \sqrt{\frac{8}{5}}\sin(\pi x)\,[1+\cos(\pi x)]$ है, तथा अन्यत्र शून्य। इस अवस्था में ऊर्जा का औसत मान है

1. $h^2/5m$
2. $h^2/3m$
3. $h^2/8m$
4. $h^2/10m$

Question Number : 102 Question Id : 562954297 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The magnitude of the orbital angular momentum vector of a quantum mechanical system is $\sqrt{6}\,\hbar$. The smallest possible angle between its orbital angular momentum vector and the z-axis is

1. $cos^{-1}\left(\frac{1}{\sqrt{2}}\right)$
2. $tan^{-1}\left(\frac{1}{\sqrt{2}}\right)$
3. $cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$
4. $sin^{-1}\left(\frac{1}{\sqrt{3}}\right)$

Question Number : 102 Question Id : 562954297 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

किसी क्वांटम यांत्रिक निकाय के कक्षक कोणीय संवेग सदिश का परिमाण $\sqrt{6}\,\hbar$ है। इसके कक्षक कोणीय संवेग सदिश तथा z-अक्ष के मध्य सबसे छोटा संभव कोण है

1. $cos^{-1}\left(\frac{1}{\sqrt{2}}\right)$
2. $tan^{-1}\left(\frac{1}{\sqrt{2}}\right)$
3. $cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$
4. $sin^{-1}\left(\frac{1}{\sqrt{3}}\right)$

Question Number : 103 Question Id : 562954298 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The wave function of a quantum mechanical system with the Hamiltonian H is $\Psi = c_1 f_1 + c_2 f_2$, where c_1, c_2 are constants and f_1, f_2 are orthonormal basis functions.
If $H_{11} = H_{22} = 5$ eV and $H_{12} = H_{21} = 2$ eV, where $H_{ij} = \langle f_i | H | f_j \rangle$, the ground state energy (in eV) of the system obtained by variation method is

1. 7
2. 5
3. 3
4. 2

Question Number : 103 Question Id : 562954298 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

हैमिल्टनी H के साथ किसी क्वांटम यांत्रिक निकाय का तरंग फलन $\Psi = c_1 f_1 + c_2 f_2$ है, जहाँ c_1, c_2 स्थिरांक हैं तथा f_1, f_2 प्रसामान्यलांबिक आधार फलन हैं।

यदि $H_{11} = H_{22} = 5$ eV तथा $H_{12} = H_{21} = 2$ eV, जहाँ $H_{ij} = \langle f_i | H | f_j \rangle$, विचरणी विधि द्वारा प्राप्त निकाय की निम्नतम अवस्था ऊर्जा (eV में) है

1. 7
2. 5
3. 3
4. 2

Question Number : 104 Question Id : 562954299 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

Let $H(x)$ be the Hamiltonian defined by $H(x) = \frac{p_x^2}{2m} + V(x)$.

Given $[H, x] = \frac{\hbar}{im} p_x$ and $H\phi_j = \varepsilon_j \phi_j \quad (j = 0,1,2, \ldots); \ \varepsilon_0 < \varepsilon_1 < \varepsilon_2 < \cdots,$ the correct statement, for $j \neq 0$, is

1. $\langle \phi_j | p_x | \phi_0 \rangle = \frac{i\hbar}{m} \langle \phi_j | x | \phi_0 \rangle (\varepsilon_j - \varepsilon_0)$
2. $\langle \phi_j | p_x | \phi_0 \rangle = \frac{i\hbar}{m} \langle \phi_j | x | \phi_0 \rangle (\varepsilon_0 - \varepsilon_j)$
3. $\langle \phi_j | p_x | \phi_0 \rangle = \frac{m}{i\hbar} \langle \phi_j | x | \phi_0 \rangle (\varepsilon_j - \varepsilon_0)$
4. $\langle \phi_j | p_x | \phi_0 \rangle = \frac{m}{i\hbar} \langle \phi_j | x | \phi_0 \rangle (\varepsilon_0 - \varepsilon_j)$

Question Number : 104 Question Id : 562954299 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

मान लीजिए $H(x)$, $H(x) = \frac{p_x^2}{2m} + V(x)$ द्वारा परिभाषित हैमिल्टनी है

दिया है $[H, x] = \frac{\hbar}{im} p_x$ तथा $H\phi_j = \varepsilon_j \phi_j \quad (j = 0,1,2, \ldots); \ \varepsilon_0 < \varepsilon_1 < \varepsilon_2 < \cdots,$

$j \neq 0$ के लिए, सही कथन, है

1. $\langle \phi_j | p_x | \phi_0 \rangle = \frac{i\hbar}{m} \langle \phi_j | x | \phi_0 \rangle (\varepsilon_j - \varepsilon_0)$
2. $\langle \phi_j | p_x | \phi_0 \rangle = \frac{i\hbar}{m} \langle \phi_j | x | \phi_0 \rangle (\varepsilon_0 - \varepsilon_j)$
3. $\langle \phi_j | p_x | \phi_0 \rangle = \frac{m}{i\hbar} \langle \phi_j | x | \phi_0 \rangle (\varepsilon_j - \varepsilon_0)$
4. $\langle \phi_j | p_x | \phi_0 \rangle = \frac{m}{i\hbar} \langle \phi_j | x | \phi_0 \rangle (\varepsilon_0 - \varepsilon_j)$

Question Number : 105 Question Id : 562954300 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The θ-dependent part of an un-normalized atomic orbital is $\Theta(\theta) = \cos\theta$. In the range $0^\circ \leq \theta \leq 90^\circ$, the maximum probability of finding an electron in this orbital, between θ and $\theta + d\theta$, is for $\theta =$

1. 0°
2. 35.3°
3. 54.7°
4. 90°

Question Number : 105 Question Id : 562954300 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

किसी अप्रसामान्यीकृत परमाण्विक कक्षक का θ-आश्रित भाग $\Theta(\theta) = \cos\theta$ है। $0^\circ \leq \theta \leq 90^\circ$ की सीमा में, θ के लिए θ तथा $\theta + d\theta$ के मध्य इस कक्षक में इलेक्ट्रॉन के पाए जाने की अधिकतम प्रायिकता, है

1. 0°
2. 35.3°
3. 54.7°
4. 90°

Question Number : 106 Question Id : 562954301 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

For a heteronuclear diatomic molecule AB, the un-normalized wavefunctions for HOMO and one of the two degenerate LUMOs, respectively, are

$$\psi_{HOMO} = 0.9\left(\phi_{2s}^{A} + 3\phi_{2p_z}^{A}\right) + 0.1\,\phi_{2p_z}^{B}$$

$$\psi_{LUMO} = 0.1\,\phi_{2p_x}^{A} + 0.9\,\phi_{2p_x}^{B}$$

(Atomic orbitals of A and B are denoted by ϕ. The internuclear axis is along the z-direction.)

AB is a

1. σ –donor through A, π –acceptor through A
2. σ –donor through B, π –acceptor through B
3. σ –donor through A, π –acceptor through B
4. σ –donor through B, π –acceptor through A

Question Number : 106 Question Id : 562954301 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

किसी विषमनाभिकीय द्विपरमाण्विक अणु AB के लिए, HOMO तथा दो अपभ्रष्ट LUMOs में से एक के लिए अप्रसामान्यीकृत तरंगफलन, हैं, क्रमशः

$$\psi_{HOMO} = 0.9\left(\phi_{2s}^{A} + 3\phi_{2p_z}^{A}\right) + 0.1\,\phi_{2p_z}^{B}$$

$$\psi_{LUMO} = 0.1\,\phi_{2p_x}^{A} + 0.9\,\phi_{2p_x}^{B}$$

(A तथा B के आण्विक कक्षकों को ϕ द्वारा दर्शाया गया हैं। अंतरनाभिकीय अक्ष z-दिशा में है।)

AB है

1. A के माध्यम से σ –दाता, A के माध्यम से π –ग्राही
2. B के माध्यम से σ –दाता, B के माध्यम से π –ग्राही
3. A के माध्यम से σ –दाता, B के माध्यम से π –ग्राही
4. B के माध्यम से σ –दाता, A के माध्यम से π –ग्राही

Question Number : 107 Question Id : 562954302 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

For the C_3 point group, with C_3 axis along the z-direction, the correct statement is

1. All the three symmetry operations (C_3, C_3^2 and $C_3^3 = E$) belong to the same class
2. The character table contains a two-dimensional irreducible representation
3. All the characters in the character table are ± 1
4. x and y jointly form a basis for a two-dimensional representation.

Question Number : 107 Question Id : 562954302 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

C_3 बिन्दु समूह के लिए, z-दिशा में C_3 अक्ष के साथ, सही कथन है

1. सभी तीन सममिति संक्रियाएँ (C_3, C_3^2 तथा $C_3^3 = E$) समान वर्ग से संबंधित होती है
2. अभिलक्षणिक सारणी में द्वि-आयामी अखंडनीय निरूपण है
3. अभिलक्षणिक सारणी में सभी अभिलक्षण ± 1 हैं
4. x तथा y संयुक्त रूप से द्वि-आयामी निरूपण के लिए आधार बनाते है।

Question Number : 108 Question Id : 562954303 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The character table of C_{3v} point group is as follows.

C_{3v}	E	$2C_3(z)$	$3\sigma_v$		
A_1	1	1	1	z	x^2+y^2, z^2
A_2	1	1	-1	R_z	
E	2	-1	0	$(x,y)\ (R_x, R_y)$	$(x^2-y^2, xy)\ (xz, yz)$

For normal modes of vibration of NH_3, the correct statement, among the following, is

1. Some of the normal modes are IR-inactive
2. At least one normal mode is both IR and Raman-inactive
3. Mixing of normal modes by the symmetry operations is not possible
4. For some of the normal modes, the wavefunction of first vibrational excited state is totally symmetric

Question Number : 108 Question Id : 562954303 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

C_{3v} बिन्दु समूह की अभिलक्षणिक सारणी निम्न प्रकार है ।

C_{3v}	E	$2C_3(z)$	$3\sigma_v$		
A_1	1	1	1	z	x^2+y^2, z^2
A_2	1	1	-1	R_z	
E	2	-1	0	$(x,y)\ (R_x, R_y)$	$(x^2-y^2, xy)\ (xz, yz)$

NH_3 के कंपन के सामान्य मोडो के लिए, निम्नलिखित में से, सही कथन, है

1. कुछ सामान्य प्रणालियां IR-असक्रिय हैं
2. कम से कम एक सामान्य प्रणाली IR तथा रमन-असक्रिय दोनों है
3. सममिति संक्रियाओं द्वारा सामान्य प्रणालियों का मिश्रण संभव नहीं है
4. कुछ सामान्य प्रणालियों के लिए, प्रथम कंपन उत्तेजित अवस्था का तरंगफलन पूर्णतया सममित है

Question Number : 109 Question Id : 562954304 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The rotational constant of a diatomic molecule is $2.0\ cm^{-1}$. The wavelength of the excitation laser is $333\ nm$. Assuming rigid rotor model of diatomic molecule, the first three Stokes lines (in cm^{-1}) in the rotational Raman spectrum are predicted to be closest to

1. 30018, 30010, 30002
2. 30058, 30050, 30042
3. 30018, 30014, 30010
4. 30034, 30030, 30026

Question Number : 109 Question Id : 562954304 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

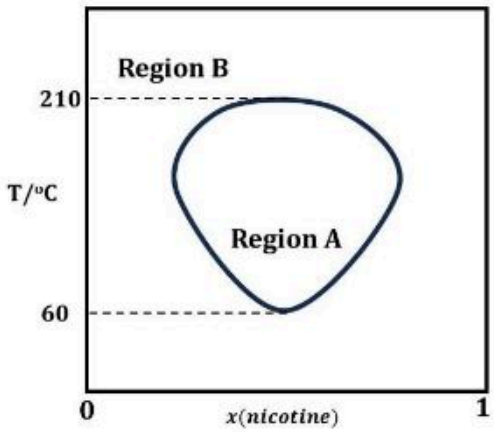
किसी द्वि-परमाण्विक अणु का घूर्णी स्थिरांक $2.0\ cm^{-1}$ है। उत्तेजित लेजर की तरंगदैर्ध्य $333\ nm$ है। द्वि-परमाण्विक अणु के दृढ़ घूर्णी मॉडल को मानते हुए, घूर्णी रमन स्पेक्ट्रम में प्रथम तीन स्टॉक्स लाइनें (cm^{-1} में) जिनके निकटतम अनुमानित होती हैं, वह है

1. 30018, 30010, 30002
2. 30058, 30050, 30042
3. 30018, 30014, 30010
4. 30034, 30030, 30026

Question Number : 110 Question Id : 562954305 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

Consider the following temperature-composition diagram for water and nicotine.



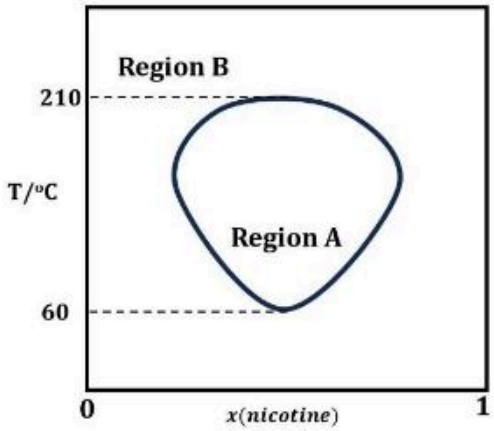
The correct option is

1. The system has two critical solution temperatures; both nicotine and water are completely miscible at 100 °C and $x(nicotine) = 0.5$
2. At 75 °C and $x(nicotine) = 0.5$, nicotine and water form a strong complex which does not dissociate
3. Nicotine and water form weak complex at 50 °C; the number of phases (P) in the region A is 2
4. Thermal motion homogenises the mixture in the entire region B where P = 1

Question Number : 110 Question Id : 562954305 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

जल तथा निकोटीन के लिए निम्नलिखित तापमान-संघटन चित्र पर विचार करें



सही विकल्प है

1. निकाय में दो क्रांतिक विलयन तापमान हैं; निकोटीन तथा जल दोनों $100\,°C$ तथा $x(\text{निकोटीन}) = 0.5$ पर पूर्णतया विलेयशील हैं

2. $75\,°C$ तथा $x(\text{निकोटीन}) = 0.5$ पर, निकोटीन तथा जल एक प्रबल संकुल बनाते है जो विघटित नहीं होता है

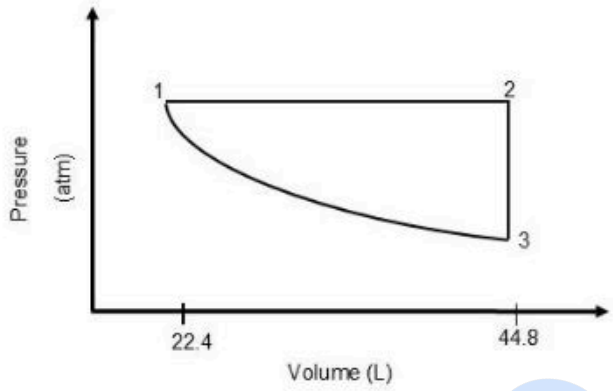
3. $50\,°C$ पर निकोटीन तथा जल एक दुर्बल संकुल बनाते है; A क्षेत्र में प्रावस्थाओं की संख्या (P) 2 है

4. संपूर्ण क्षेत्र B में तापीय गति मिश्रण को समांगी बनाती है जहाँ P = 1

Question Number : 111 Question Id : 562954306 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

One mole of a monoatomic ideal gas at 1 atm pressure is taken through the $p - V$ cycle as shown below.



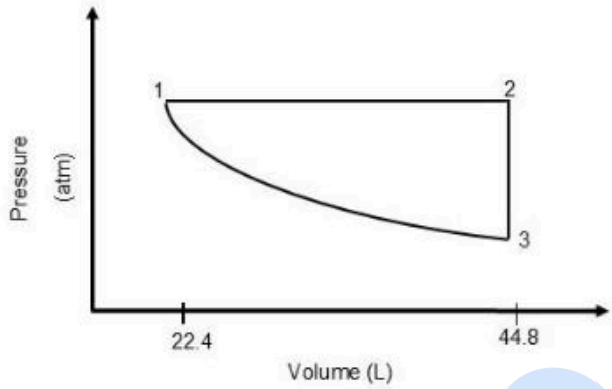
For the process $1 \rightarrow 2$, the reversible work done and the change in enthalpy(in kJ), respectively, are

1. -2.27 and 5.67
2. 3.40 and 2.27
3. 3.40 and -5.67
4. -2.27 and 3.40

Question Number : 111 Question Id : 562954306 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

1 atm दाब पर एकआण्विक आदर्श गैस का एक मोल $p - V$ चक्र से लिया गया है जैसा कि नीचे दिखाया गया है।



$1 \rightarrow 2$ प्रक्रम के लिए, किया गया उत्क्रमणीय कार्य तथा एन्थैल्पी में परिवर्तन (kJ में), हैं, क्रमशः

1. -2.27 तथा 5.67
2. 3.40 तथा 2.27
3. 3.40 तथा -5.67
4. -2.27 तथा 3.40

Question Number : 112 Question Id : 562954307 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The number of permitted configurations for N water molecules at absolute zero temperature is

1. 2^{2N}
2. 2^{4N}
3. $2^{2N}\,(3/8)^{N}$
4. $2^{2N}\,(8/3)^{N}$

Question Number : 112 Question Id : 562954307 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

परम शून्य तापमान पर N जल अणुओं के लिए अनुमत विन्यासों की संख्या है

1. 2^{2N}
2. 2^{4N}
3. $2^{2N}\,(3/8)^{N}$
4. $2^{2N}\,(8/3)^{N}$

Question Number : 113 Question Id : 562954308 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The solubility of Bi_2S_3 in aqueous solution at 25 °C is $1.4 \times 10^{-20}\,M$. Given that $E^0(Bi^{3+}/Bi) = 0.226\,V$, the value of $E^o(Bi_2S_3/Bi, S^{2-})$ (in V) at 25 °C is closest to

1. 1.18
2. −0.73
3. −0.96
4. 0.23

Question Number : 113 Question Id : 562954308 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

25 °C पर जलीय विलयन में Bi_2S_3 की विलेयता $1.4 \times 10^{-20}\,M$ है। जैसा कि दिया है $E^0(Bi^{3+}/Bi) = 0.226\,V$, $E^o(Bi_2S_3/Bi, S^{2-})$ (V में) का मान 25 °C पर जिसके निकटतम है, वह है

1. 1.18
2. −0.73
3. −0.96
4. 0.23

Question Number : 114 Question Id : 562954309 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The dielectric constants of electrolyte solutions, A and B, are ε and 2ε, respectively. At a given temperature T, the ratio, $\lambda_D(A)/\lambda_D(B)$ of two Debye (ionic) screening lengths $\lambda_D(A)$ and $\lambda_D(B)$, is

1. 1
2. 2
3. $\sqrt{2}$
4. $1/\sqrt{2}$

Question Number : 114 Question Id : 562954309 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

A तथा B, वैद्युत अपघट्य विलयनों के परावैद्युत स्थिरांक, क्रमशः ε तथा 2ε, हैं। दिए गए तापमान T पर, दो डिबे (आयनिक) आवरण लम्बाइयों $\lambda_D(A)$ तथा $\lambda_D(B)$,का अनुपात, $\lambda_D(A)/\lambda_D(B)$, है

1. 1
2. 2
3. $\sqrt{2}$
4. $1/\sqrt{2}$

Question Number : 115 Question Id : 562954310 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

In the photochemical reaction A → B, 2.5 mmol of A is converted into B on irradiation with 100 W light of wavelength 300 nm for 66 s. The quantum yield of the reaction is closest to

1. 0.05
2. 0.15
3. 0.25
4. 0.35

Question Number : 115 Question Id : 562954310 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

प्रकाश रासायनिक अभिक्रिया $A \rightarrow B$ में, A के 2.5 mmol को 66 s के लिए 300 nm तरंगदैर्ध्य की 100 W प्रकाश के साथ किरणन पर B में परिवर्तित होते है। अभिक्रिया की क्वांटम लब्धि जिसके निकटतम है, वह है

1. 0.05
2. 0.15
3. 0.25
4. 0.35

Question Number : 116 Question Id : 562954311 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The rate law for the reaction $N_2O_2\,(g) \rightarrow 2\,NO\,(g)$ is first order in the concentration of N_2O_2. If the initial concentration of N_2O_2 is $1.0\ mol\ dm^{-3}$, the expression for time-dependent behavior of concentration of NO (in $mol\ dm^{-3}$) is

1. $2(1 - e^{-kt})$
2. $1 - e^{-kt}$
3. $0.5\,(1 - e^{-kt})$
4. $1 + e^{-kt}$

Question Number : 116 Question Id : 562954311 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया $N_2O_2\,(g) \rightarrow 2\,NO\,(g)$ के लिए N_2O_2 के सांद्रण में दर नियम प्रथम कोटि की है। यदि N_2O_2 की प्रारम्भिक सांद्रता $1.0\ mol\ dm^{-3}$ है, तो NO ($mol\ dm^{-3}$ में) की सांद्रता के काल-आश्रित व्यवहार के लिए व्यंजक है

1. $2(1 - e^{-kt})$
2. $1 - e^{-kt}$
3. $0.5\,(1 - e^{-kt})$
4. $1 + e^{-kt}$

Question Number : 117 Question Id : 562954312 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

At 100 Pa and 500 K, the number of collisions Ar atoms make on a solid surface of area $1.0\ cm^2$ in 10 s is closest to
[Molar mass of Ar is $40\ g\ mol^{-1}$; assume Ar to behave as a perfect gas]

1. 1.9×10^{21}
2. 2.1×10^{23}
3. 3.5×10^{19}
4. 4.7×10^{17}

Question Number : 117 Question Id : 562954312 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

100 Pa तथा 500 K पर, 10 s में $1.0\ cm^2$ क्षेत्रफल वाले ठोस सतह पर Ar परमाणुओं द्वारा की गई संघट्टों की संख्या जिसके निकटतम है, वह है
[Ar का मोलर द्रव्यमान $40\ g\ mol^{-1}$ है; मान लें कि Ar एक आदर्श गैस की तरह व्यवहार करता है]

1. 1.9×10^{21}
2. 2.1×10^{23}
3. 3.5×10^{19}
4. 4.7×10^{17}

Question Number : 118 Question Id : 562954313 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The XRD pattern of a crystalline material, measured using Cu K_α radiation (λ = 1.54 Å), is as follows:

2θ (degree)
38.43
44.65
65.02
78.13

Considering the cubic edge length ~ 4 Å, the Miller indices and Bravais lattice of this material are

1. (111) (200) (220) (311), BCC
2. (111) (200) (220) (311), FCC
3. (110) (200) (211) (220), BCC
4. (110) (200) (211) (220), FCC

Question Number : 118 Question Id : 562954313 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

Cu K_α विकिरण (λ = 1.54 Å) का उपयोग करके मापे गए किसी क्रिस्टलीय पदार्थ का XRD प्रतिरूप, इस प्रकार है:

2θ (degree)
38.43
44.65
65.02
78.13

घनीय कोर लंबाई ~ 4 Å विचार करते हुए, इस पदार्थ के मिलर सूचकांक तथा ब्रेवे जालक हैं

1. (111) (200) (220) (311), BCC
2. (111) (200) (220) (311), FCC
3. (110) (200) (211) (220), BCC
4. (110) (200) (211) (220), FCC

Question Number : 119 Question Id : 562954314 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

Double logarithmic plot of the intrinsic viscosity and the molar mass of polymers in solution is linear with slope ¾ . The ratio of molar mass of two solutions of the same polymer of different molar mass is 16. The expected ratio of their measured intrinsic viscosity in an experiment will be

1. 2
2. 4
3. 8
4. 16

Question Number : 119 Question Id : 562954314 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

अंतस्थ श्यानता तथा विलयन में बहुलकों के मोलर द्रव्यमान का द्विलघुगणकीय आरेख ¾ ढाल के साथ रैखिक है। भिन्न मोलर द्रव्यमान के समान बहुलक के दो विलयनों के मोलर द्रव्यमान का अनुपात 16 है। किसी प्रयोग में उनकी मापी गई अंतस्थ श्यानता का प्रत्याशित अनुपात होगा

1. 2
2. 4
3. 8
4. 16

Question Number : 120 Question Id : 562954315 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

The unnormalized probability density distribution of a continuous variable x is given by

$$p(x) = e^{-ax^2} \quad -\infty \leq x \leq \infty \ (a \text{ is a constant})$$

The average of x^2 over the normalized distribution is

1. a^2
2. $2a$
3. $a^2/2$
4. $\frac{1}{2a}$

Question Number : 120 Question Id : 562954315 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Calculator : Yes Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Single Line Question Option : No Option Orientation : Vertical Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 4 Wrong Marks : 1

सतत चर x का अप्रसामान्यीकृत प्रायिकता घनत्व वितरण

$$p(x) = e^{-ax^2} \quad -\infty \leq x \leq \infty \ (a \text{ एक स्थिरांक है}) \text{ से दिया गया है।}$$

प्रसामान्यीकृत वितरण पर x^2 का औसत है

1. a^2
2. $2a$
3. $a^2/2$
4. $\frac{1}{2a}$