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CSIR NET DECEMBER 15, 2019 CHEMICAL SCIENCES QUESTION PAPER

National Testing Agency

Question Paper Name:	Chemical Sciences 15th December 2019 Shift 2
Subject Name:	Chemical Sciences
Creation Date:	2019-12-15 19:00:21
Duration:	180
Total Marks:	200
Display Marks:	Yes

Chemical Sciences

Group Number :	1
Group Id :	18798014
Group Maximum Duration :	0
Group Minimum Duration :	180
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	200

Part A Chemical Sciences

Section Id :	18798040
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	20
Number of Questions to be attempted:	15
Section Marks:	30
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	18798040
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 1879801621 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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There are nine identical balls, one of which is heavier than the other eight. What is the least number of weighings, using a two-pan balance, needed for definitely identifying the heavier ball?

(1) One

(2) Two

(3) Three

(4) Four

Options :

1879806481. 1

1879806482. 2

1879806483. 3

1879806484. 4

Question Number : 1 Question Id : 1879801621 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

एक जैसी नौ गेंदों में एक गेंद अन्य आठों से भारी है। भारी गेंद की सटीक पहचान के लिए दो पलड़े वाली तुला का प्रयोग करने पर न्यूनतम कितने तोलों की आवश्यकता होगी?

(1) एक

(2) दो

(3) तीन

(4) चार

Options :

1879806481. 1

1879806482. 2

1879806483. 3

1879806484. 4

Question Number : 2 Question Id : 1879801622 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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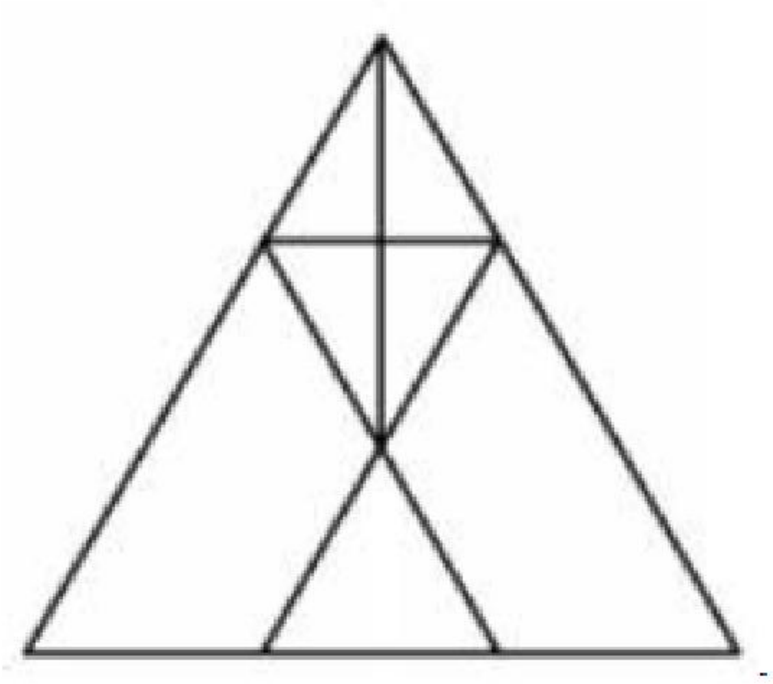
The number of triangles in the figure is



(1) 9

(2) 10

(3) 11

(4) 12

Options :

1879806485. 1

1879806486. 2

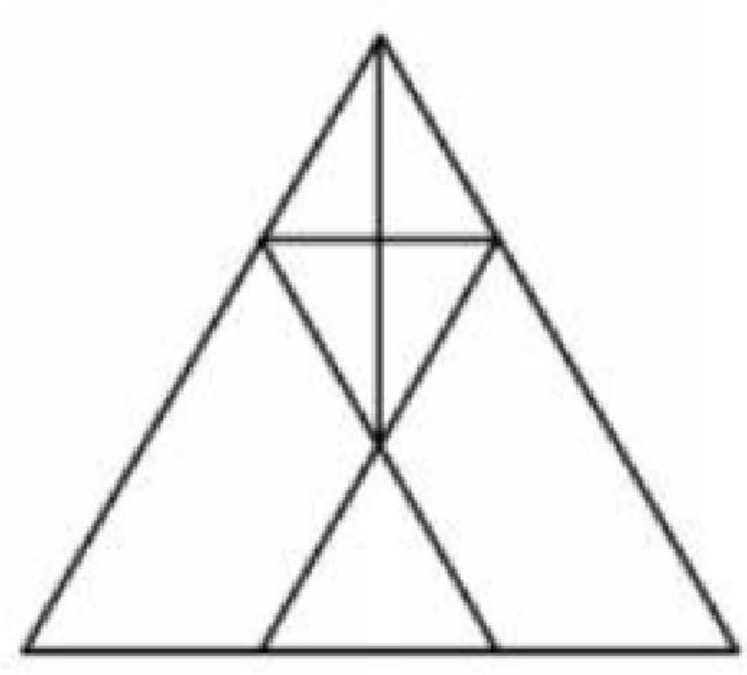
1879806487. 3

1879806488. 4

Question Number : 2 Question Id : 1879801622 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

इस आकृति में कितने त्रिभुज हैं:



(1) 9

(2) 10

(3) 11

(4) 12

Options :

1879806485. 1

1879806486. 2

1879806487. 3

1879806488. 4

Question Number : 3 Question Id : 1879801623 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The difference, the sum and the product of two integers are in the proportion 1:3:10. The two integers are:

(1) 3, 9

(2) 2, 5

(3) 5, 10

(4) 3, 10

Options :

1879806489. 1

1879806490. 2

1879806491. 3

1879806492. 4

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Question Number : 3 Question Id : 1879801623 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

दो पूर्णांकों के अंतर, योग, और गुणनफल का अनुपात 1:3:10 है। वे दोनों पूर्णांक हैं:–

(1) 3, 9

(2) 2, 5

(3) 5, 10

(4) 3, 10

Options :

1879806489. 1

1879806490. 2

1879806491. 3

1879806492. 4

Question Number : 4 Question Id : 1879801624 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

In a population of 900, the number of married couples is as much as the number of singles. There are 100 twins of which 50 twins are singles. The population has 400 females in all. What is the number of married persons?

(1) 325

(2) 600

(3) 250

(4) 300

Options :

1879806493. 1

1879806494. 2

1879806495. 3

1879806496. 4

Question Number : 4 Question Id : 1879801624 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

900 की आबादी में विवाहित जोड़ियों की संख्या अविवाहितों की संख्या के बराबर है। 100 जुड़वाँ हैं जिनमें से 50 अविवाहित हैं। उस आबादी में कुल 400 महिलाएं हैं। विवाहित व्यक्तियों की संख्या कितनी है?

(1) 325

(2) 600

(3) 250

(4) 300

Options :

1879806493. 1

1879806494. 2

1879806495. 3

1879806496. 4

Question Number : 5 Question Id : 1879801625 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

In a certain cipher language 'BIKE' is coded as 'YFHB' and 'CAR' is coded as 'ZXO' then 'SCOOTER' can be coded as

(1) TAPPIYB

(2) PYVVAHJ

(3) PZLLQBO

(4) JZKKMCO

Options :

1879806497. 1

1879806498. 2

1879806499. 3

1879806500. 4

Question Number : 5 Question Id : 1879801625 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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यदि किसी संकेत भाषा में 'BIKE' का कूट 'YFHB' और 'CAR' का कूट 'ZXO' हो तो 'SCOOTER' का कूट क्या होगा?

(1) TAPPIYB

(2) PYVVAHJ

(3) PZLLQBO

(4) JZKKMCO

Options :

1879806497. 1

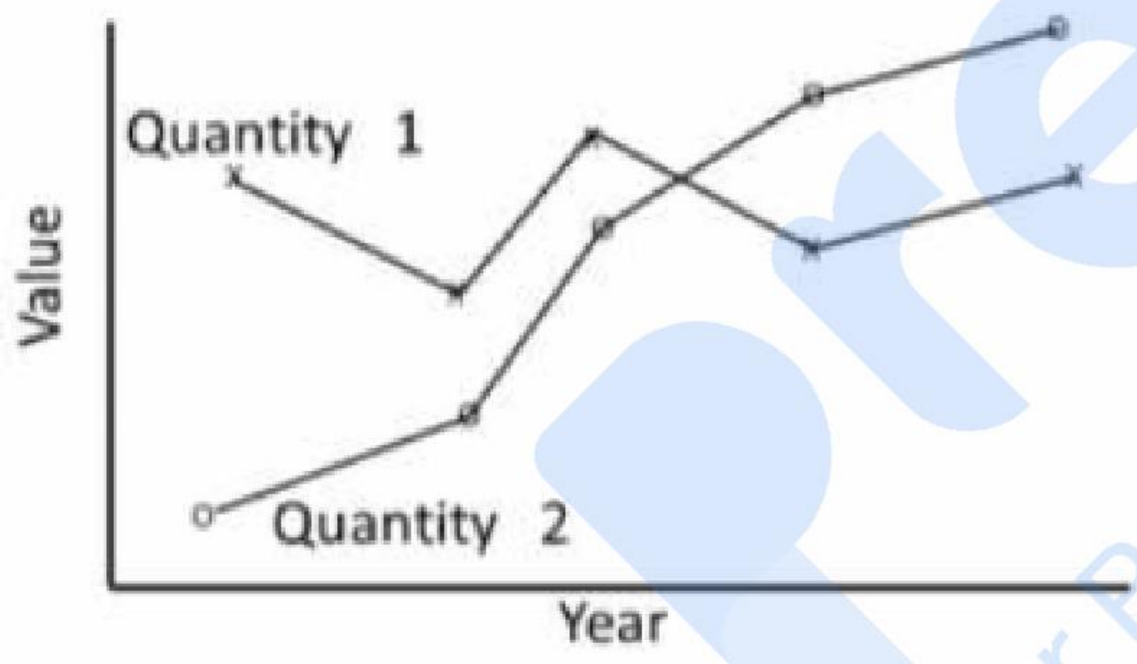
1879806498. 2

1879806499. 3

1879806500. 4

Question Number : 6 Question Id : 1879801626 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5



The trends of two quantities over five years are shown in the graph. Which of the following are valid inferences?

A. The mean values of the quantities are nearly equal

B. The variations in the two quantities are nearly equal

C. Quantity 1 varies less over the given period as compared to Quantity 2

(1) Only A is true

(2) Only B is true

(3) A and C are true

(4) A and B are true

Options :

1879806501. 1

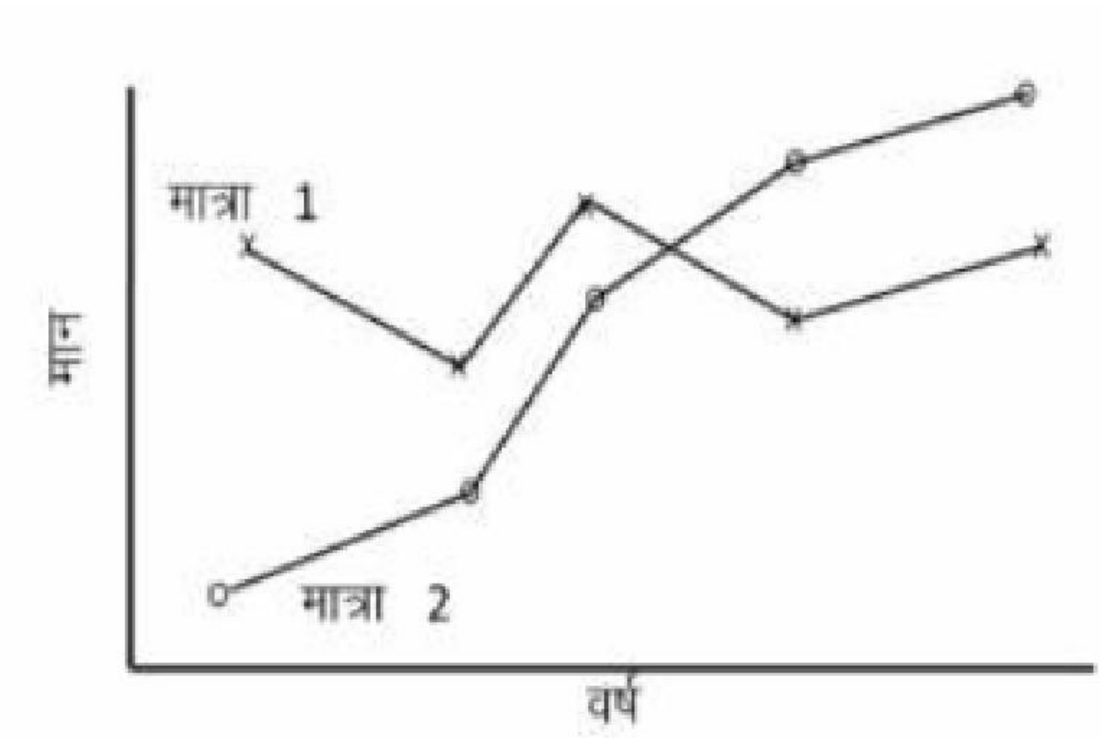
1879806502. 2

1879806503. 3

1879806504. 4

Question Number : 6 Question Id : 1879801626 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5



पाँच वर्षों के दौरान दो मात्राओं के रूझान उपर्युक्त आरेख में दर्शाये गए हैं। निम्नलिखित में से सही निष्कर्ष कौन से हैं?

A. मात्राओं के मध्यमान लगभग एक समान है।

B. दो मात्राओं के विचरण लगभग एक समान है।

C. उक्त अवधि में 2 की तुलना में मात्रा 1 में कम विचरण होता है।

(1) केवल A सही है।

(2) केवल B सही है।

(3) A और C सही हैं।

(4) A और B सही हैं।

Options :

1879806501. 1

1879806502. 2

1879806503. 3

1879806504. 4

Question Number : 7 Question Id : 1879801627 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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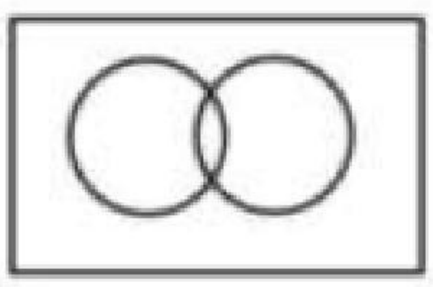
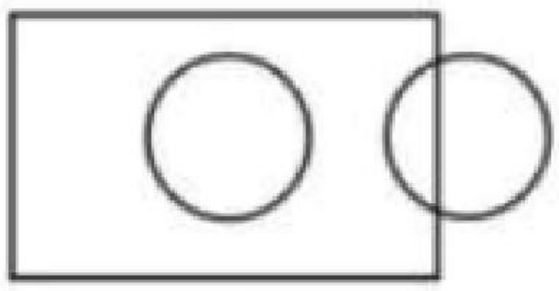
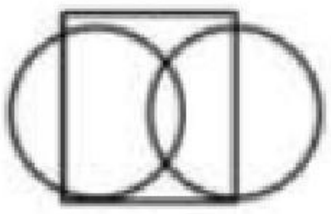
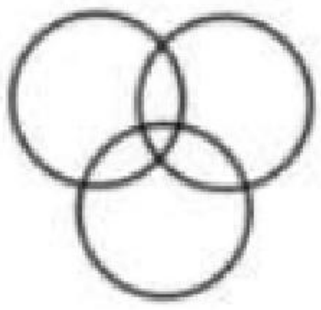
Which among the following diagrams can represent the relationships between houses, offices and buildings?

(1) 

(2) 

(3) 

(4) 

Options :

1879806505. 1

1879806506. 2

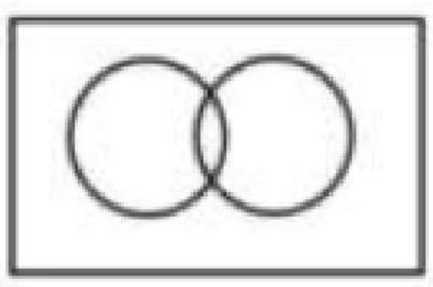
1879806507. 3

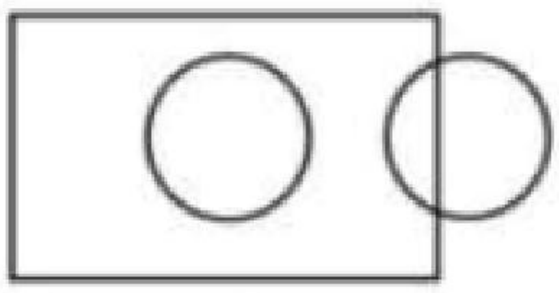
1879806508. 4

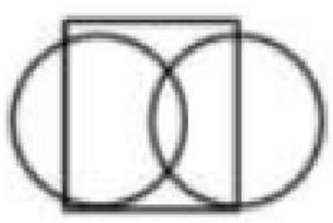
Question Number : 7 Question Id : 1879801627 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

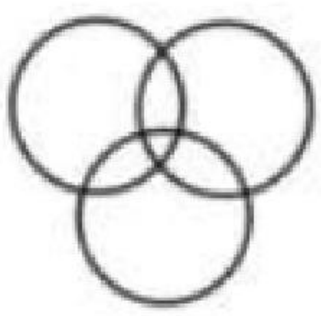
Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित में से कौन सा आरेख मकानों, कार्यालयों और भवनों के मध्य संबंध का सही निरूपण कर सकता है?

(1) 

(2) 

(3) 

(4) 

Options :

1879806505. 1

1879806506. 2

1879806507. 3

1879806508. 4

Question Number : 8 Question Id : 1879801628 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

Consider a location on the Earth where the Sun is overhead at noon. Compared to its shadow at 10.00 AM, the shadow of a tower at 4.00 PM would be

(1) twice longer

(2) three times longer

(3) four times longer

(4) eight times longer

Options :

1879806509. 1

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1879806510. 2
1879806511. 3
1879806512. 4

Question Number : 8 Question Id : 1879801628 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

धरती के उस स्थान के बारे में विचार करें जहाँ दोपहर के समय सूर्य सिर के ऊपर है। प्रातः 10 बजे की तुलना में शाम 4 बजे किसी टावर की परछाई होगी :

(1) दोगुनी लंबी

(2) तिगुनी लंबी

(3) चौगुनी लंबी

(4) आठ गुनी लंबी

Options :

1879806509. 1
1879806510. 2
1879806511. 3
1879806512. 4

Question Number : 9 Question Id : 1879801629 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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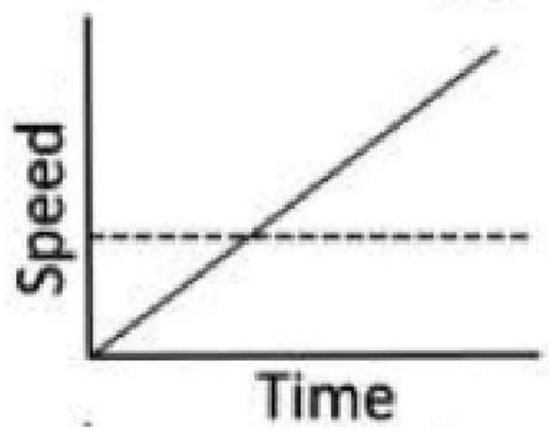
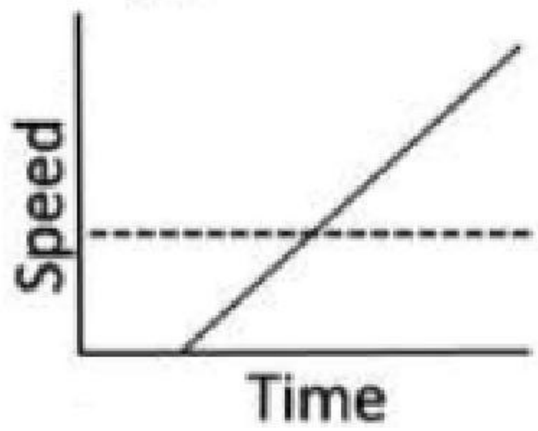
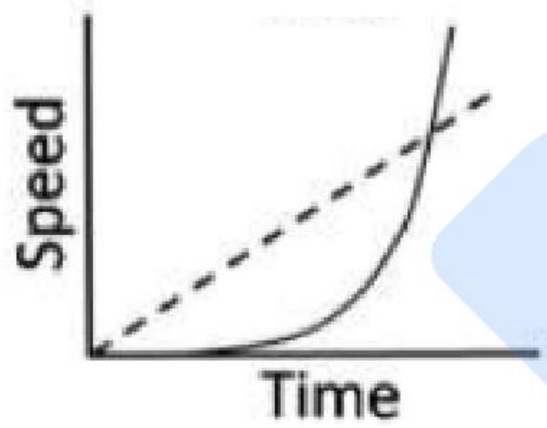
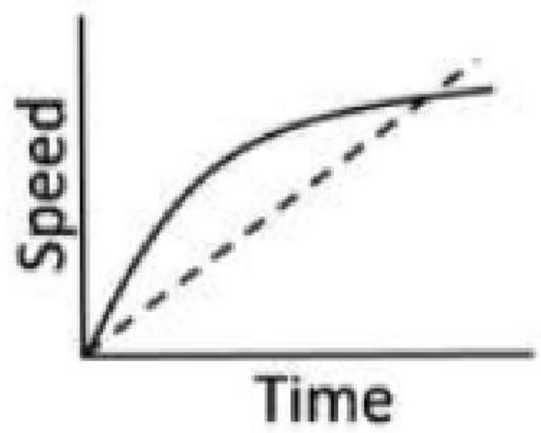
A girl is running at constant speed to catch a bus which is stationary. Before she reaches the bus, the bus leaves and moves with a constant acceleration. Which one of these graphs describes the situation correctly?

—— bus - - - girl

(1)


(2)


(3)


(4)


Options :

1879806513. 1

1879806514. 2

1879806515. 3

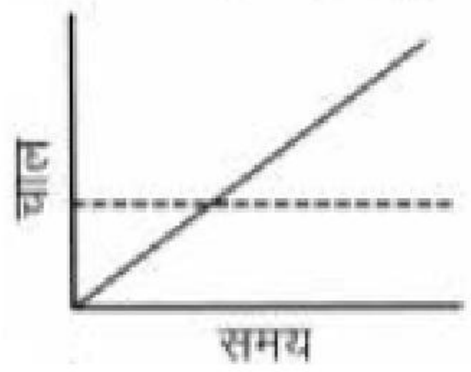
1879806516. 4

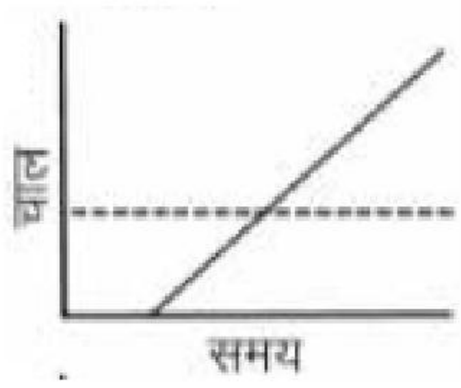
Question Number : 9 Question Id : 1879801629 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

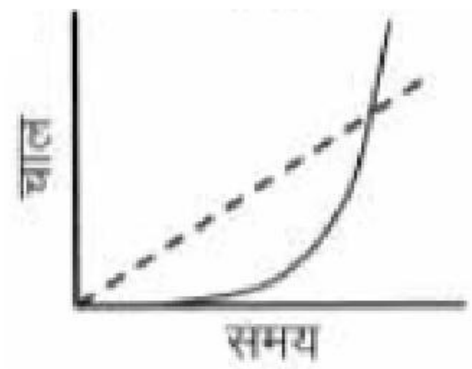
Correct Marks : 2 Wrong Marks : 0.5

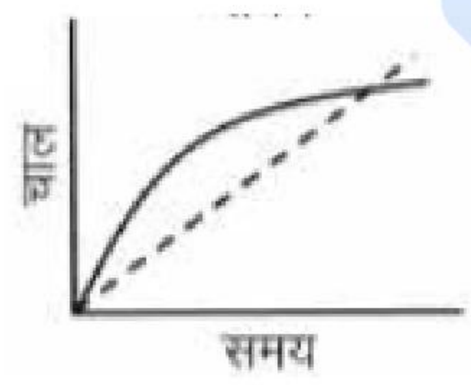
एक लड़की किसी खड़ी बस को पकड़ने के लिए एक समान चाल से दौड़ रही है। उसके बस तक पहुँचने से पहले, बस चल पड़ती है और एक समान त्वरण से आगे बढ़ने लगती है। निम्नलिखित में से कौन सा आरेख इस दशा का सही वर्णन करता है?

—— बस - - - लड़की

(1)


(2)


(3)


(4)


Options :

1879806513. 1

1879806514. 2

1879806515. 3

1879806516. 4

Question Number : 10 Question Id : 1879801630 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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A dart is randomly thrown at a circular board on which two concentric rings of radii R and 2R having the same width (width much less than R) are marked. The probability of the dart hitting the smaller ring is

(1) twice the probability that it hits the larger ring.

(2) half of the probability that it hits the larger ring.

(3) four times the probability that it hits the larger ring.

(4) one-fourth the probability that it hits the larger ring.

Options :

1879806517. 1

1879806518. 2

1879806519. 3

1879806520. 4

Question Number : 10 Question Id : 1879801630 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

एक समान चौड़ाई वाली दो त्रिज्याओं– R और 2R (चौड़ाई R की तुलना में बहुत कम है) के दो संकेन्द्री वलयों वाले किसी वृत्ताकार बोर्ड पर एक डार्ट संयोगिक रूप से फेंका जाता है। डार्ट द्वारा लघुतर वलय को भेदने की संभावना क्या है?

(1) वृहत्तर वलय को भेदने की संभाव्यता की दोगुनी।

(2) वृहत्तर वलय को भेदने की संभाव्यता की आधी।

(3) वृहत्तर वलय को भेदने की संभाव्यता की चौगुनी।

(4) वृहत्तर वलय को भेदने की संभाव्यता का एक चौथाई।

Options :

1879806517. 1

1879806518. 2

1879806519. 3

1879806520. 4

Question Number : 11 Question Id : 1879801631 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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The length of a rod is measured repeatedly by two persons. Person A reports the length to be 1002 ± 1 cm while person B reports the length to be 1001 ± 2 cm. It is known from a more reliable method that the length is 1000.1 ± 0.5 cm. Which one of the following statements is correct?

(1) Measurements made by B are less accurate, but more precise, compared to those by A.

(2) Measurements made by A are less accurate, but more precise, compared to those by B.

(3) Measurements made by B are more precise and more accurate, compared to those by A.

(4) Measurements made by A are more precise and more accurate, compared to those by B.

Options :

1879806521. 1

1879806522. 2

1879806523. 3

1879806524. 4

Question Number : 11 Question Id : 1879801631 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

दो व्यक्तियों द्वारा एक दण्ड (रॉड) की लंबाई बार–बार मापी जाती है। व्यक्ति A दण्ड की लंबाई 1002 ± 1 सेंटीमीटर बताता है जबकि व्यक्ति B के अनुसार दण्ड की लंबाई 1001 ± 2 सेंटीमीटर है। एक अधिक विश्वसनीय विधि से दण्ड की लंबाई 1000.1 ± 0.5 सेंटीमीटर ज्ञात होती है। निम्नलिखित में से कौन सा कथन सही है –

(1) A की तुलना में B द्वारा किया गया माप कम सही लेकिन अधिक परिशुद्ध है।

(2) B की तुलना में A द्वारा किया गया माप कम सही लेकिन अधिक परिशुद्ध है।

(3) A की तुलना में B द्वारा किया गया माप अधिक परिशुद्ध और अधिक सही है।

(4) B की तुलना में A द्वारा किया गया माप अधिक परिशुद्ध और अधिक सही है।

Options :

1879806521. 1

1879806522. 2

1879806523. 3

1879806524. 4

Question Number : 12 Question Id : 1879801632 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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Seven chairs numbered 1 to 7 are placed around a round table. Starting from chair number 5, a person keeps going around the table anticlockwise. After crossing 41 chairs, the person will reach the chair number

(1) 1

(2) 3

(3) 5

(4) 7

Options :

1879806525. 1

1879806526. 2

1879806527. 3

1879806528. 4

Question Number : 12 Question Id : 1879801632 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

एक गोलाकार मेज के चारों ओर 7 कुर्सियाँ रखी गयी हैं जिनपर 1 से 7 की संख्या अंकित है। कुर्सी संख्या 5 से शुरू होकर घड़ी की सूई की उल्टी दिशा में एक व्यक्ति मेज के चारों ओर घूमता रहता है। 41 कुर्सियों को पार करने के बाद वह व्यक्ति किस कुर्सी संख्या पर पहुँचेगा?

(1) 1

(2) 3

(3) 5

(4) 7

Options :

1879806525. 1

1879806526. 2

1879806527. 3

1879806528. 4

Question Number : 13 Question Id : 1879801633 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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A, B, C and D are four consecutive points on a circle such that chords AB=BC=CD=10.0 cm and DA = 20.0 cm. The radius of the circle (in cm) is

(1) 10.0

(2) $10\sqrt{2}$

(3) $10\sqrt{3}$

(4) 20.0

Options :

1879806529. 1

1879806530. 2

1879806531. 3

1879806532. 4

Question Number : 13 Question Id : 1879801633 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

A,B,C और D किसी वृत्त के चार क्रमागत बिन्दु हैं जिसकी जीवाएं AB=BC=CD=10.0 सेंटीमीटर और DA=20.0 सेंटीमीटर हैं। वृत्त की त्रिज्या (सेंटीमीटर में) क्या होगी?

(1) 10.0

(2) $10\sqrt{2}$

(3) $10\sqrt{3}$

(4) 20.0

Options :

1879806529. 1

1879806530. 2

1879806531. 3

1879806532. 4

Question Number : 14 Question Id : 1879801634 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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A tells B, "I could be visiting you on any day in the next two months and you must give me gold coins of as much total weight in grams as the number of days that would elapse from today". If gold coins are available in integer gram weights, what is the least number of coins with which B can meet A's demand on any day?

(1) 31

(2) 7

(3) 6

(4) 13

Options :

1879806533. 1

1879806534. 2

1879806535. 3

1879806536. 4

Question Number : 14 Question Id : 1879801634 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

A, B से कहता है, "मैं अगले दो महीने में किसी भी दिन तुम्हारे पास आ सकता हूँ और आज के बाद से जितने दिन बीतेंगे उतने ग्राम भार के बराबर सोने के सिक्के तुम्हें, मुझे देने होंगे।" यदि सोने के सिक्के पूर्णांक ग्राम भार में उपलब्ध हों तो किसी भी दिन विशेष को न्यूनतम कितने सिक्कों से B, A की माँग की पूर्ति कर सकता है?

(1) 31

(2) 7

(3) 6

(4) 13

Options :

1879806533. 1

1879806534. 2

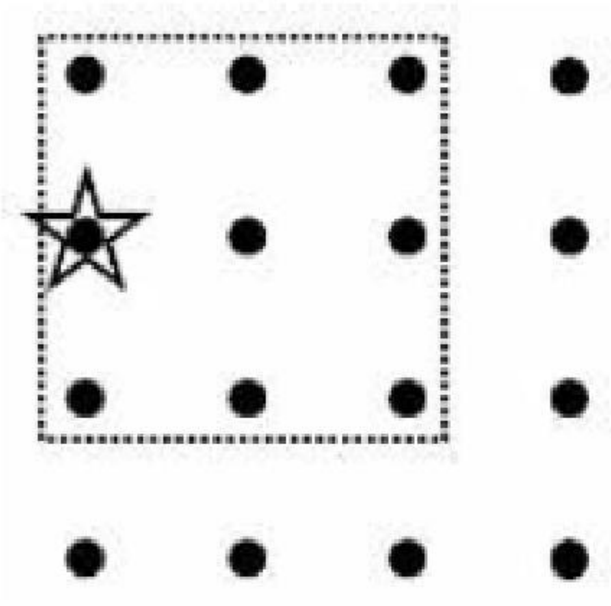
1879806535. 3

1879806536. 4

Question Number : 15 Question Id : 1879801635 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

A move of a coin is defined as crossing any number of points in a straight line on the 4 × 4 grid (horizontally, vertically or diagonally). What is the least number of moves in which a coin, starting from the indicated position, can cover all nine points within the marked square?



(1) four

(2) five

(3) six

(4) seven

Options :

1879806537. 1

1879806538. 2

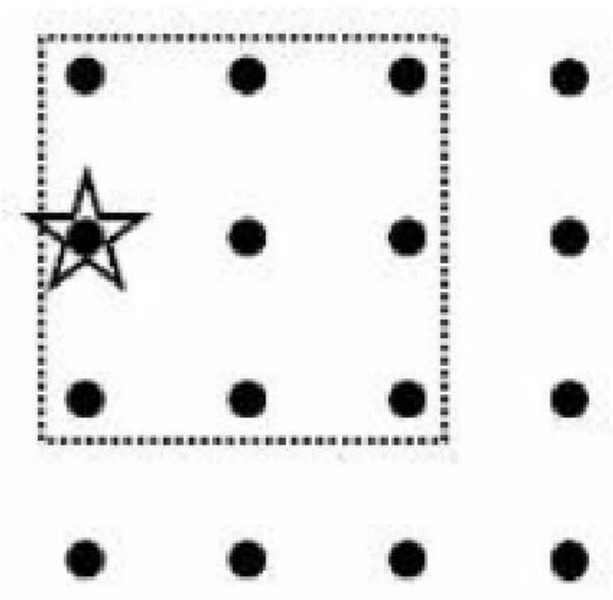
1879806539. 3

1879806540. 4

Question Number : 15 Question Id : 1879801635 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

किसी सिक्के की चाल को 4 × 4 ग्रिड पर एक सीधी रेखा में कितने भी बिन्दुओं को पार करने (क्षैतिज, उर्ध्वाधर अथवा विकर्णी) के रूप में परिभाषित किया जाता है। निम्नांकित वर्ग के सभी नौ बिन्दुओं तक पहुँचने में निर्दिष्ट बिन्दु से शुरूआत करने पर किसी सिक्के को न्यूनतम कितनी चालें चलनी पड़ेंगी?



(1) चार

(2) पाँच

(3) छह

(4) सात

Options :

1879806537. 1

1879806538. 2

1879806539. 3

1879806540. 4

Question Number : 16 Question Id : 1879801636 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The graph below shows the rainfall and temperature at a place over one week. Which day of the week would feel the most humid?

(1) Monday

(2) Wednesday

(3) Thursday

(4) Saturday

Options :

1879806541. 1

1879806542. 2

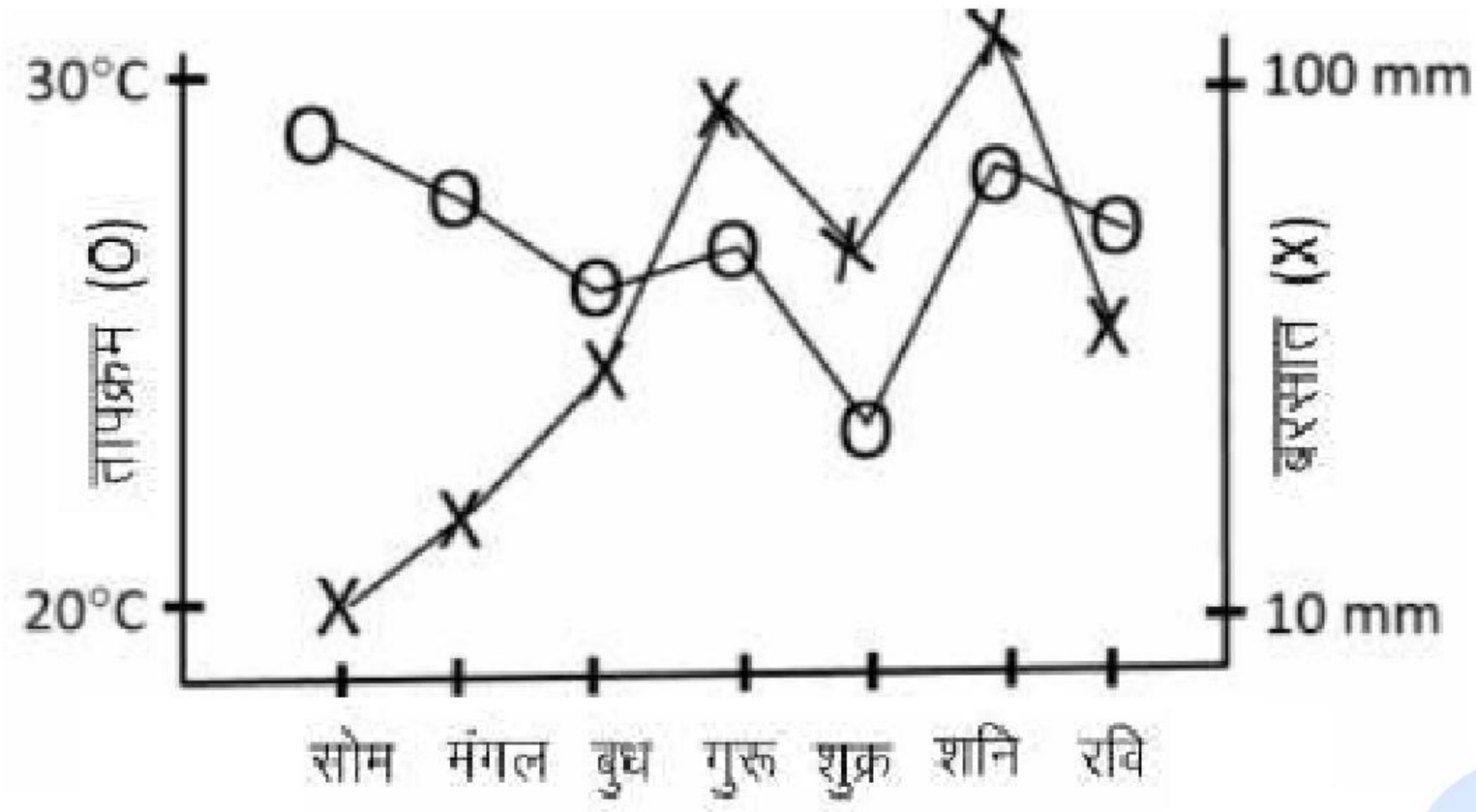
1879806543. 3

1879806544. 4

Question Number : 16 Question Id : 1879801636 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

निम्नांकित आरेख में किसी स्थान विशेष में एक सप्ताह में हुई बरसात और तापमान को दर्शाया गया हैं उक्त सप्ताह के किस दिन आर्द्रता सर्वाधिक होगी?



(1) सोमवार

(2) बुधवार

(3) गुरूवार

(4) शनिवार

Options :

1879806541. 1

1879806542. 2

1879806543. 3

1879806544. 4

Question Number : 17 Question Id : 1879801637 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The difference between the squares of two consecutive integers is 408235. The sum of the numbers is

(1) 16324

(2) 27061

(3) 180235

(4) 408235

Options :

1879806545. 1

1879806546. 2

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1879806547. 3

1879806548. 4

Question Number : 17 Question Id : 1879801637 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

दो क्रमागत पूर्णांकों के वर्ग का अंतर 408235 है। इन संख्याओं का योग होगा :

(1) 16324

(2) 27061

(3) 180235

(4) 408235

Options :

1879806545. 1

1879806546. 2

1879806547. 3

1879806548. 4

Question Number : 18 Question Id : 1879801638 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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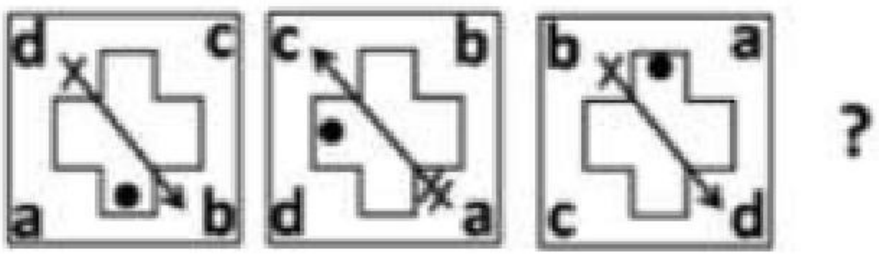
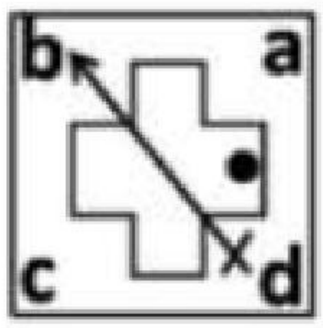
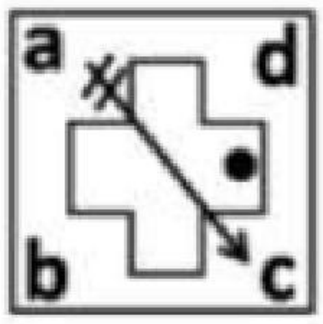
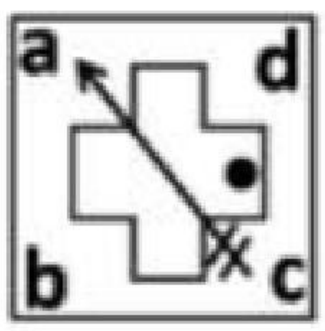
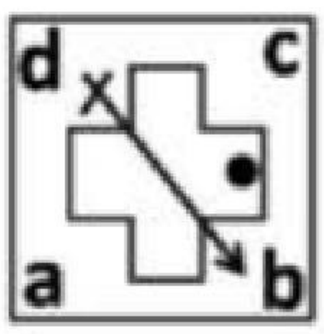
Find out the next figure in following sequence?



(1) 

(2) 

(3) 

(4) 

Options :

1879806549. 1

1879806550. 2

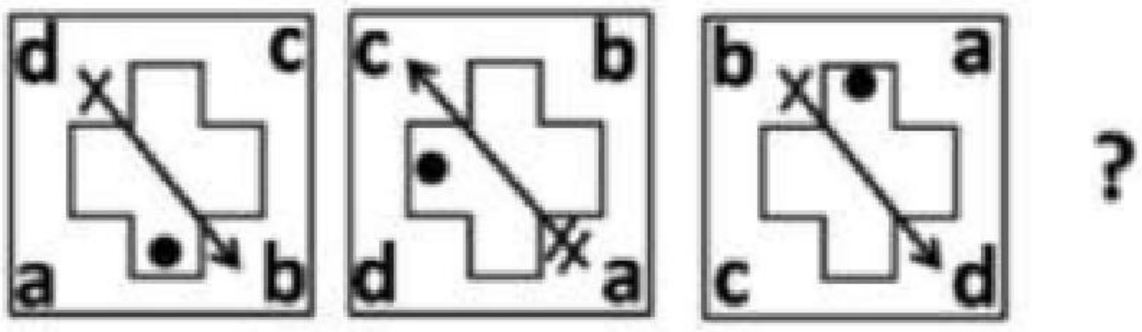
1879806551. 3

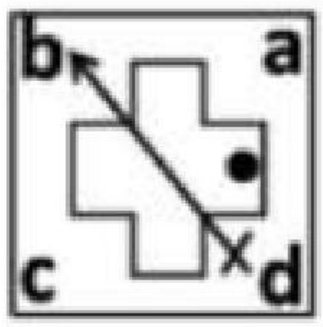
1879806552. 4

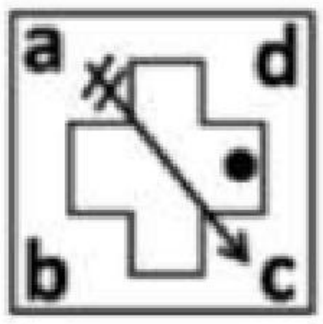
Question Number : 18 Question Id : 1879801638 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

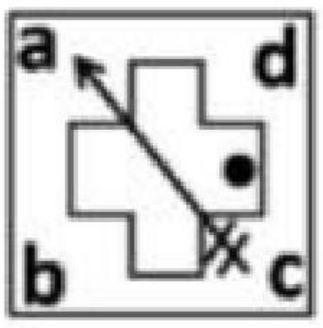
Correct Marks : 2 Wrong Marks : 0.5

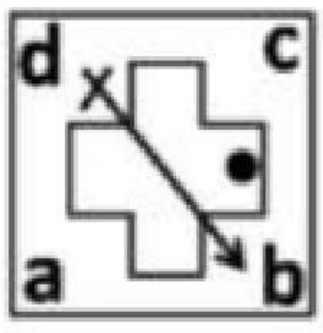
निम्नांकित क्रम में अगली आकृति क्या होगी?



(1) 

(2) 

(3) 

(4) 

Options :

1879806549. 1

1879806550. 2

1879806551. 3

1879806552. 4

Question Number : 19 Question Id : 1879801639 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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A partially filled hour glass has water falling from the upper bowl to the lower bowl. Which of the following statements is correct?

(1) The level of water rises in the lower bowl at the same rate as the fall in the upper bowl

(2) The level of water rises in the lower bowl at the half rate as the fall in the upper bowl

(3) The rate of increase in the volume of water in the lower bowl is the same as the rate of decrease in the upper bowl

(4) The area of top surface of the water column is the same in both bowls at all times

Options :

1879806553. 1

1879806554. 2

1879806555. 3

1879806556. 4

Question Number : 19 Question Id : 1879801639 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

एक अंशतः भरी हुई रेत घड़ी में ऊपरी कटोरी से निचली कटोरी में पानी गिर रहा है। निम्नलिखित में से कौन सा कथन सही है :

(1) निचली कटोरी में जल स्तर के बढ़ने और ऊपरी कटोरी में जल स्तर के घटने की दर एक समान है।

(2) निचली कटोरी में जल स्तर के बढ़ने की दर ऊपरी कटोरी में जल स्तर के घटने की दर की आधी है।

(3) निचली कटोरी में जल के परिमाण में बढ़ोतरी की दर ऊपरी कटोरी के परिमाण में कमी की दर के एक समान है।

(4) दोनों कटोरियों में सदैव जल कॉलम के ऊपरी सतह का क्षेत्रफल एक समान है।

Options :

1879806553. 1

1879806554. 2

1879806555. 3

1879806556. 4

Question Number : 20 Question Id : 1879801640 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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Examine the following statements:

a. Fat cells normally produce hormone A in proportion to the amount of fat. Obese individuals, however, have lower than normal levels of hormone A.

b. Hormone A reduces food intake

Which among the following is a valid inference based on the above statements?

(1) Impaired production of hormone A causes obesity

(2) Impaired action of hormone A causes obesity

(3) Obesity results into low levels of hormone A

(4) Excess food intake causes depletion of hormone A

Options :

1879806557. 1

1879806558. 2

1879806559. 3

1879806560. 4

Question Number : 20 Question Id : 1879801640 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित कथनों पर विचार करें :

a. वसा कोशिकाएं सामान्यतः वसा की मात्रा के समानुपाती हार्मोन A उत्पन्न करती हैं बहरहाल, मोटे लोगों में हार्मोन A का स्तर सामान्य से कम होता है।

b. हार्मोन A के कारण खाद्य आग्रहण घट जाता है।

निम्नलिखित कथनों में से कौन सा निष्कर्ष सही है :

(1) हार्मोन A की बाधित उत्पत्ति के कारण मोटापा होता है।

(2) हार्मोन A की बाधित क्रिया के कारण मोटापा होता है।

(3) मोटापे के कारण हार्मोन A का स्तर घट जाता है।

(4) अतिशय खाद्य आग्रहण के कारण हार्मोन A का क्षय होता है।

Options :

1879806557. 1

1879806558. 2

1879806559. 3

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1879806560. 4

Part B Chemical Sciences

Section Id :	18798041
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	40
Number of Questions to be attempted:	35
Section Marks:	70
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	18798041
Question Shuffling Allowed :	Yes

Question Number : 21 Question Id : 1879801641 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

Correct order of molar extinction coefficient values of the visible absorption bands for the following species is

(1) $[Cr(H_2O)_6]^{2+} > [Mn(H_2O)_6]^{2+} >$ Chlorophyll $> [NiCl_4]^{2-}$

(2) Chlorophyll $> [NiCl_4]^{2-} > [Cr(H_2O)_6]^{2+} > [Mn(H_2O)_6]^{2+}$

(3) $[NiCl_4]^{2-} >$ Chlorophyll $> [Cr(H_2O)_6]^{2+} > [Mn(H_2O)_6]^{2+}$

(4) Chlorophyll $> [Cr(H_2O)_6]^{2+} > [NiCl_4]^{2-} > [Mn(H_2O)_6]^{2+}$

Options :

1879806561. 1

1879806562. 2

1879806563. 3

1879806564. 4

Question Number : 21 Question Id : 1879801641 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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निम्नलिखित स्पीशीज़ के दृश्य अवशोषण बैन्डों के लिए मोलर विलोपन गुणांकों के मान का सही क्रम है।

(1) $[Cr(H_2O)_6]^{2+} > [Mn(H_2O)_6]^{2+} >$ क्लोरोफिल $> [NiCl_4]^{2-}$

(2) क्लोरोफिल $> [NiCl_4]^{2-} > [Cr(H_2O)_6]^{2+} > [Mn(H_2O)_6]^{2+}$

(3) $[NiCl_4]^{2-} >$ क्लोरोफिल $> [Cr(H_2O)_6]^{2+} > [Mn(H_2O)_6]^{2+}$

(4) क्लोरोफिल $> [Cr(H_2O)_6]^{2+} > [NiCl_4]^{2-} > [Mn(H_2O)_6]^{2+}$

Options :

1879806561. 1

1879806562. 2

1879806563. 3

1879806564. 4

Question Number : 22 Question Id : 1879801642 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The expected number of ν_{CO} bands in the IR spectra of *fac*-$[Mo(PPh_3)_3(CO)_3]$ and *trans*-$[Mo(PPh_3)_2(CO)_4]$ are, respectively

(1) one and one

(2) two and two

(3) two and one

(4) three and one

Options :

1879806565. 1

1879806566. 2

1879806567. 3

1879806568. 4

Question Number : 22 Question Id : 1879801642 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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fac-$[Mo(PPh_3)_3(CO)_3]$ तथा *trans*-$[Mo(PPh_3)_2(CO)_4]$ के IR स्पेक्ट्रमों में ν_{CO} बैन्डों की प्रत्याशित संख्यायें हैं, क्रमशः

(1) एक तथा एक

(2) दो तथा दो

(3) दो तथा एक

(4) तीन तथा एक

Options :

1879806565. 1

1879806566. 2

1879806567. 3

1879806568. 4

Question Number : 23 Question Id : 1879801643 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

Pair of lanthanide ions which show significant deviation between the experimental and calculated magnetic moments, considering contribution from the ground state only (given $\mu_{eff} = g[J(J+1)]^{1/2}$, is

(1) Gd^{3+} and Lu^{3+}

(2) Sm^{3+} and Tb^{3+}

(3) Eu^{3+} and Tb^{3+}

(4) Sm^{3+} and Eu^{3+}

Options :

1879806569. 1

1879806570. 2

1879806571. 3

1879806572. 4

Question Number : 23 Question Id : 1879801643 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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केवल निम्नतम अवस्था के योगदान को यथेष्ट मानकर परकलित तथा प्रायोगिक चुम्बकीय आघूर्णों के मध्य सार्थक विचलन जो लैन्थेनाइड आयनों का युग्म दर्शाता है, वह है
(दिया है $\mu_{eff} = g[J(J+1)]^{1/2}$)

(1) Gd^{3+} तथा Lu^{3+}

(2) Sm^{3+} तथा Tb^{3+}

(3) Eu^{3+} तथा Tb^{3+}

(4) Sm^{3+} तथा Eu^{3+}

Options :
1879806569. 1
1879806570. 2
1879806571. 3
1879806572. 4

Question Number : 24 Question Id : 1879801644 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.5

In common glass electrode, alkaline error caused at pH > 10 is least for

(1) 0.01M NaCl

(2) 1.0 M NaCl

(3) 1.0 M LiCl

(4) 1.0 M KCl

Options :
1879806573. 1
1879806574. 2
1879806575. 3
1879806576. 4

Question Number : 24 Question Id : 1879801644 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.5

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सामान्य कांच–इलेक्ट्रोड में, pH > 10 पर, होने वाली क्षारीय त्रुटि जिसके लिए न्यूनतम है, वह है

(1) 0.01M NaCl

(2) 1.0 M NaCl

(3) 1.0 M LiCl

(4) 1.0 M KCl

Options :

1879806573. 1

1879806574. 2

1879806575. 3

1879806576. 4

Question Number : 25 Question Id : 1879801645 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

Consider four species **A**, **B**, **C**, and **D**.

$$A + B \xrightarrow{KI,\ H^+} C$$

Oxidation of **A** with **C** in an acidic medium gives **D**. **A**, **B**, **C** and **D** are, respectively

(1) $S_4O_6^{2-}$, I_2, KIO_3 and SO_4^{2-}

(2) $S_4O_6^{2-}$, KIO_3, I_2 and SO_4^{2-}

(3) $S_2O_3^{2-}$, KIO_3, I_2 and $S_4O_6^{2-}$

(4) $S_2O_3^{2-}$, KIO_3, I_2 and SO_4^{2-}

Options :

1879806577. 1

1879806578. 2

1879806579. 3

1879806580. 4

Question Number : 25 Question Id : 1879801645 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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चार स्पीशीज़ **A**, **B**, **C** तथा **D** पर विचार कीजिए

$$A + B \xrightarrow{KI,\ H^+} C$$

अम्लीय विलयन में **A** का **C** से ऑक्सीकरण **D** देता है। **A**, **B**, **C** तथा **D** हैं, क्रमशः

(1) $S_4O_6^{2-}$, I_2, KIO_3 तथा SO_4^{2-}

(2) $S_4O_6^{2-}$, KIO_3, I_2 तथा SO_4^{2-}

(3) $S_2O_3^{2-}$, KIO_3, I_2 तथा $S_4O_6^{2-}$

(4) $S_2O_3^{2-}$, KIO_3, I_2 तथा SO_4^{2-}

Options :

1879806577. 1

1879806578. 2

1879806579. 3

1879806580. 4

Question Number : 26 Question Id : 1879801646 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

For an octahedral Cu^{2+} complex depicting axial EPR spectrum ($g_{||} > g_{\perp}$), the geometry of Cu^{2+} and the orbital containing the unpaired electron are, respectively

(1) Tetragonally elongated, $d_{x^2-y^2}$

(2) Tetragonally compressed, d_{z^2}

(3) Tetragonally elongated, d_{z^2}

(4) Tetragonally compressed, $d_{x^2-y^2}$

Options :

1879806581. 1

1879806582. 2

1879806583. 3

1879806584. 4

Question Number : 26 Question Id : 1879801646 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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अक्षीय EPR स्पेक्ट्रम ($g_{\parallel} > g_{\perp}$) दर्शाने वाले अष्टफलकीय Cu^{2+} संकुल में Cu^{2+} की ज्यामिति तथा अयुग्ममित इलेक्ट्रॉन को धारण करने वाला आर्बिटल है, क्रमशः

(1) द्विसमलम्बाक्षीय दीर्घित, $d_{x^2-y^2}$

(2) द्विसमलम्बाक्षीय संपीडित, d_{z^2}

(3) द्विसमलम्बाक्षीय दीर्घित, d_{z^2}

(4) द्विसमलम्बाक्षीय संपीडित, $d_{x^2-y^2}$

Options :

1879806581. 1

1879806582. 2

1879806583. 3

1879806584. 4

Question Number : 27 Question Id : 1879801647 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The common heptacity observed for coordination of C_{60} to a metal center is

(1) 2

(2) 4

(3) 5

(4) 6

Options :

1879806585. 1

1879806586. 2

1879806587. 3

1879806588. 4

Question Number : 27 Question Id : 1879801647 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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C_{60} के धातु केन्द्र से समन्वयी आबन्धन में सामान्य रूप से प्रेक्षित हैप्टिसिटी है।

(1) 2

(2) 4

(3) 5

(4) 6

Options :

1879806585. 1

1879806586. 2

1879806587. 3

1879806588. 4

Question Number : 28 Question Id : 1879801648 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The pair of light source and atomizer resulting highest sensitivity to atomic absorption spectrometric measurement is:

(1) Hg lamp; nitric oxide flame

(2) Hg lamp; graphite furnace

(3) Hollow cathode lamp; graphite furnace

(4) Hollow cathode lamp; acetylene-nitric oxide flame

Options :

1879806589. 1

1879806590. 2

1879806591. 3

1879806592. 4

Question Number : 28 Question Id : 1879801648 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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प्रकाश स्त्रोत तथा कणित का युग्म जो परमाण्वीय अवशोषण स्पेक्ट्रामिति मापन को सर्वाधिक सुग्राहिता देता है, वह है

(1) Hg लैम्प; नाइट्रिक आक्साइड ज्वाला

(2) Hg लैम्प; ग्रेफाइट भट्टी

(3) खोखला कैथोड लैम्प; ग्रेफाइट भट्टी

(4) खोखला कैथोड लैम्प; ऐसीटिलीन–नाइट्रिक आक्साइड ज्वाला

Options :

1879806589. 1

1879806590. 2

1879806591. 3

1879806592. 4

Question Number : 29 Question Id : 1879801649 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The magnitude of bond angles in gaseous NF_3, SbF_3 and $SbCl_3$ follow the order

(1) $NF_3 > SbF_3 > SbCl_3$

(2) $SbCl_3 > SbF_3 > NF_3$

(3) $SbF_3 > SbCl_3 > NF_3$

(4) $NF_3 > SbCl_3 > SbF_3$

Options :

1879806593. 1

1879806594. 2

1879806595. 3

1879806596. 4

Question Number : 29 Question Id : 1879801649 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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गैसीय NF_3, SbF_3 तथा $SbCl_3$ में आबन्ध कोणों के परिमाण जिस क्रम का अनुसरण करते हैं, वह है

(1) $NF_3 > SbF_3 > SbCl_3$

(2) $SbCl_3 > SbF_3 > NF_3$

(3) $SbF_3 > SbCl_3 > NF_3$

(4) $NF_3 > SbCl_3 > SbF_3$

Options :

1879806593. 1

1879806594. 2

1879806595. 3

1879806596. 4

Question Number : 30 Question Id : 1879801650 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The most stable vanadium species in aqueous medium is

(1) $[V(H_2O)_5(OH)]^{2+}$

(2) $[VO(H_2O)_5]^{2+}$

(3) $[VO(H_2O)_5]^{+}$

(4) $[V(H_2O)_4(OH)_2]^{2+}$

Options :

1879806597. 1

1879806598. 2

1879806599. 3

1879806600. 4

Question Number : 30 Question Id : 1879801650 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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जलीय माध्यम में सर्वाधिक स्थिर वैनेडियम स्पीशीज़ है

(1) $[V(H_2O)_5(OH)]^{2+}$

(2) $[VO(H_2O)_5]^{2+}$

(3) $[VO(H_2O)_5]^{+}$

(4) $[V(H_2O)_4(OH)_2]^{2+}$

Options :

1879806597. 1

1879806598. 2

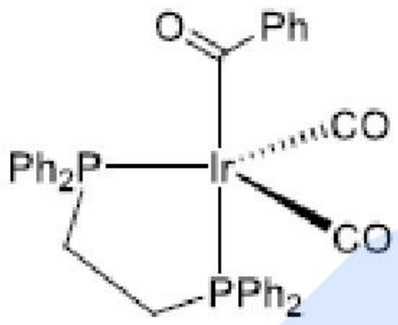
1879806599. 3

1879806600. 4

Question Number : 31 Question Id : 1879801651 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

For the complex shown below in non-fluxional state, the expected $^{31}P\{^1H\}$ NMR resonance(s) is/are [^{31}P: $I = ½$]



(1) one singlet

(2) one doublet

(3) two singlets

(4) two doublets

Options :

1879806601. 1

1879806602. 2

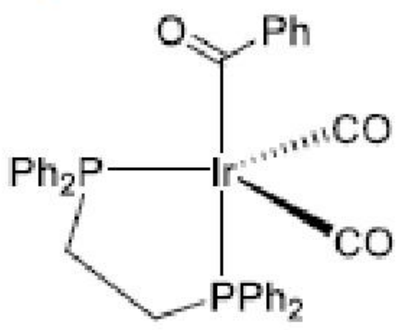
1879806603. 3

1879806604. 4

Question Number : 31 Question Id : 1879801651 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

नीचे दर्शाये गये संकुल की अप्रवाही अवस्था में प्रत्याशित $^{31}P\{^{1}H\}$ NMR अनुनाद [^{31}P: $I = ½$] है / हैं



(1) एक एकक

(2) एक द्विक

(3) दो एकक

(4) दो द्विक

Options :

1879806601. 1

1879806602. 2

1879806603. 3

1879806604. 4

Question Number : 32 Question Id : 1879801652 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.5

Identify from following, the products of K-electron capture by the nucleus:

A. neutron

B. neutrino

C. positron

Answer is

(1) A only

(2) A and B

(3) C only

(4) B and C

Options :

1879806605. 1

1879806606. 2

1879806607. 3

1879806608. 4

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Question Number : 32 Question Id : 1879801652 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

न्युक्लियस द्वारा K-इलेक्ट्रान प्रग्रहण से उत्पन्न उत्पादों को निम्नलिखित में से पहिचानिए

A. न्यूट्रान

B. न्यूट्रिनो

C. पॉजिट्रान

उत्तर है

(1) केवल A

(2) A तथा B

(3) केवल C

(4) B तथा C

Options :

1879806605. 1

1879806606. 2

1879806607. 3

1879806608. 4

Question Number : 33 Question Id : 1879801653 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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Choose the correct statements for oxymyoglobin and cytochrome P_{450} (resting state) from the following:

A. Both contain dianion of protoporphyrin-IX

B. They have same fifth-ligand bonded to metal centre from the protein backbone

C. They contain single active site

D. They contain metal ion in +3 oxidation state

Answer is

(1) A, B and C

(2) A, C and D

(3) A, B and D

(4) B and C only

Options :

1879806609. 1

1879806610. 2

1879806611. 3

1879806612. 4

Question Number : 33 Question Id : 1879801653 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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निम्नलिखित में से आक्सीमायोग्लोबिन तथा साइट्रोक्रोम P_{450} (विराम अवस्था) के लिए सही कथनों का चयन कीजिए

A. प्रोटोपार्फिरिन-IX का द्विऋणायन दोनों में होता है।

B. इनमें प्रोटीन के मेरूदण्ड का, धातु केन्द्र से आबन्धित, पंचम लिगन्ड समान होता है।

C. इनमें सक्रिय स्थल एक होता है।

D. इनमें धातु आयन की आक्सीकरण अवस्था +3 होती है।

उत्तर है

(1) A, B तथा C

(2) A, C तथा D

(3) A, B तथा D

(4) केवल B तथा C

Options :

1879806609. 1

1879806610. 2

1879806611. 3

1879806612. 4

Question Number : 34 Question Id : 1879801654 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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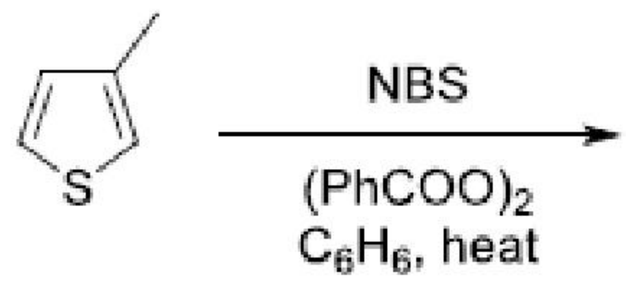
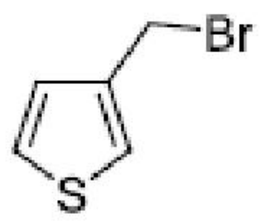
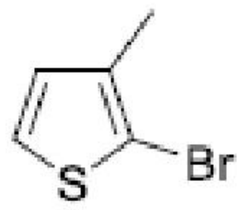
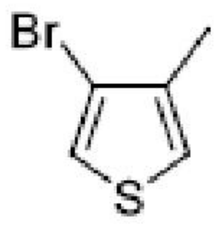
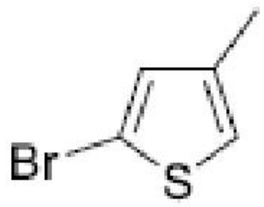
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806613. 1

1879806614. 2

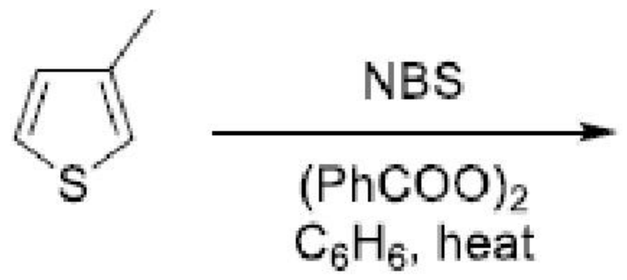
1879806615. 3

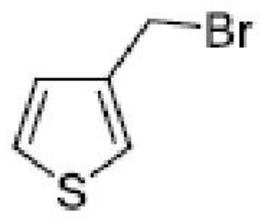
1879806616. 4

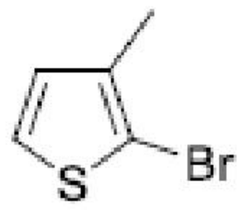
Question Number : 34 Question Id : 1879801654 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

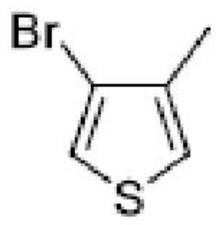
Correct Marks : 2 Wrong Marks : 0.5

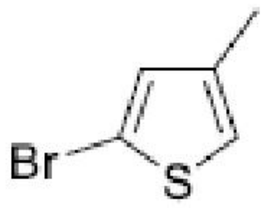
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806613. 1

1879806614. 2

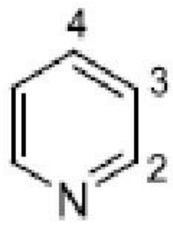
1879806615. 3

1879806616. 4

Question Number : 35 Question Id : 1879801655 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The correct match of ^{13}C NMR chemical shift values (δ ppm) for pyridine is



(1) C2: 136; C3: 124; C4: 150

(2) C2: 124; C3: 150; C4: 136

(3) C2: 150; C3: 124; C4: 136

(4) C2: 150; C3: 136; C4: 124

Options :

1879806617. 1

1879806618. 2

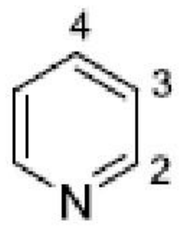
1879806619. 3

1879806620. 4

Question Number : 35 Question Id : 1879801655 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

पिरिडीन के लिए ^{13}C NMR की रासायनिक सृति मानों (δ ppm) का सही मिलान है



(1) C2: 136; C3: 124; C4: 150

(2) C2: 124; C3: 150; C4: 136

(3) C2: 150; C3: 124; C4: 136

(4) C2: 150; C3: 136; C4: 124

Options :

1879806617. 1

1879806618. 2

1879806619. 3

1879806620. 4

Question Number : 36 Question Id : 1879801656 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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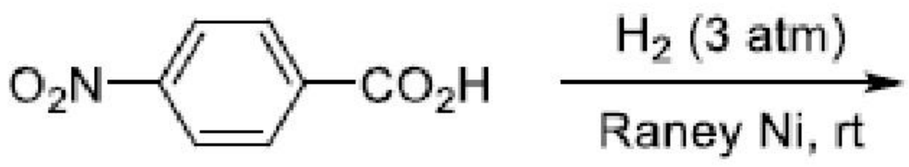
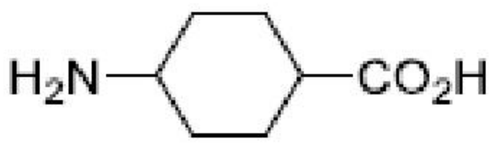
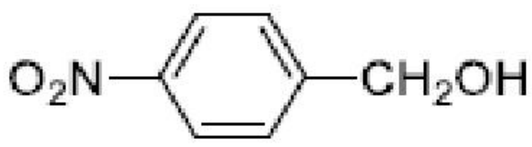
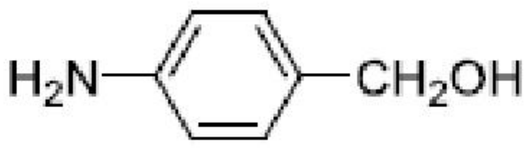
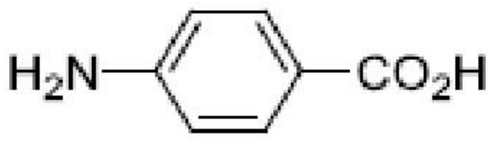
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806621. 1

1879806622. 2

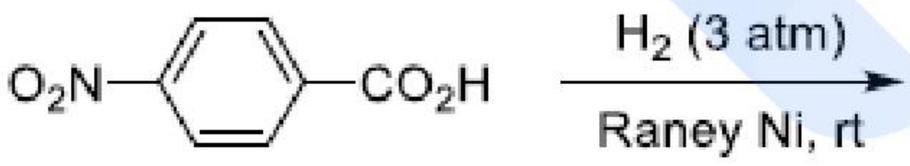
1879806623. 3

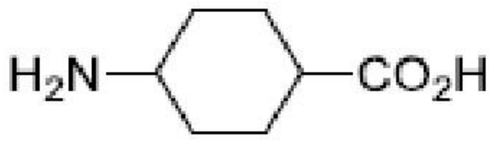
1879806624. 4

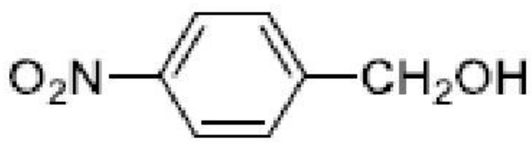
Question Number : 36 Question Id : 1879801656 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

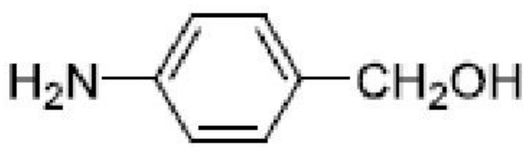
Correct Marks : 2 Wrong Marks : 0.5

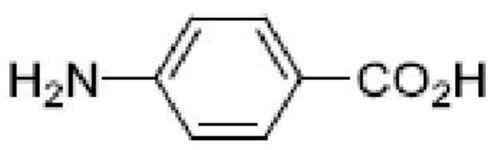
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806621. 1

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1879806622. 2

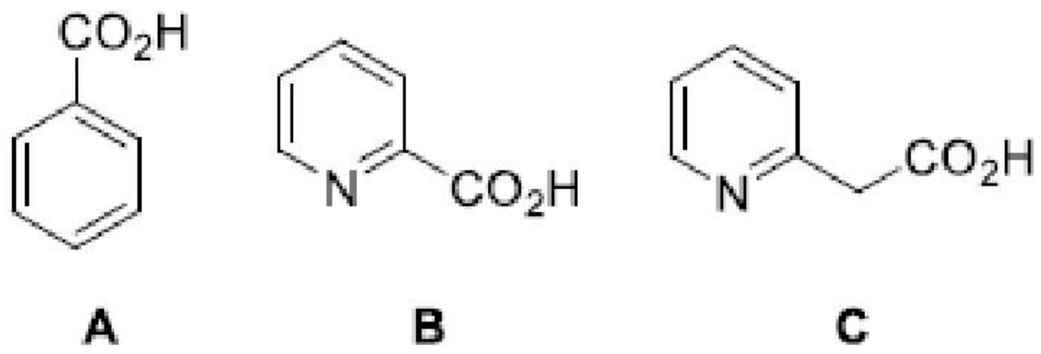
1879806623. 3

1879806624. 4

Question Number : 37 Question Id : 1879801657 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The correct order for the rate of thermal decarboxylation of the following compounds is



(1) C > B > A

(2) C > A > B

(3) A > C > B

(4) B > C > A

Options :

1879806625. 1

1879806626. 2

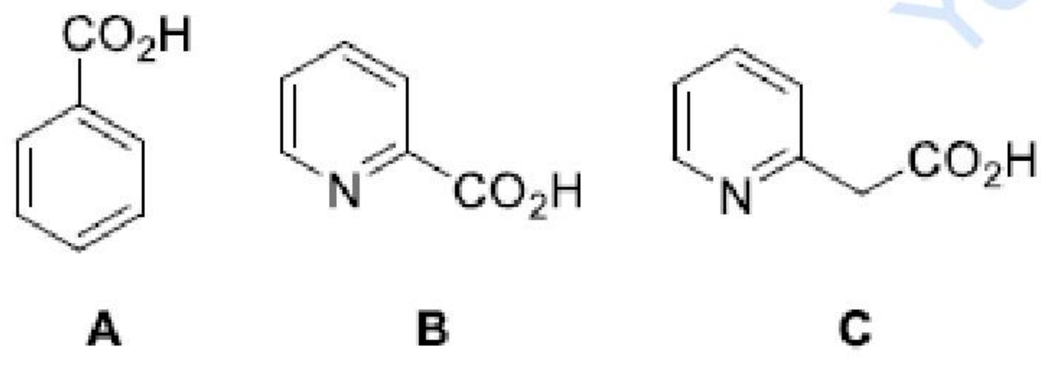
1879806627. 3

1879806628. 4

Question Number : 37 Question Id : 1879801657 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित यौगिकों के तापीय विकार्बोक्सिलन की दर का सही क्रम है



(1) C > B > A

(2) C > A > B

(3) A > C > B

(4) B > C > A

Options :

1879806625. 1

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1879806626. 2

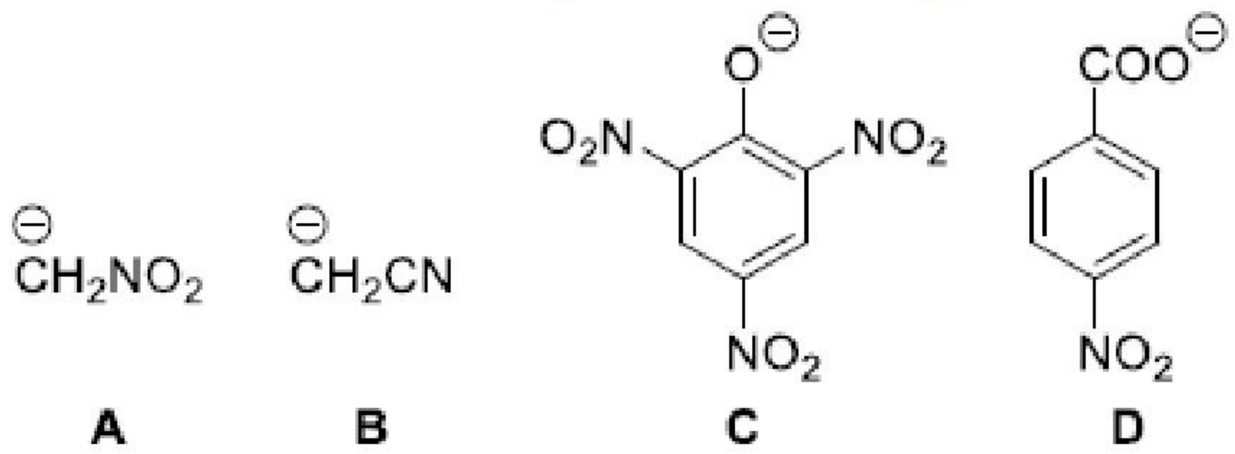
1879806627. 3

1879806628. 4

Question Number : 38 Question Id : 1879801658 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The correct order of basicity of the following anions is



(1) B > A > C > D

(2) D > B > C > A

(3) C > D > B > A

(4) B > A > D > C

Options :

1879806629. 1

1879806630. 2

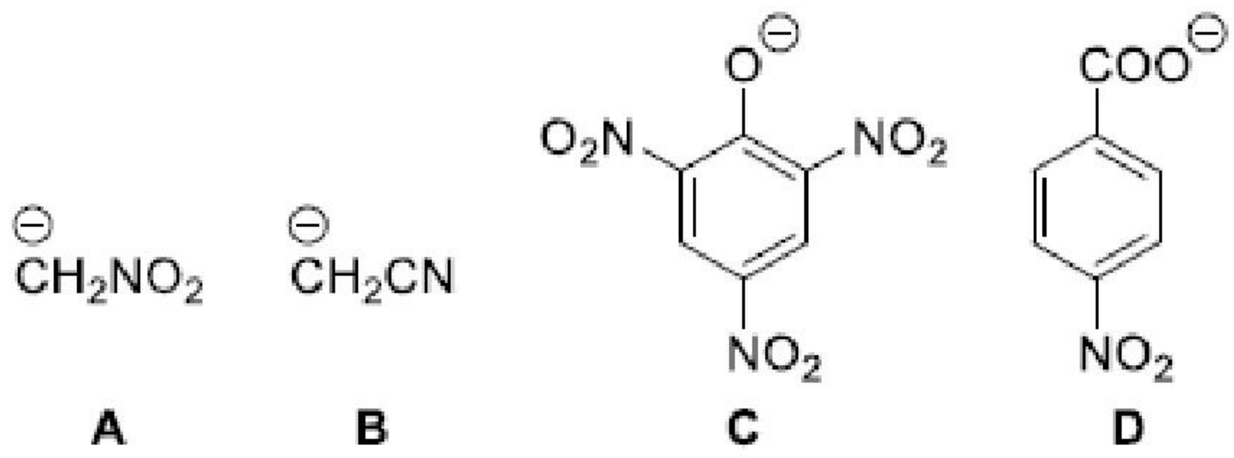
1879806631. 3

1879806632. 4

Question Number : 38 Question Id : 1879801658 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित ऋणायनों की क्षारीयता का सही क्रम है



(1) B > A > C > D

(2) D > B > C > A

(3) C > D > B > A

(4) B > A > D > C

Options :

1879806629. 1

1879806630. 2

1879806631. 3

1879806632. 4

Question Number : 39 Question Id : 1879801659 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

E1cb mechanism is followed in the reaction of

(1) 2-bromopentane with t-BuOK to give pent-2-ene

(2) nitromethane with benzaldehyde in the presence of KOH to give β-nitrostyrene

(3) bromobenzene with $NaNH_2$ to give aniline

(4) *p*-chloronitrobenzene with NaOMe to give *p*-nitroanisole

Options :

1879806633. 1

1879806634. 2

1879806635. 3

1879806636. 4

Question Number : 39 Question Id : 1879801659 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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E1cb अभिक्रिया क्रियाविधि का अनुसरण होता है

(1) 2-ब्रोमोपेन्टेन की t-BuOK से अभिक्रिया में जो पेन्ट-2-ईन देती है।

(2) नाइट्रोमेथेन की KOH की उपस्थिति मे बेन्जैल्डिहाइड से अभिक्रिया में जो β-नाइट्रोस्टाइरीन देती है।

(3) ब्रोमोबेन्जीन की $NaNH_2$ से अभिक्रिया में जो ऐनिलीन देती है।

(4) *p*-क्लोरोनाइट्रोबेन्जीन की NaOMe से अभिक्रिया में जो *p*-नाइट्रोऐनिसोल देती है।

Options :

1879806633. 1

1879806634. 2

1879806635. 3

1879806636. 4

Question Number : 40 Question Id : 1879801660 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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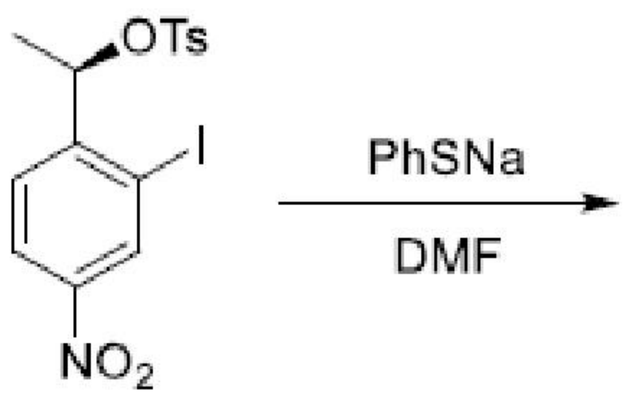
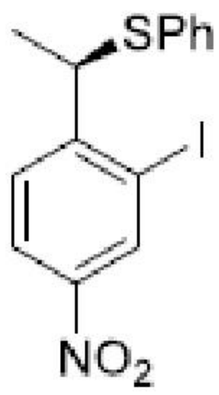
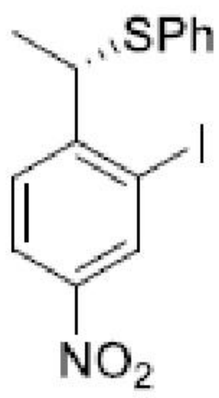
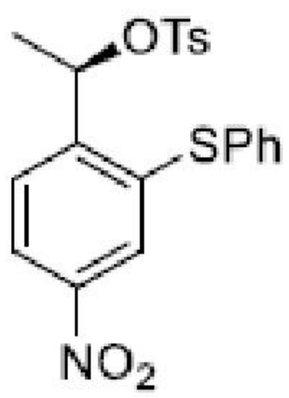
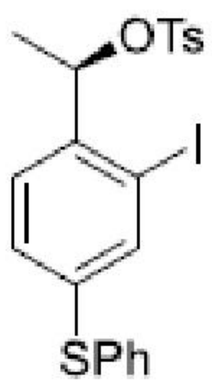
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806637. 1

1879806638. 2

1879806639. 3

1879806640. 4

Question Number : 40 Question Id : 1879801660 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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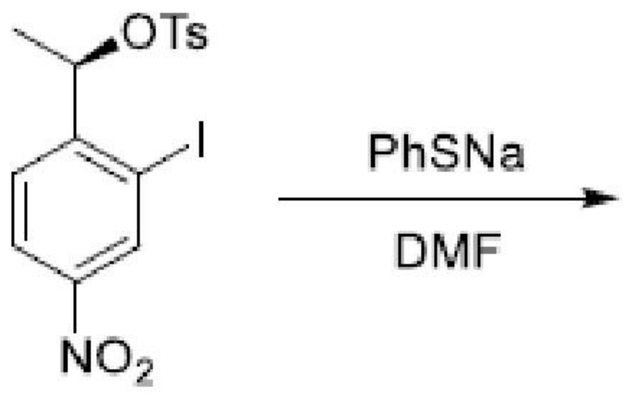
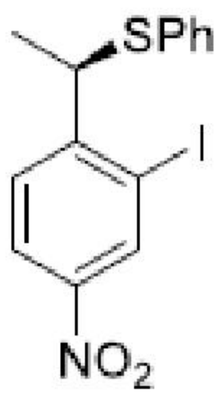
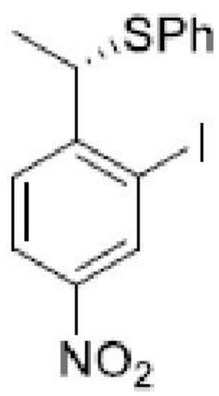
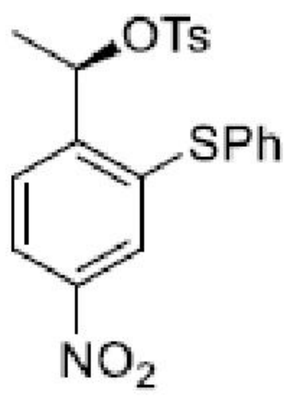
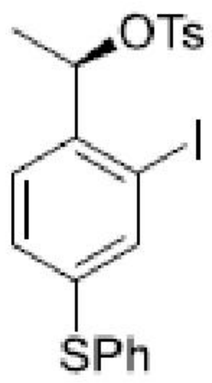
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806637. 1

1879806638. 2

1879806639. 3

1879806640. 4

Question Number : 41 Question Id : 1879801661 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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In IR spectrum, recorded neat, a compound shows a strong and broad band at 3300 cm^{-1}. The band becomes sharp and shifts to 3600 cm^{-1} when the spectrum is recorded in CCl_4 at high dilution. This proves that the compound has

(1) OH group, which is involved in intramolecular H-bonding

(2) OH group, which is involved in intermolecular H-bonding

(3) a terminal alkyne group

(4) OH group, present in severely sterically hindered environment

Options :

1879806641. 1

1879806642. 2

1879806643. 3

1879806644. 4

Question Number : 41 Question Id : 1879801661 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

एक यौगिक का शुद्ध अवस्था में रिकार्ड किया गया IR स्पेक्ट्रम 3300 cm^{-1} पर एक प्रबल तथा विस्तृत बैन्ड दर्शाता है। इस स्पेक्ट्रम को CCl_4 में उच्च तनुता पर रिकार्ड करने पर यह बैन्ड तीव्र होकर 3600 cm^{-1} पर विस्थापित हो जाता है। यह सिद्ध करता है कि यौगिक में

(1) OH ग्रुप है जो अंतःअणुक H-आबन्धन में शामिल है

(2) OH ग्रुप है जो अन्तराअणुक H-आबन्धन में शामिल है

(3) एक टर्मिनल ऐल्काइन ग्रुप है

(4) OH ग्रुप है जो अत्यधिक त्रिविमी **अवरुद्ध** पर्यावरण में उपस्थित है

Options :

1879806641. 1

1879806642. 2

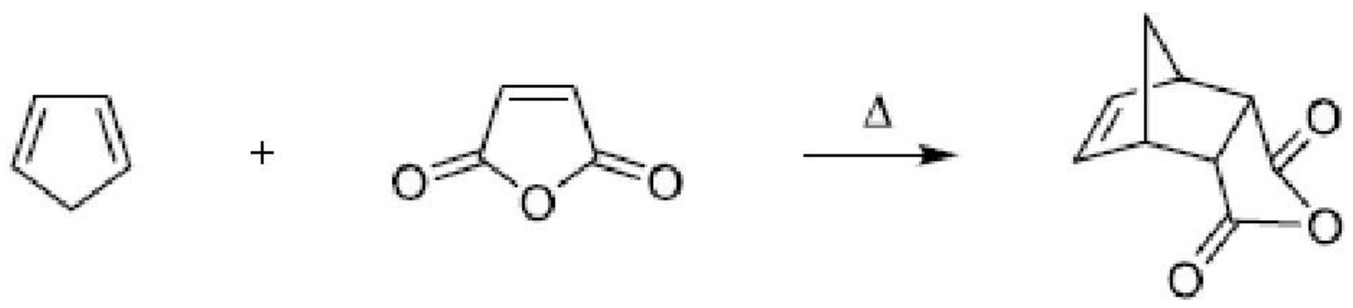
1879806643. 3

1879806644. 4

Question Number : 42 Question Id : 1879801662 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

TRUE statement for the following transformation is



(1) ΔH° and ΔS° are positive

(2) ΔH° and ΔS° are negative

(3) ΔH° is positive and ΔS° is negative

(4) ΔH° is negative and ΔS° is positive

Options :

1879806645. 1

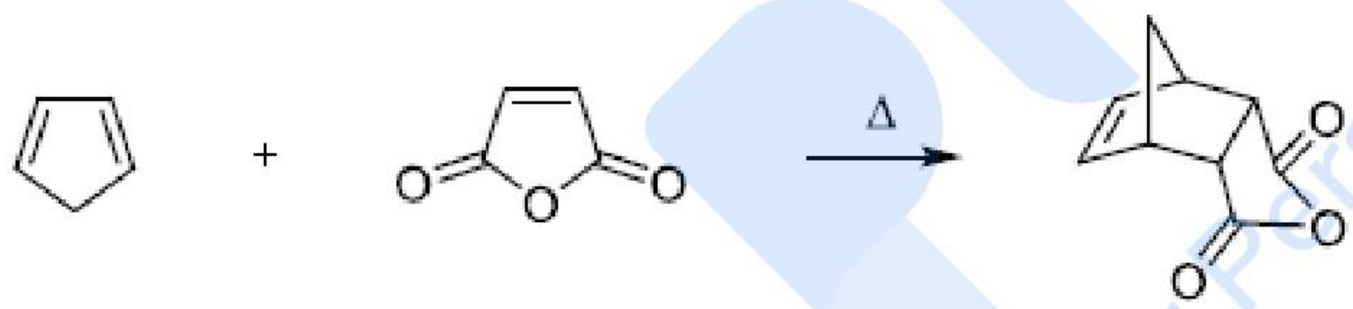
1879806646. 2

1879806647. 3

1879806648. 4

Question Number : 42 Question Id : 1879801662 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित रूपान्तरण के लिए सही कथन है



(1) ΔH° तथा ΔS° घनात्मक हैं।

(2) ΔH° तथा ΔS° ऋणात्मक हैं।

(3) ΔH° घनात्मक है और ΔS° ऋणात्मक है।

(4) ΔH° ऋणात्मक है और ΔS° घनात्मक है।

Options :

1879806645. 1

1879806646. 2

1879806647. 3

1879806648. 4

Question Number : 43 Question Id : 1879801663 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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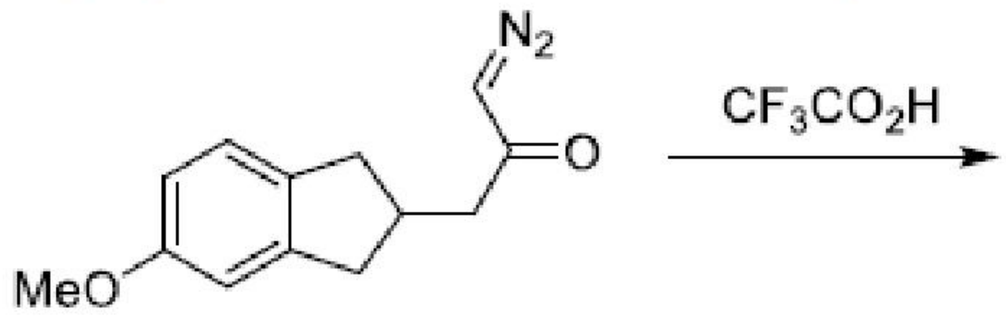
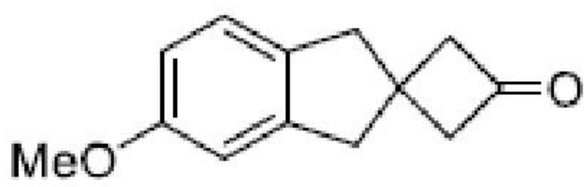
Correct Marks : 2 Wrong Marks : 0.5

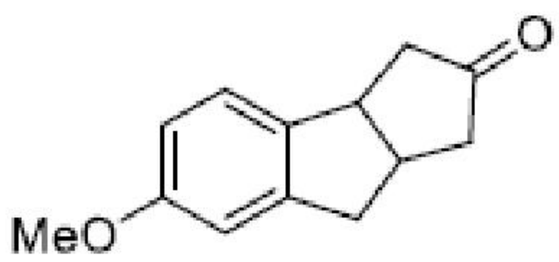
The major product formed in the following reaction is



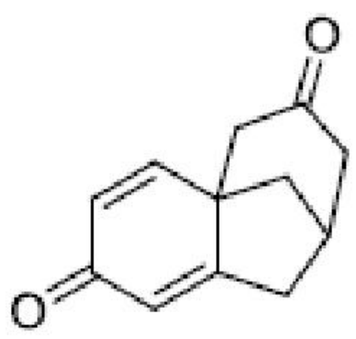
(1)



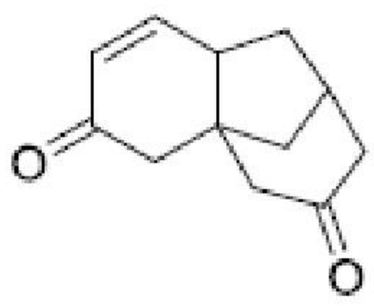
(2)



(3)



(4)



Options :

1879806649. 1

1879806650. 2

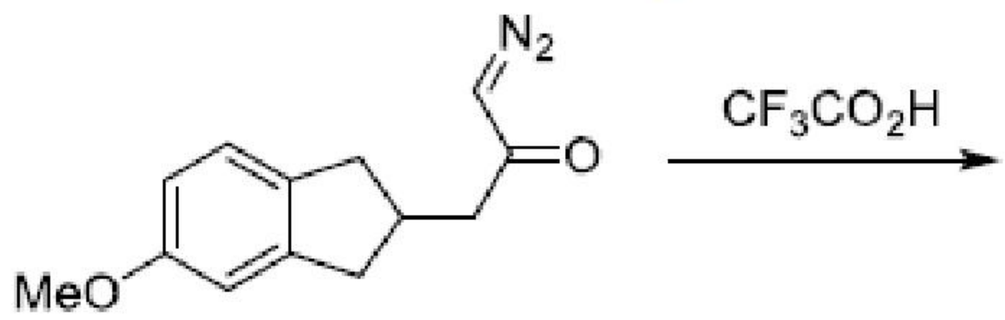
1879806651. 3

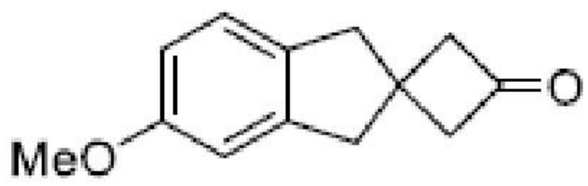
1879806652. 4

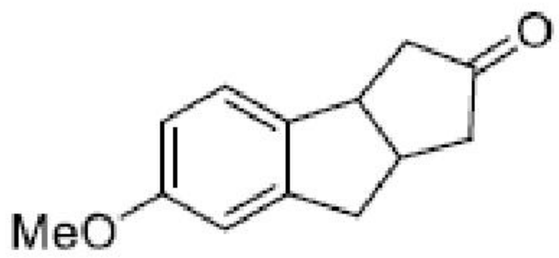
Question Number : 43 Question Id : 1879801663 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

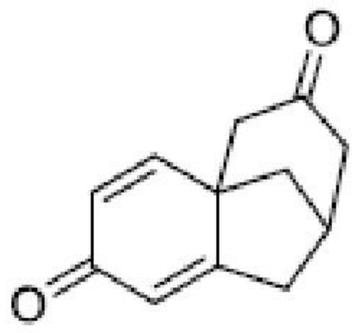
Correct Marks : 2 Wrong Marks : 0.5

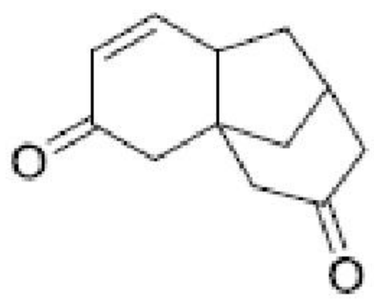
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806649. 1

1879806650. 2

1879806651. 3

1879806652. 4

Question Number : 44 Question Id : 1879801664 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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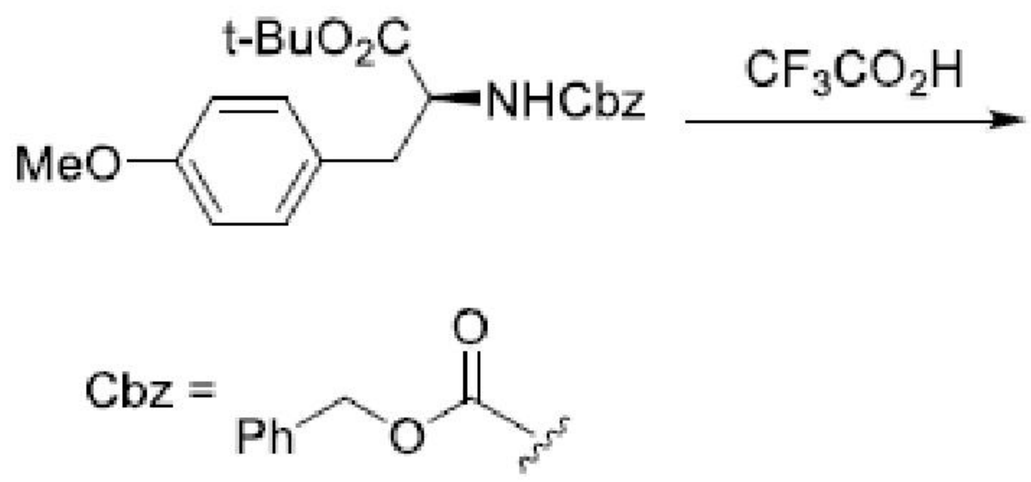
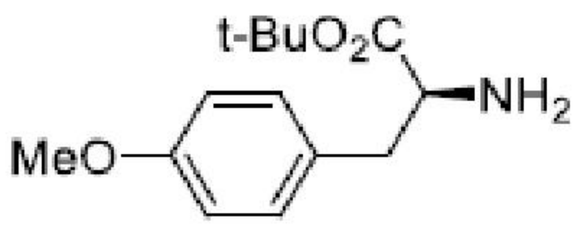
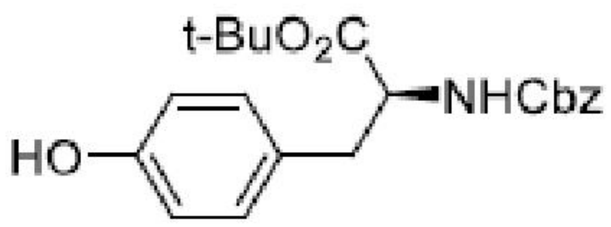
The major product formed in the following reaction is



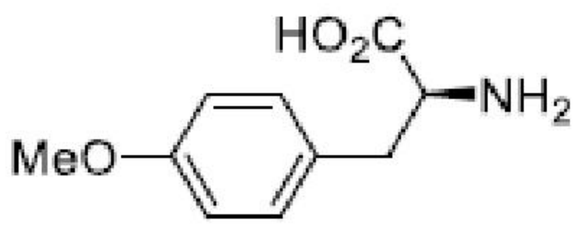
(1)



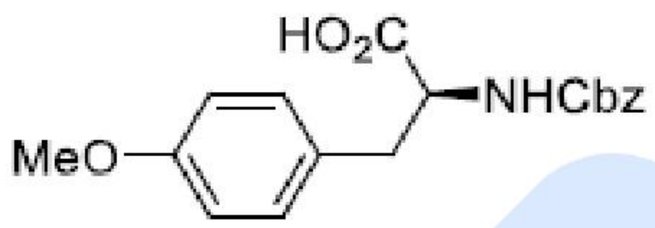
(2)



(3)



(4)



Options :

1879806653. 1

1879806654. 2

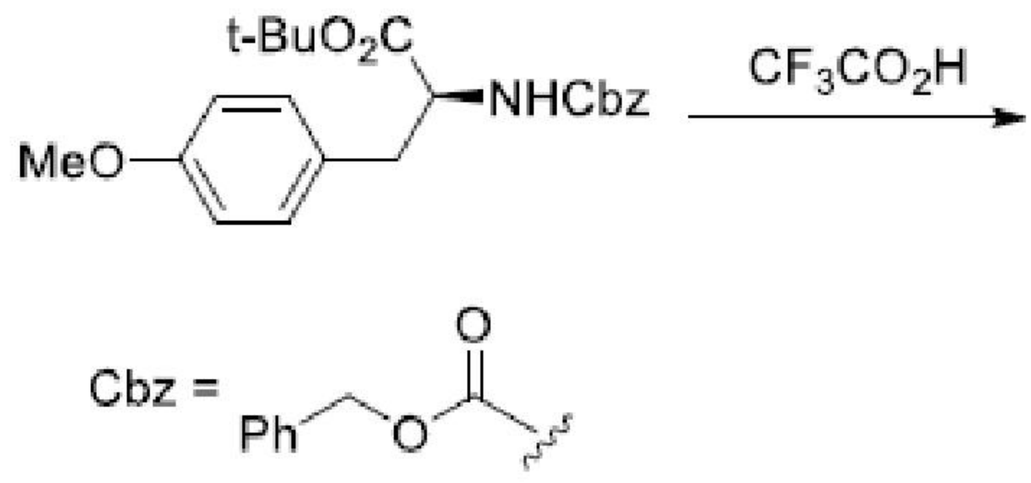
1879806655. 3

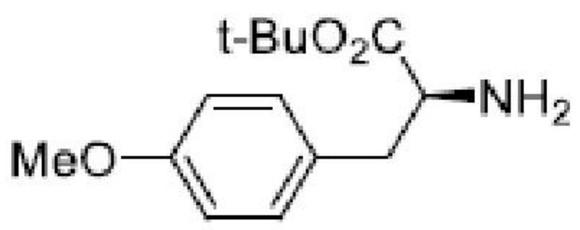
1879806656. 4

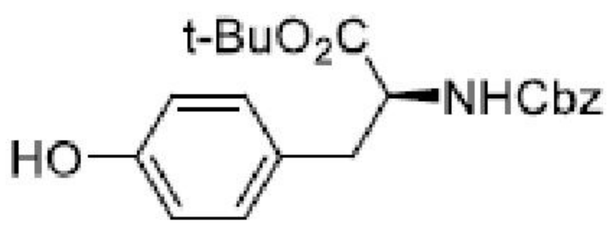
Question Number : 44 Question Id : 1879801664 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

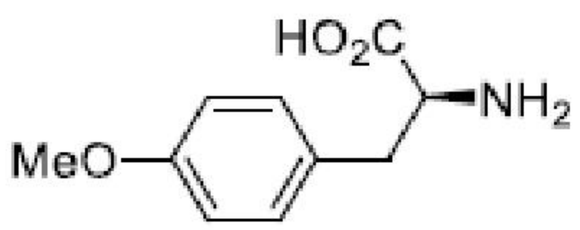
Correct Marks : 2 Wrong Marks : 0.5

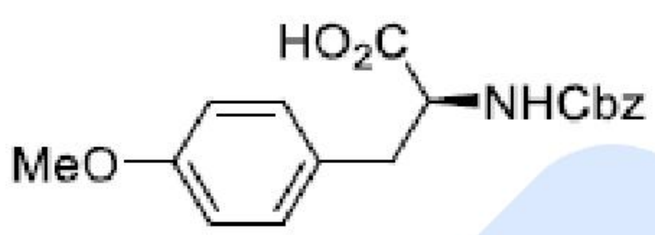
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1)


(2)


(3)


(4)


Options :

1879806653. 1

1879806654. 2

1879806655. 3

1879806656. 4

Question Number : 45 Question Id : 1879801665 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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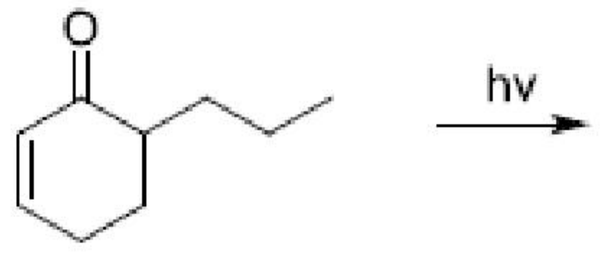
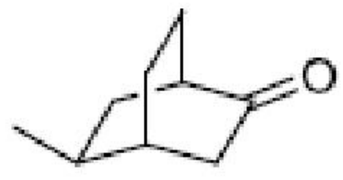
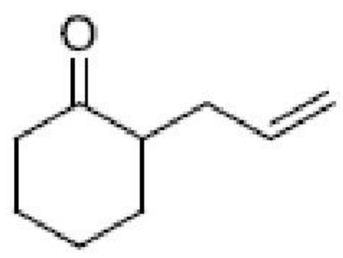
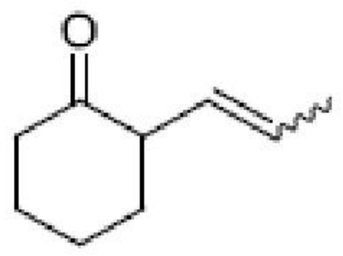
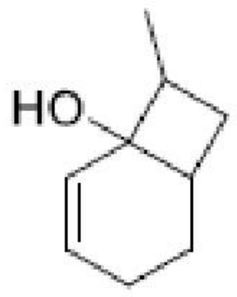
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806657. 1

1879806658. 2

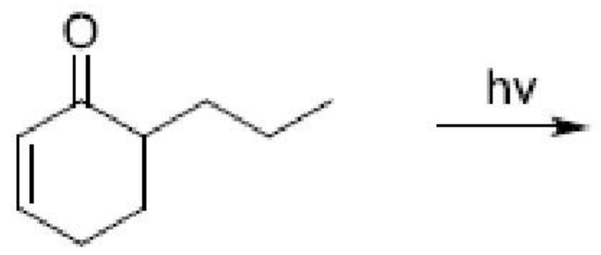
1879806659. 3

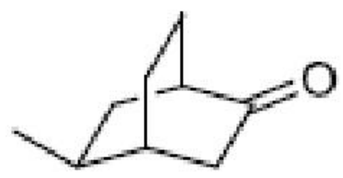
1879806660. 4

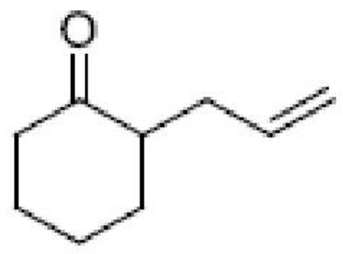
Question Number : 45 Question Id : 1879801665 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

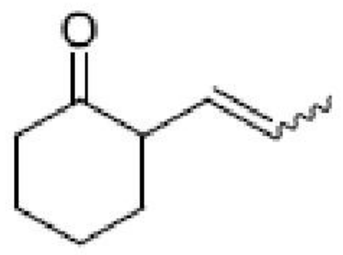
Correct Marks : 2 Wrong Marks : 0.5

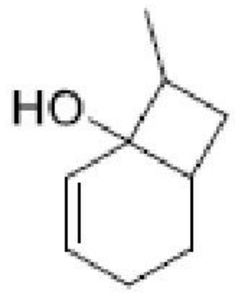
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806657. 1

1879806658. 2

1879806659. 3

1879806660. 4

Question Number : 46 Question Id : 1879801666 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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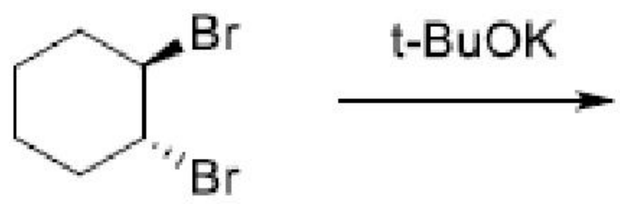
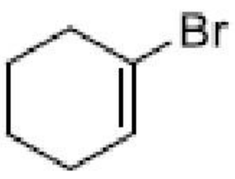
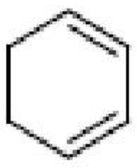
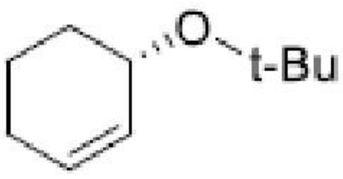
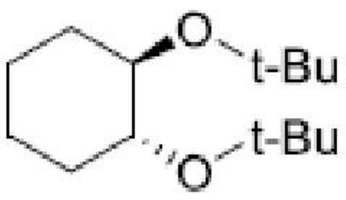
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806661. 1

1879806662. 2

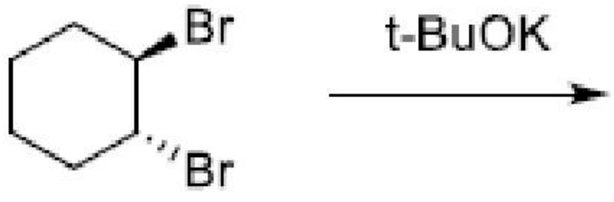
1879806663. 3

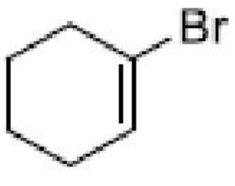
1879806664. 4

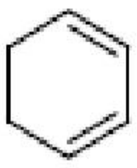
Question Number : 46 Question Id : 1879801666 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

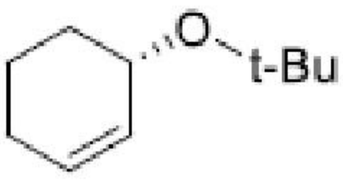
Correct Marks : 2 Wrong Marks : 0.5

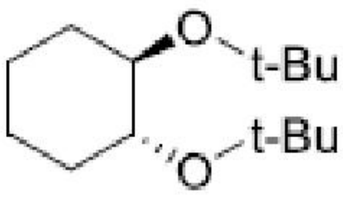
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806661. 1

1879806662. 2

1879806663. 3

1879806664. 4

Question Number : 47 Question Id : 1879801667 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The ion having the highest bond order is

(1) NO^+

(2) O_2^+

(3) N_2^+

(4) C_2^+

Options :

1879806665. 1

1879806666. 2

1879806667. 3

1879806668. 4

Question Number : 47 Question Id : 1879801667 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 2 Wrong Marks : 0.5

आयन जिसका आबन्ध क्रम सर्वाधिक है, वह है

(1) NO^+

(2) O_2^+

(3) N_2^+

(4) C_2^+

Options :

1879806665. 1

1879806666. 2

1879806667. 3

1879806668. 4

Question Number : 48 Question Id : 1879801668 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The frequency of O – H stretch occurs at ~3600 cm^{-1}. The O – D stretch frequency (in cm^{-1}) would be closest to

(1) 3000

(2) 2600

(3) 1800

(4) 900

Options :

1879806669. 1

1879806670. 2

1879806671. 3

1879806672. 4

Question Number : 48 Question Id : 1879801668 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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O – H तनन की आवृति ~3600 cm^{-1} पर प्रगट होती है। O – D की तनन आवृति (cm^{-1} में) जिसके निकटतम होगी, वह है

(1) 3000

(2) 2600

(3) 1800

(4) 900

Options :

1879806669. 1

1879806670. 2

1879806671. 3

1879806672. 4

Question Number : 49 Question Id : 1879801669 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The value of a physical variable was found to be 196, 198, 194, 199 and 198 in a set of five independent measurements. The average value and the standard deviation would be closest, respectively, to

(1) 198 and 2

(2) 197 and 4

(3) 197 and 2

(4) 198 and 4

Options :

1879806673. 1

1879806674. 2

1879806675. 3

1879806676. 4

Question Number : 49 Question Id : 1879801669 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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एक भौतिक परिवर्ती के पांच स्वतंत्र मापनों के सेट में प्राप्त मान 196, 198, 194, 199 तथा 198 हैं। औसत मान तथा मानक विचलन निकटतम होंगे, क्रमशः

(1) 198 तथा 2 के

(2) 197 तथा 4 के

(3) 197 तथा 2 के

(4) 198 तथा 4 के

Options :

1879806673. 1

1879806674. 2

1879806675. 3

1879806676. 4

Question Number : 50 Question Id : 1879801670 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The titration of 4.4 g of a polymer having carboxylic acid end group requires 11 mL of 0.02M NaOH. The average molar mass (in kg mol^{-1}) of the polymer is

(1) 40

(2) 20

(3) 15

(4) 10

Options :

1879806677. 1

1879806678. 2

1879806679. 3

1879806680. 4

Question Number : 50 Question Id : 1879801670 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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एक 4.4 g बहुलक जिसमें कार्बोक्सिल अम्ल अंत्य ग्रुप है, के अनुमापन में 0.02M NaOH के 11 mL की आवश्यकता होती है। बहुलक की औसत मोलर संहित (kg mol^{-1} में) है।

(1) 40

(2) 20

(3) 15

(4) 10

Options :

1879806677. 1

1879806678. 2

1879806679. 3

1879806680. 4

Question Number : 51 Question Id : 1879801671 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

A liquid of density 1.1 g cm^{-3} climbs to a height of 5.0 cm when a capillary with internal radius of 0.2 mm is dipped into it. The surface tension (in Nm^{-1}) of the liquid is closest to

(1) 0.05

(2) 0.108

(3) 0.018

(4) 0.005

Options :

1879806681. 1

1879806682. 2

1879806683. 3

1879806684. 4

Question Number : 51 Question Id : 1879801671 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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एक 1.1 g cm^{-3} घनत्व के द्रव में 0.2 mm आन्तरिक त्रिज्या की केशिका को डुबाने पर उसमें 5.0 cm की ऊंचाई तक द्रव चढ़ जाता है। द्रव का पृष्ठ तनाव (Nm^{-1} में) जिसके निकटतम है, वह है

(1) 0.05

(2) 0.108

(3) 0.018

(4) 0.005

Options :

1879806681. 1

1879806682. 2

1879806683. 3

1879806684. 4

Question Number : 52 Question Id : 1879801672 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

Consider a two-level system in which the excited state, separated from the ground state by energy ε, is doubly degenerate. The fraction of the molecules in the excited state, as $T \to \infty$, is

(1) $\frac{1}{3}$

(2) $\frac{1}{2}$

(3) $\frac{2}{3}$

(4) 1

Options :

1879806685. 1

1879806686. 2

1879806687. 3

1879806688. 4

Question Number : 52 Question Id : 1879801672 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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एक द्वित: अपभ्रष्ट द्विस्तरीय निकाय जिसमें उत्तेजित अवस्था का मूल अवस्था से पृथकन ε ऊर्जा का है, पर विचार कीजिए। उत्तेजित अवस्था में, अणुओं का अंश जब $T \to \infty$, है

(1) $\frac{1}{3}$

(2) $\frac{1}{2}$

(3) $\frac{2}{3}$

(4) 1

Options :

1879806685. 1

1879806686. 2

1879806687. 3

1879806688. 4

Question Number : 53 Question Id : 1879801673 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

The cell potential (in V) of a Ag/AgCl/KCl electrode connected to the standard hydrogen electrode at 298 K is closest to (Given $E^{o}_{(AgCl/Ag,Cl^-)} = 0.222$ V and assume that the activity of KCl is 0.01)

(1) 0.197

(2) 0.297

(3) 0.340

(4) 0.440

Options :

1879806689. 1

1879806690. 2

1879806691. 3

1879806692. 4

Question Number : 53 Question Id : 1879801673 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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मानक हाइड्रोजन, इलेक्ट्रोड और Ag/AgCl/KCl इलेक्ट्रोड के संयोजन से बने सेल का विभव (V में) जिसके निकटतम है, वह है (दिया है $E^{o}_{(AgCl/Ag,Cl^{-})} = 0.222$ V; तथा KCl की सक्रियता 0.01 मान लीजिए)

(1) 0.197

(2) 0.297

(3) 0.340

(4) 0.440

Options :

1879806689. 1

1879806690. 2

1879806691. 3

1879806692. 4

Question Number : 54 Question Id : 1879801674 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

If the rate constant for a base catalyzed ester hydrolysis reaction is 0.20 L mol^{-1} s^{-1}, half-life (in s) of the ester (Given $[ester]_o = [base]_o = 0.05$ mol. L^{-1}) would be closest to

(1) 40

(2) 100

(3) 140

(4) 200

Options :

1879806693. 1

1879806694. 2

1879806695. 3

1879806696. 4

Question Number : 54 Question Id : 1879801674 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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क्षार उत्प्रेरित एस्टर की जल अपघटन अभिक्रिया के लिए यदि दर स्थिरांक 0.20 L mol^{-1} s^{-1} है, तो एस्टर की अर्ध आयु (s में) जिसके निकटतम होगी, वह है
(दिया है $[ester]_0 = [base]_0 = 0.05$ mol. L^{-1})

(1) 40

(2) 100

(3) 140

(4) 200

Options :
1879806693. 1
1879806694. 2
1879806695. 3
1879806696. 4

Question Number : 55 Question Id : 1879801675 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.5

The hydrogen atomic orbital given by $Nr^2e^{-r/3a_0}(3\cos^2\theta - 1)$ represents

(1) 2p orbital

(2) 3p orbital

(3) 3d orbital

(4) 4d orbital

Options :
1879806697. 1
1879806698. 2
1879806699. 3
1879806700. 4

Question Number : 55 Question Id : 1879801675 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 2 Wrong Marks : 0.5

$Nr^2e^{-r/3a_0}(3\cos^2\theta - 1)$ द्वारा दिया जाने वाला हाइड्रोजन आण्विक कक्षक प्रतिनिधित्व करता है

(1) 2p कक्षक का

(2) 3p कक्षक का

(3) 3d कक्षक का

(4) 4d कक्षक का

Options :

1879806697. 1

1879806698. 2

1879806699. 3

1879806700. 4

Question Number : 56 Question Id : 1879801676 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

Molar composition of a mixture of P and Q at equilibrium is 3:1 (P:Q). A small disturbance in composition results in change of chemical potential of P by 10 J mol^{-1}. The chemical potential of Q will change (in J mol^{-1}) by:

(1) 30

(2) 3.3

(3) −30

(4) −3.3

Options :

1879806701. 1

1879806702. 2

1879806703. 3

1879806704. 4

Question Number : 56 Question Id : 1879801676 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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P तथा Q के मिश्रण का साम्य अवस्था में मोलर संघटन 3:1 (P:Q) है। संघटन में एक छोटी सी उथल पुथल P के रासायनिक विभव में $10\ J\ mol^{-1}$ का परिवर्तन कर देती है। Q के रासायनिक विभव में जितना परिवर्तन ($J\ mol^{-1}$ में) आ जाएगा, वह है

(1) 30

(2) 3.3

(3) −30

(4) −3.3

Options :

1879806701. 1

1879806702. 2

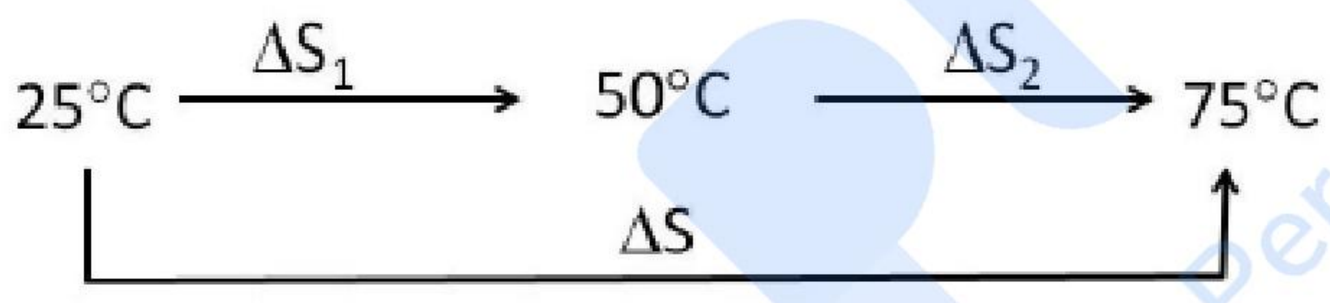
1879806703. 3

1879806704. 4

Question Number : 57 Question Id : 1879801677 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

Consider the entropy changes in a system undergoing transformation, as depicted in the diagram, below



The correct statement among the following is

(1) $\Delta S_1 = \Delta S_2$ and $\Delta S \neq \Delta S_1 + \Delta S_2$

(2) $\Delta S_1 > \Delta S_2$ and $\Delta S \neq \Delta S_1 + \Delta S_2$

(3) $\Delta S_1 = \Delta S_2$ and $\Delta S = \Delta S_1 + \Delta S_2$

(4) $\Delta S_1 > \Delta S_2$ and $\Delta S = \Delta S_1 + \Delta S_2$

Options :

1879806705. 1

1879806706. 2

1879806707. 3

1879806708. 4

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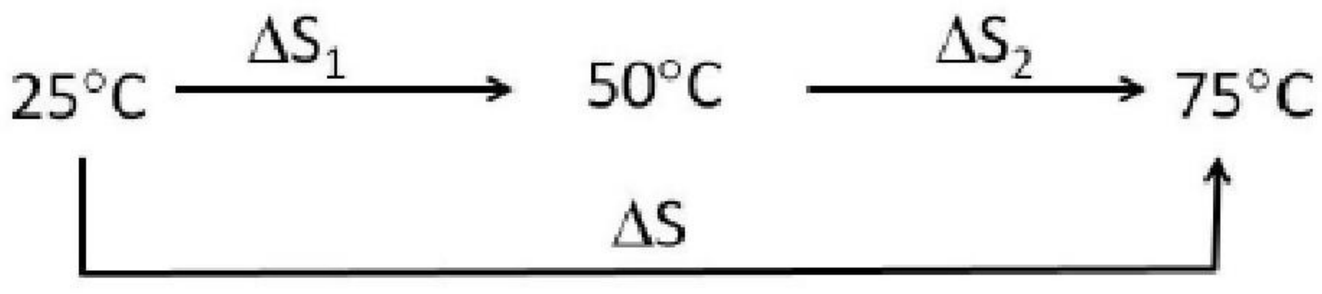
Question Number : 57 Question Id : 1879801677 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

एक निकाय के एन्ट्रापी परिवर्तन पर विचार कीजिए, जिसके रूपांतरण को निम्न रेखाचित्र में दर्शाया है



निम्नलिखित में से सही कथन है

(1) $\Delta S_1 = \Delta S_2$ तथा $\Delta S \neq \Delta S_1 + \Delta S_2$

(2) $\Delta S_1 > \Delta S_2$ तथा $\Delta S \neq \Delta S_1 + \Delta S_2$

(3) $\Delta S_1 = \Delta S_2$ तथा $\Delta S = \Delta S_1 + \Delta S_2$

(4) $\Delta S_1 > \Delta S_2$ तथा $\Delta S = \Delta S_1 + \Delta S_2$

Options :

1879806705. 1

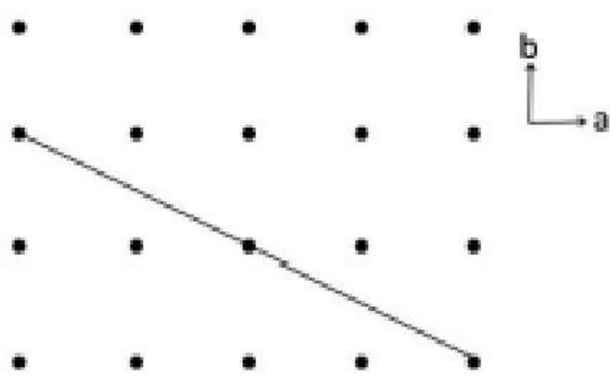
1879806706. 2

1879806707. 3

1879806708. 4

Question Number : 58 Question Id : 1879801678 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5



The Miller index for the plane as shown in the figure and parallel to the c-axis, is

(1) 110

(2) 120

(3) 210

(4) 220

Options :

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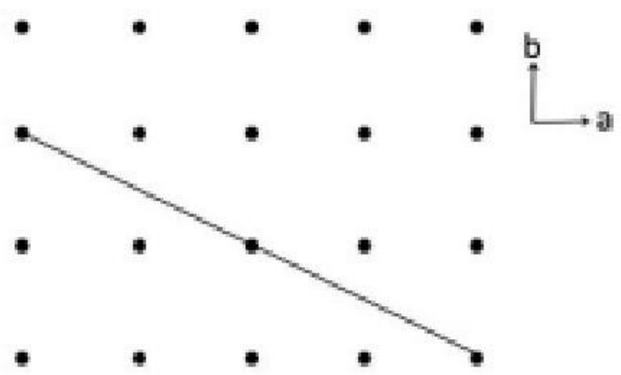
1879806709. 1
1879806710. 2
1879806711. 3
1879806712. 4

Question Number : 58 Question Id : 1879801678 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5



चित्र में दिखाए गए c-अक्षक के समानान्तर समतल के मिलर सूचकांक है

(1) 110

(2) 120

(3) 210

(4) 220

Options :

1879806709. 1
1879806710. 2
1879806711. 3
1879806712. 4

Question Number : 59 Question Id : 1879801679 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

A cube does not have the symmetry element

(1) C_2

(2) C_3

(3) C_4

(4) C_6

Options :

1879806713. 1
1879806714. 2

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1879806715. 3

1879806716. 4

Question Number : 59 Question Id : 1879801679 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

घन में जो सममिति तत्त्व नहीं होता है, वह है

(1) C_2

(2) C_3

(3) C_4

(4) C_6

Options :

1879806713. 1

1879806714. 2

1879806715. 3

1879806716. 4

Question Number : 60 Question Id : 1879801680 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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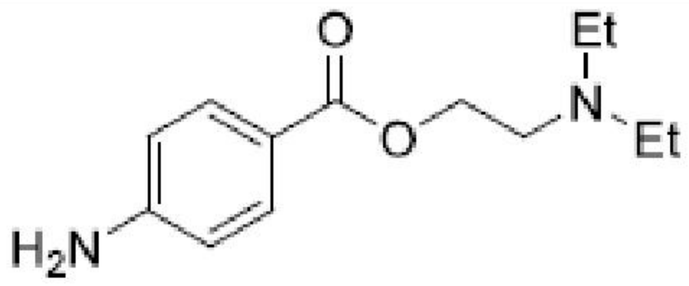
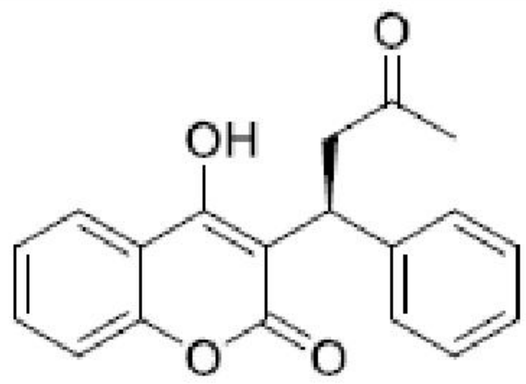
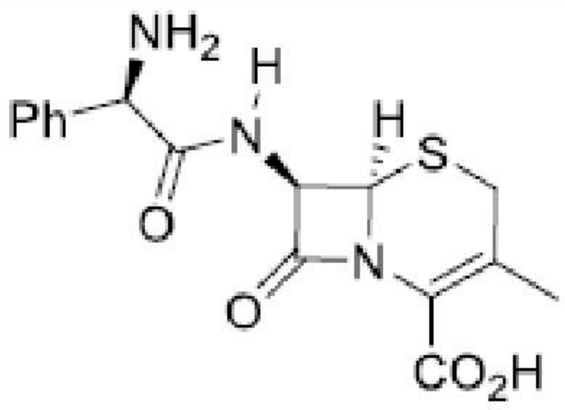
The correct match for the drug molecules in the Column **A** with their medicinal use in Column **B** is

	Column A		Column B
P	 Procaine	i.	Anaesthetic
Q	 Warfarin	ii.	Anticoagulant
R	 Cephalexin	iii.	Antibiotic

(1) **P** – i; **Q** – ii; **R** – iii

(2) **P** – ii; **Q** –i; **R** – iii

(3) **P** – iii; **Q** – i; **R** –ii

(4) **P** – i; **Q** – iii; **R** –ii

Options :

1879806717. 1

1879806718. 2

1879806719. 3

1879806720. 4

Question Number : 60 Question Id : 1879801680 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0.5

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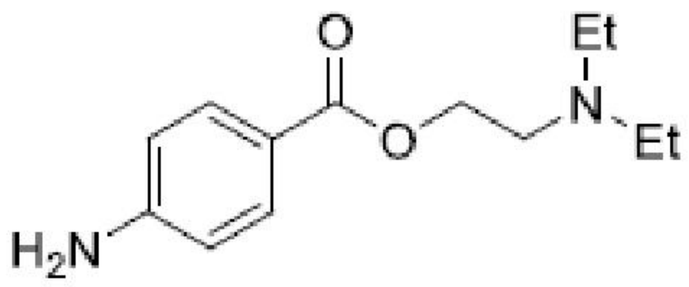
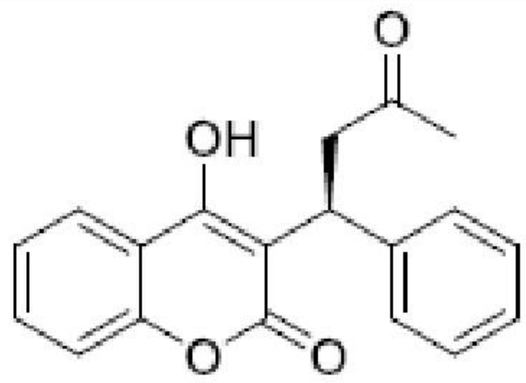
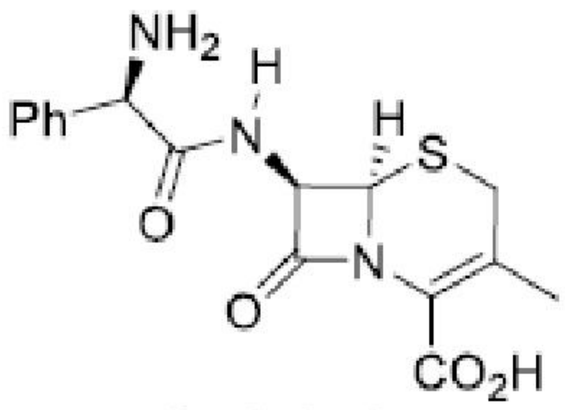
कालम **A** में दिए औषध अणुओं का कालम **B** में दिए औषधीय उपयोग से मिलान कीजिए

	कालम **A**		कालम **B**
P	 Procaine	i.	संज्ञाहारी
Q	 Warfarin	ii.	प्रतिस्कंदक
R	 Cephalexin	iii.	प्रतिजैविक

(1) **P** – i; **Q** – ii; **R** – iii

(2) **P** – ii; **Q** –i; **R** – iii

(3) **P** – iii; **Q** – i; **R** –ii

(4) **P** – i; **Q** – iii; **R** –ii

Options :

1879806717. 1

1879806718. 2

1879806719. 3

1879806720. 4

Part C Chemical Sciences

Section Id :	18798042
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	60
Number of Questions to be attempted:	25
Section Marks:	100
Display Number Panel:	Yes
Group All Questions:	No

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Sub-Section Number: 1
Sub-Section Id: 18798042
Question Shuffling Allowed : Yes

Question Number : 61 Question Id : 1879801681 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The rate-determining step in the catalytic synthesis of acetic acid by Monsanto process is

(1) oxidative addition of CH_3I to $[RhI_2(CO)_2]^-$

(2) migration of CH_3 group to CO of $[RhI_3(CO)_2(CH_3)]^-$

(3) loss of CH_3COI from $[RhI_3(CO)_2(COCH_3)]^-$

(4) coordination of CO to $[RhI_3CO(COCH_3)]^-$

Options :
1879806721. 1
1879806722. 2
1879806723. 3
1879806724. 4

Question Number : 61 Question Id : 1879801681 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

ऐसीटिक अम्ल के मोन्सन्टो प्रक्रम से उत्प्रेरकी संश्लेषण में वेग निर्धारक पद है।

(1) $[RhI_2(CO)_2]^-$ से CH_3I का आक्सीकरणी संकलन

(2) CH_3 गुप का $[RhI_3(CO)_2(CH_3)]^-$ के CO पर अभिगमन

(3) $[RhI_3(CO)_2(COCH_3)]^-$ से CH_3COI की क्षति

(4) $[RhI_3CO(COCH_3)]^-$ से CO का उपसहसंयोजन

Options :
1879806721. 1
1879806722. 2
1879806723. 3
1879806724. 4

Question Number : 62 Question Id : 1879801682 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 4 Wrong Marks : 1

The cluster types of $[Fe_5(CO)_{14}N]^-$ and $[Co_6(CO)_{13}N]^-$ are, respectively,

(1) *nido-*, *nido-*

(2) *nido-*, *closo-*

(3) *closo-*, *nido-*

(4) *closo-*, *closo-*

Options :

1879806725. 1

1879806726. 2

1879806727. 3

1879806728. 4

Question Number : 62 Question Id : 1879801682 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$[Fe_5(CO)_{14}N]^-$ तथा $[Co_6(CO)_{13}N]^-$ के, क्लस्टर प्रकार हैं, क्रमशः

(1) *nido-*, *nido-*

(2) *nido-*, *closo-*

(3) *closo-*, *nido-*

(4) *closo-*, *closo-*

Options :

1879806725. 1

1879806726. 2

1879806727. 3

1879806728. 4

Question Number : 63 Question Id : 1879801683 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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In the electronic spectrum of $[IrBr_6]^{2-}$, the number of charge transfer band(s) and their origin are, respectively

(1) Two, ligand → metal ($\sigma \rightarrow t_{2g}$ and $\sigma \rightarrow a_{1g}^*$)

(2) One, ligand → metal ($\sigma \rightarrow e_g$)

(3) Two, ligand → metal ($\sigma \rightarrow t_{2g}$ and $\sigma \rightarrow e_g$)

(4) One, ligand → metal ($\sigma \rightarrow t_{2g}$)

Options :

1879806729. 1

1879806730. 2

1879806731. 3

1879806732. 4

Question Number : 63 Question Id : 1879801683 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$[IrBr_6]^{2-}$ के इलेक्ट्रॉनिक स्पेक्ट्रम में, आवेश अंतरण बैन्डों की संख्या तथा उनके उद्गम हैं, क्रमशः

(1) दो, लिगन्ड → धातु ($\sigma \rightarrow t_{2g}$ तथा $\sigma \rightarrow a_{1g}^*$)

(2) एक, लिगन्ड → धातु ($\sigma \rightarrow e_g$)

(3) दो, लिगन्ड → धातु ($\sigma \rightarrow t_{2g}$ तथा $\sigma \rightarrow e_g$)

(4) एक, लिगन्ड → धातु ($\sigma \rightarrow t_{2g}$)

Options :

1879806729. 1

1879806730. 2

1879806731. 3

1879806732. 4

Question Number : 64 Question Id : 1879801684 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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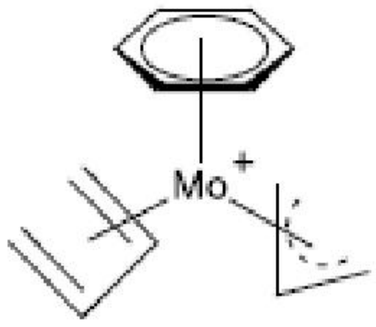
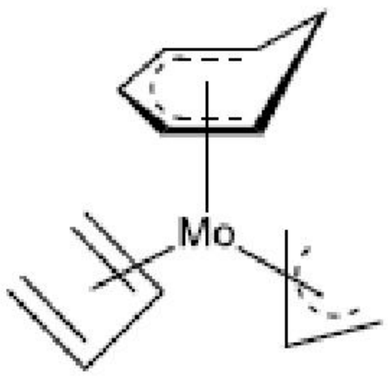
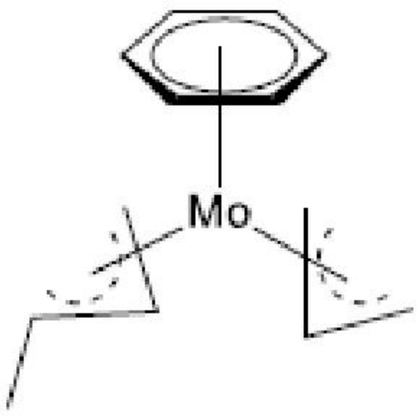
The main product of nucleophillic attack of H^- on the complex ion given below is



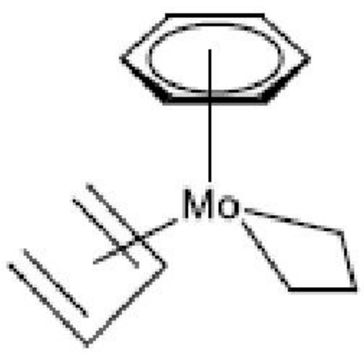
(1)



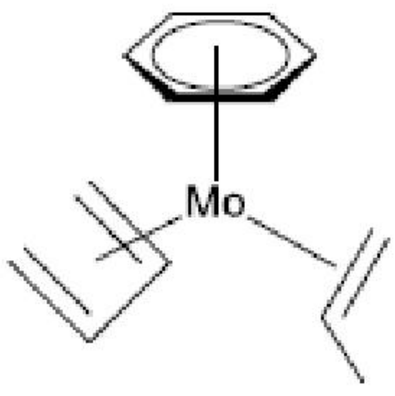
(2)



(3)



(4)



Options :

1879806733. 1

1879806734. 2

1879806735. 3

1879806736. 4

Question Number : 64 Question Id : 1879801684 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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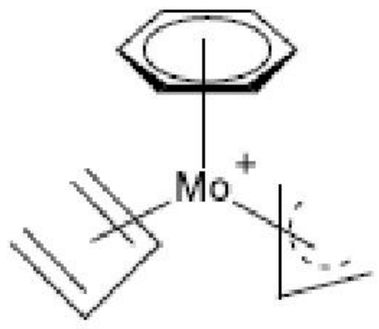
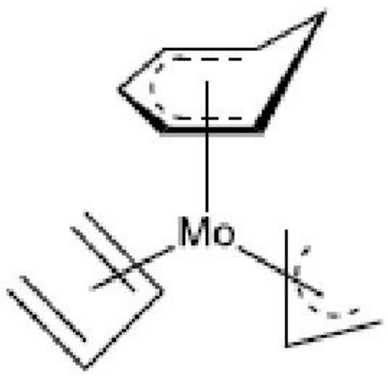
निम्नलिखित संकुल आयन पर H^- के नाभिकस्नेही आक्रमण का मुख्य उत्पाद है



(1)


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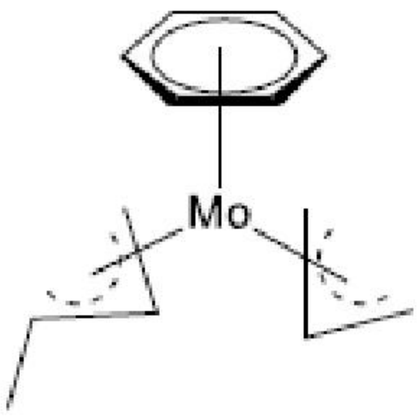
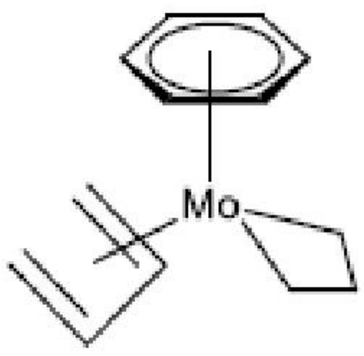


(3)


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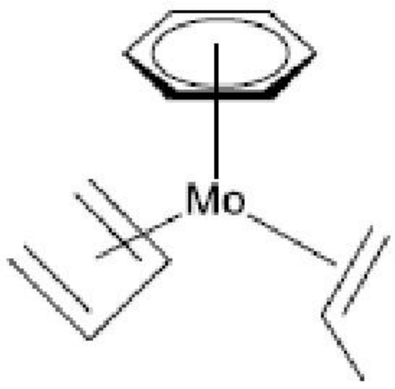

Options :

1879806733. 1

1879806734. 2

1879806735. 3

1879806736. 4

Question Number : 65 Question Id : 1879801685 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Choose the equilibria from the following that are **NOT** favoured to go to right:

(A) $As_2S_5 + 5\ HgO \rightleftharpoons As_2O_5 + 5\ HgS$

(B) $La_2(CO_3)_3 + Bi_2S_3 \rightleftharpoons La_2S_3 + Bi_2(CO_3)_3$

(C) $CdSO_4 + CaS \rightleftharpoons CdS + CaSO_4$

(D) $BeF_2 + HgI_2 \rightleftharpoons BeI_2 + HgF_2$

(1) A and B

(2) A and C

(3) B and C

(4) B and D

Options :

1879806737. 1

1879806738. 2

1879806739. 3

1879806740. 4

Question Number : 65 Question Id : 1879801685 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से उन साम्यों का चुनाव कीजिए जिनका दाहिनी ओर जाना अनुकूल **नहीं** है।

(A) $As_2S_5 + 5\ HgO \rightleftharpoons As_2O_5 + 5\ HgS$

(B) $La_2(CO_3)_3 + Bi_2S_3 \rightleftharpoons La_2S_3 + Bi_2(CO_3)_3$

(C) $CdSO_4 + CaS \rightleftharpoons CdS + CaSO_4$

(D) $BeF_2 + HgI_2 \rightleftharpoons BeI_2 + HgF_2$

(1) A तथा B

(2) A तथा C

(3) B तथा C

(4) B तथा D

Options :

1879806737. 1

1879806738. 2

1879806739. 3

1879806740. 4

Question Number : 66 Question Id : 1879801686 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The correct statements for dithionite and dithionate anions from the following are
(A) both have S–S bond
(B) both are dianionic
(C) oxidation state of sulphur is +3 and +5, respectively
(D) sulphur in dithionate has lone pair of electrons

(1) A, B and C

(2) A, B and D

(3) B, C and D

(4) A and B only

Options :
1879806741. 1
1879806742. 2
1879806743. 3
1879806744. 4

Question Number : 66 Question Id : 1879801686 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

डाइथायोनाइट तथा डाइथायोनेट ऋणायनों के लिए निम्नलिखित में से सही कथन हैं
(A) दोनों में S–S आबन्ध है।
(B) दोनों द्वि–ऋणायनी हैं।
(C) सल्फर, ऑक्सीकरण अवस्था क्रमशः +3 तथा +5 में है।
(D) डाइथायोनेट के सल्फर पर एकाकी इलेक्ट्रॉन युग्म है।

(1) A, B तथा C

(2) A, B तथा D

(3) B, C तथा D

(4) केवल A तथा B

Options :
1879806741. 1
1879806742. 2
1879806743. 3
1879806744. 4

Question Number : 67 Question Id : 1879801687 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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The species for which the shapes (geometry) can be predicted by VSEPR theory is/are

(A) $[PtCl_4]^{2-}$

(B) $[TeCl_6]^{2-}$

(C) PF_3 and SF_6

Answer is

(1) A and C

(2) B and C

(3) C only

(4) A and B

Options :

1879806745. 1

1879806746. 2

1879806747. 3

1879806748. 4

Question Number : 67 Question Id : 1879801687 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

VSEPR सिद्धान्त से जिन स्पीशीज़ के रूप (ज्यामिति) को पूर्व अनुमानित कर सकते हैं, वह है/हैं

(A) $[PtCl_4]^{2-}$

(B) $[TeCl_6]^{2-}$

(C) PF_3 तथा SF_6

उत्तर है

(1) A तथा C

(2) B तथा C

(3) केवल C

(4) A तथा B

Options :

1879806745. 1

1879806746. 2

1879806747. 3

1879806748. 4

Question Number : 68 Question Id : 1879801688 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 4 Wrong Marks : 1

Among $SO_2(OH)F$, CH_3CO_2H, LiF and H_2O, the compound(s) which behave(s) as a base in liquid HF is/are

(1) CH_3CO_2H and LiF only

(2) LiF only

(3) $SO_2(OH)F$ and LiF only

(4) CH_3CO_2H, LiF and H_2O

Options :

1879806749. 1

1879806750. 2

1879806751. 3

1879806752. 4

Question Number : 68 Question Id : 1879801688 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$SO_2(OH)F$, CH_3CO_2H, LiF तथा H_2O में से जिस यौगिक / जिन यौगिकों का द्रव HF में क्षार जैसा व्यवहार होता है, वह है / हैं।

(1) केवल CH_3CO_2H तथा LiF

(2) केवल LiF

(3) केवल $SO_2(OH)F$ तथा LiF

(4) CH_3CO_2H, LiF तथा H_2O

Options :

1879806749. 1

1879806750. 2

1879806751. 3

1879806752. 4

Question Number : 69 Question Id : 1879801689 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Complex(es) which has/have unpaired electron(s) that is equal to that of iron center in oxymyoglobin is/are

A. $[Fe(ox)_3]^{3-}$

B. $[Fe(CN)_6]^{3-}$

C. $[NiCl_4]^{2-}$

D. $[Cu(NH_3)_4]^{2+}$

(Given: ox = oxalato)

Correct answer is

(1) A and B

(2) B and D

(3) C only

(4) C and D

Options :

1879806753. 1

1879806754. 2

1879806755. 3

1879806756. 4

Question Number : 69 Question Id : 1879801689 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

संकुल जिसमें/संकुलों जिनमें अयुग्मित इलेक्ट्रॉनों की संख्या ऑक्सीमायोग्लोबिन के आयरन केन्द्र के समान होती है, वह है/हैं

A. $[Fe(ox)_3]^{3-}$

B. $[Fe(CN)_6]^{3-}$

C. $[NiCl_4]^{2-}$

D. $[Cu(NH_3)_4]^{2+}$

(दिया है: ox = ऑक्सैलेटो)

सही उत्तर है

(1) A तथा B

(2) B तथा D

(3) केवल C

(4) C तथा D

Options :

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1879806753. 1

1879806754. 2

1879806755. 3

1879806756. 4

Question Number : 70 Question Id : 1879801690 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In spectrofluorimetric determination in solution

A. absorbance of analyte solution is kept near to 0.05

B. oxygen is eradicated from solution

C. pH of solution is controlled

D. wavelength of incident light is always above 400 nm

Correct from the above is

(1) A, B and D

(2) B, C and D

(3) A, B and C

(4) A, C and D

Options :

1879806757. 1

1879806758. 2

1879806759. 3

1879806760. 4

Question Number : 70 Question Id : 1879801690 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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विलयन में स्पेक्ट्रमी प्रतिदीप्तिमापी निर्धारण के लिए

A. विश्लेष्य के विलयन का अवशोषणांक 0.05 के आसपास रखते हैं।

B. विलयन से आक्सीजन को उन्मूलित कर देते हैं।

C. विलयन की pH को नियंत्रित करते हैं।

D. आपतित प्रकाश किरण की तरंग दैर्ध्य 400 nm से सदा अधिक होती है।

उपरोक्त से सही उत्तर है

(1) A, B तथा D

(2) B, C तथा D

(3) A, B तथा C

(4) A, C तथा D

Options :

1879806757. 1

1879806758. 2

1879806759. 3

1879806760. 4

Question Number : 71 Question Id : 1879801691 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Match the items in Column I with those of Column II.

Column I (species)		Column II (structure/properties)	
a	NaH	i	polymeric chain
b	BeH_2	ii	interstitial hydride
c	$HfH_{2.10}$	iii	tricapped trigonal prismatic
d	$[TcH_9]^{2-}$	iv	saline hydride

The correct match is

(1) a-iv, b-ii, c-iii, d-i

(2) a-i, b-iv, c-ii, d-iii

(3) a-iv, b-i, c-ii, d-iii

(4) a-iv, b-i, c-iii, d-ii

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Options :

1879806761. 1

1879806762. 2

1879806763. 3

1879806764. 4

Question Number : 71 Question Id : 1879801691 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कालम I की मदों का कालम II से मिलान कीजिए

कालम I (स्पीशीज़)		कालम II (संरचना / गुणधर्म)	
a	NaH	i	बहुलकी श्रृखंला
b	BeH_2	ii	अंतराकाशी हाइड्राइड
c	$HfH_{2.10}$	iii	त्रिटोपीकृत त्रिसमनताक्ष प्रिज्मीय
d	$[TcH_9]^{2-}$	iv	लवणीय हाइड्राइड

सही मिलान है

(1) a-iv, b-ii, c-iii, d-i

(2) a-i, b-iv, c-ii, d-iii

(3) a-iv, b-i, c-ii, d-iii

(4) a-iv, b-i, c-iii, d-ii

Options :

1879806761. 1

1879806762. 2

1879806763. 3

1879806764. 4

Question Number : 72 Question Id : 1879801692 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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In Mössbauer spectrum of a sample containing iron recorded in the presence of a static magnetic field, the number of possible allowed transition(s) is

(1) Two

(2) Four

(3) Six

(4) Eight

Options :
1879806765. 1
1879806766. 2
1879806767. 3
1879806768. 4

Question Number : 72 Question Id : 1879801692 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

एक नमूना जिसमें आयरन है, का मॉसबौर स्पेक्ट्रम स्थैतिक चुम्बकीय क्षेत्र की उपस्थिति में रिकार्ड किया गया। संभव अनुमत संक्रमणों की संख्या है।

(1) दो

(2) चार

(3) छः

(4) आठ

Options :
1879806765. 1
1879806766. 2
1879806767. 3
1879806768. 4

Question Number : 73 Question Id : 1879801693 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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$FeCr_2O_4$ and $NiGa_2O_4$ have normal and inverse spinel structures, respectively. The correct statement is

(1) Fe(II) and Ni(II) occupy octahedral sites

(2) Fe(II) and Ni(II) occupy tetrahedral and octahedral sites, respectively

(3) Cr(III) and Ga(III) occupy only octahedral sites

(4) Cr(III) and Ga(III) occupy tetrahedral and octahedral sites, respectively

Options :

1879806769. 1

1879806770. 2

1879806771. 3

1879806772. 4

Question Number : 73 Question Id : 1879801693 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$FeCr_2O_4$ तथा $NiGa_2O_4$ की संरचनायें क्रमशः सामान्य तथा प्रतिलोमी स्पिनेल हैं। सही कथन है

(1) Fe(II) तथा Ni(II) अष्टफलकीय स्थलों को ग्रहण करते हैं

(2) Fe(II) तथा Ni(II) क्रमशः, चतुष्फलकीय तथा अष्टफलकीय स्थलों को ग्रहण करते हैं

(3) Cr(III) तथा Ga(III) केवल अष्टफलकीय स्थलों को ग्रहण करते हैं

(4) Cr(III) तथा Ga(III) क्रमशः, चतुष्फलकीय तथा अष्टफलकीय स्थलों को ग्रहण करते हैं

Options :

1879806769. 1

1879806770. 2

1879806771. 3

1879806772. 4

Question Number : 74 Question Id : 1879801694 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The correct order of metal–carbon distance is

(1) $Fe(\eta^5\text{-}Cp)_2 > Co(\eta^5\text{-}Cp)_2 > Ni(\eta^5\text{-}Cp)_2$

(2) $Fe(\eta^5\text{-}Cp)_2 > Ni(\eta^5\text{-}Cp)_2 > Co(\eta^5\text{-}Cp)_2$

(3) $Ni(\eta^5\text{-}Cp)_2 > Fe(\eta^5\text{-}Cp)_2 > Co(\eta^5\text{-}Cp)_2$

(4) $Ni(\eta^5\text{-}Cp)_2 > Co(\eta^5\text{-}Cp)_2 > Fe(\eta^5\text{-}Cp)_2$

Options :

1879806773. 1

1879806774. 2

1879806775. 3

1879806776. 4

Question Number : 74 Question Id : 1879801694 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

धातु–कार्बन की दूरी का सही क्रम है

(1) $Fe(\eta^5\text{-}Cp)_2 > Co(\eta^5\text{-}Cp)_2 > Ni(\eta^5\text{-}Cp)_2$

(2) $Fe(\eta^5\text{-}Cp)_2 > Ni(\eta^5\text{-}Cp)_2 > Co(\eta^5\text{-}Cp)_2$

(3) $Ni(\eta^5\text{-}Cp)_2 > Fe(\eta^5\text{-}Cp)_2 > Co(\eta^5\text{-}Cp)_2$

(4) $Ni(\eta^5\text{-}Cp)_2 > Co(\eta^5\text{-}Cp)_2 > Fe(\eta^5\text{-}Cp)_2$

Options :

1879806773. 1

1879806774. 2

1879806775. 3

1879806776. 4

Question Number : 75 Question Id : 1879801695 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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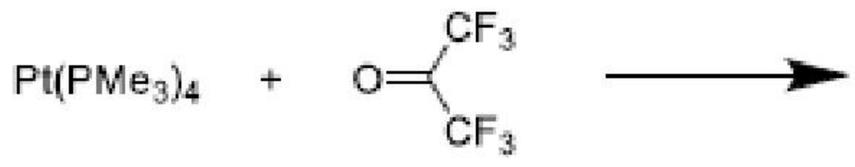
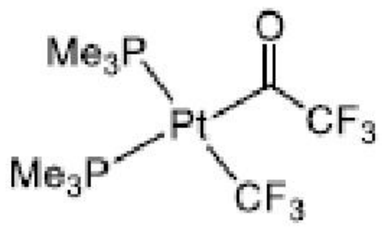
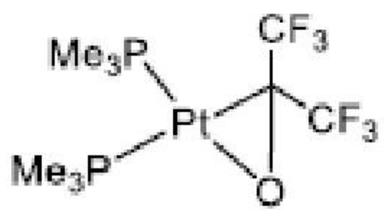
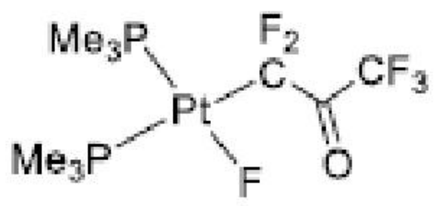
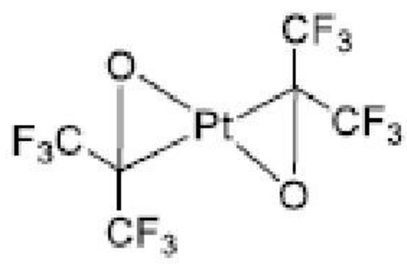
The major product of the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806777. 1

1879806778. 2

1879806779. 3

1879806780. 4

Question Number : 75 Question Id : 1879801695 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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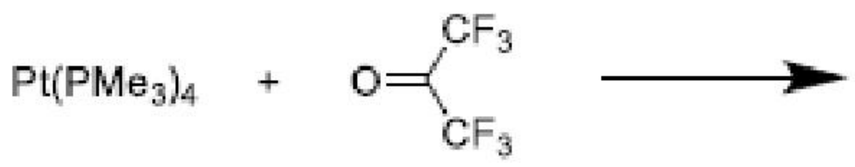
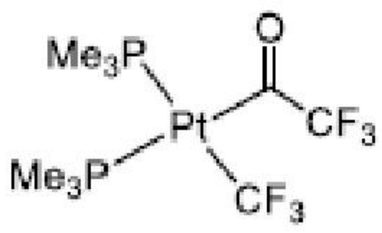
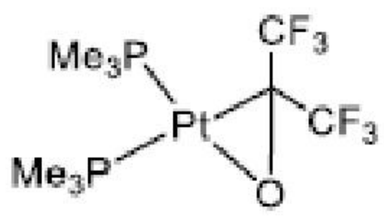
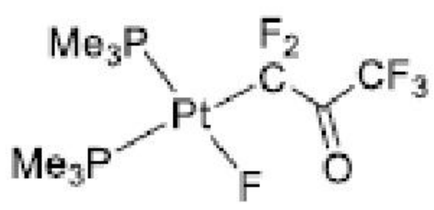
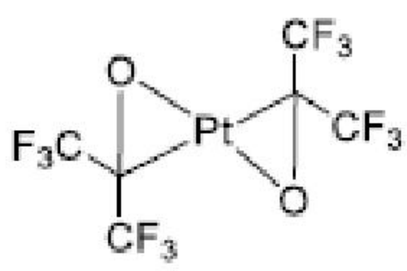
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806777. 1

1879806778. 2

1879806779. 3

1879806780. 4

Question Number : 76 Question Id : 1879801696 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct match of spin-only magnetic moment for the complexes *cis*-$[Fe(phen)_2(NCS\text{-}N)_2]$ (**A**) and $[Fe(phen)_3]Cl_2$ (**B**) at 300 K is (phen = 1,10-phenanthroline)

(1) 4.89 BM for both **A** and **B**

(2) 0 BM for both **A** and **B**

(3) 4.89 BM for **A** and 0 BM for **B**

(4) 0 BM for **A** and 4.89 BM for **B**

Options :

1879806781. 1

1879806782. 2

1879806783. 3

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1879806784. 4

Question Number : 76 Question Id : 1879801696 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

300 K पर संकुलों *cis*-$[Fe(phen)_2(NCS\text{-}N)_2]$ (**A**) तथा $[Fe(phen)_3]Cl_2$ (**B**) के केवल स्पिन चुम्बकीय आघूर्णों का सही मिलान है (phen = 1,10-फिनैन्थ्रोलीन)

(1) **A** तथा **B**, दोनों के लिए 4.89 BM

(2) **A** तथा **B**, दोनों के लिए 0 BM

(3) **A** के लिए 4.89 BM तथा **B** के लिए 0 BM

(4) **A** के लिए 0 BM तथा **B** के लिए 4.89 BM

Options :

1879806781. 1

1879806782. 2

1879806783. 3

1879806784. 4

Question Number : 77 Question Id : 1879801697 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Match Column I, II and III

Column I (metal)		Column II (enzyme)		Column III (end product)	
A	Ni	i	Carbonic anhydrase	X	uric acid
B	Zn	ii	Xanthine oxidase	Y	methane
C	Mo	iii	Coenzyme F_{430}	Z	carbonic acid

The correct match is

(1) A-iii-Y; B-i-Z; C-ii-X

(2) A-iii-Y; B-ii-X; C-i-Z

(3) A-ii-X; B-i-Y; C-iii-Z

(4) A-i-X; B-iii-Z; C-ii-Y

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Options :

1879806785. 1

1879806786. 2

1879806787. 3

1879806788. 4

Question Number : 77 Question Id : 1879801697 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कालम I, II तथा III का मिलान कीजिए

कालम I (धातु)		कालम II (एन्जाइम)		कालम III (अंत्य उत्पाद)	
A	Ni	i	कार्बोनिक ऐनहाइड्रेज	X	यूरिक अम्ल
B	Zn	ii	जैन्थाइन ऑक्सीडेज	Y	मेथेन
C	Mo	iii	सह–एन्जाइम F_{430}	Z	कार्बोनिक अम्ल

सही मिलान है

(1) A-iii-Y; B-i-Z; C-ii-X

(2) A-iii-Y; B-ii-X; C-i-Z

(3) A-ii-X; B-i-Y; C-iii-Z

(4) A-i-X; B-iii-Z; C-ii-Y

Options :

1879806785. 1

1879806786. 2

1879806787. 3

1879806788. 4

Question Number : 78 Question Id : 1879801698 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Match the items in column I with those of column II

Column I	Column II
a. Conductometric titration	i. Voltage
b. Amperometric titrations	ii. Resistance
c. pH metric tiration	iii. ΔI
d. Differential pulse polarography	iv. I_d

Correct match is

(1) a-ii; b-iv; c-i; d-iii

(2) a-iii; b-i; c-ii; d-iv

(3) a-iii; b-ii; c-iv; d-i

(4) a-i; b-iii; c-iv; d-ii

Options :

1879806789. 1

1879806790. 2

1879806791. 3

1879806792. 4

Question Number : 78 Question Id : 1879801698 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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कालम I की मदों का कालम II से मिलान कीजिए

कालम I	कालम II
a. चालकतामितीय अनुमापन	i. वोल्टेज़
b. धारामितीय अनुमापन	ii. प्रतिरोध
c. pH-मितीय अनुमापन	iii. ΔI
d. विभेदी स्पंदी ध्रुवण लेखिकी	iv. I_d

सही मिलान है

(1) a-ii; b-iv; c-i; d-iii

(2) a-iii; b-i; c-ii; d-iv

(3) a-iii; b-ii; c-iv; d-i

(4) a-i; b-iii; c-iv; d-ii

Options :

1879806789. 1

1879806790. 2

1879806791. 3

1879806792. 4

Question Number : 79 Question Id : 1879801699 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct statement about base hydrolysis of $[Co(py)_4Cl_2]^+$ (py = pyridine) is

(1) rate expression is, Rate = $k[Co(py)_4Cl_2]^+[OH^-]$

(2) reaction does not depend on hydroxide ion concentration

(3) reaction proceeds through $S_{N}1CB$ mechanism

(4) intermediate involved in this reaction is $[Co(py)_4Cl_2(OH)]$

Options :

1879806793. 1

1879806794. 2

1879806795. 3

1879806796. 4

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Question Number : 79 Question Id : 1879801699 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

$[Co(py)_4Cl_2]^+$ (py = पिरिडीन) के क्षार-जल अपघटन के लिए सही कथन है

(1) दर व्यंजक है, दर = $k[Co(py)_4Cl_2]^+[OH^-]$ ।

(2) हाइड्राक्साइड आयन की सान्द्रता पर अभिक्रिया निर्भर नहीं करती है।

(3) $S_{N^1}CB$ क्रियाविधि से अभिक्रिया होती है।

(4) $[Co(py)_4Cl_2(OH)]$, इस अभिक्रिया में सम्मलित मध्यवर्ती है।

Options :
1879806793. 1
1879806794. 2
1879806795. 3
1879806796. 4

Question Number : 80 Question Id : 1879801700 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Consider the following statements:

(A) The highest oxidation state of Group 8 elements is more readily shown in their oxides than in fluorides.

(B) Fe can exist in −2 formal oxidation state also.

(C) Mn, Tc and Re easily form M(II) compounds.

The correct statement(s) is/are

(1) A and B

(2) A and C

(3) B and C

(4) C only

Options :
1879806797. 1
1879806798. 2
1879806799. 3
1879806800. 4

Question Number : 80 Question Id : 1879801700 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 4 Wrong Marks : 1

निम्नलिखित कथनों पर विचार कीजिए:

(A) ग्रुप 8 के तत्वों द्वारा सर्वोच्च आक्सीकरण अवस्था फ्लुओराइडों की अपेक्षा, आक्साइडों में अधिक आसानी से दर्शायी जाती है

(B) Fe, –2 फार्मल आक्सीकरण अवस्था में भी विद्यमान हो सकता है

(C) Mn, Tc तथा Re आसानी से M(II) यौगिक बनाते हैं

सही कथन है / हैं

(1) A तथा B

(2) A तथा C

(3) B तथा C

(4) केवल C

Options :

1879806797. 1

1879806798. 2

1879806799. 3

1879806800. 4

Question Number : 81 Question Id : 1879801701 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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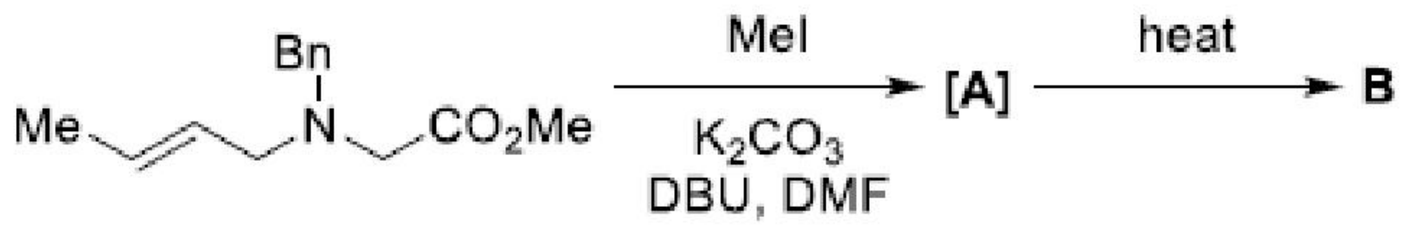
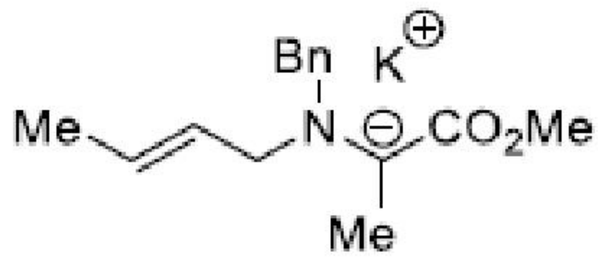
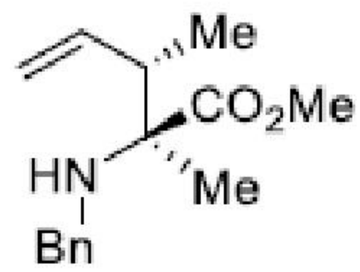
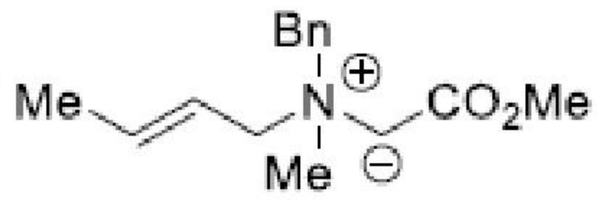
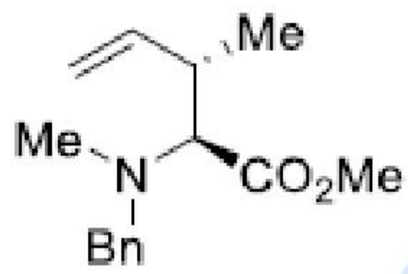
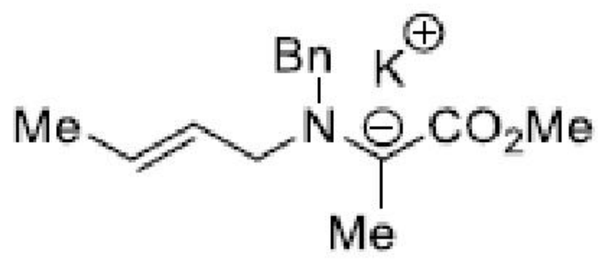
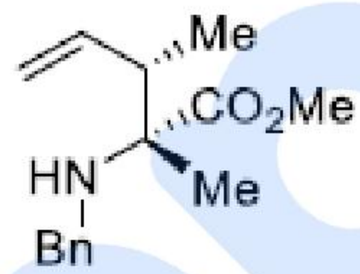
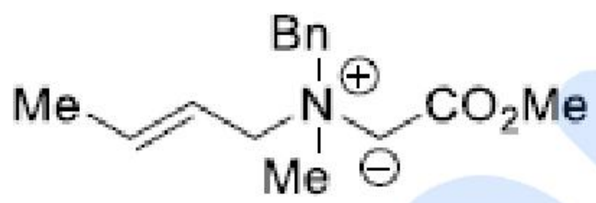
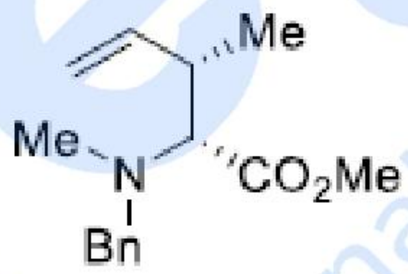
The intermediate **A** and the major product **B** formed in the following reaction are



(1) **[A] =**  **B =** 

(2) **[A] =**  **B =** 

(3) **[A] =**  **B =** 

(4) **[A] =**  **B =** 

Options :

1879806801. 1

1879806802. 2

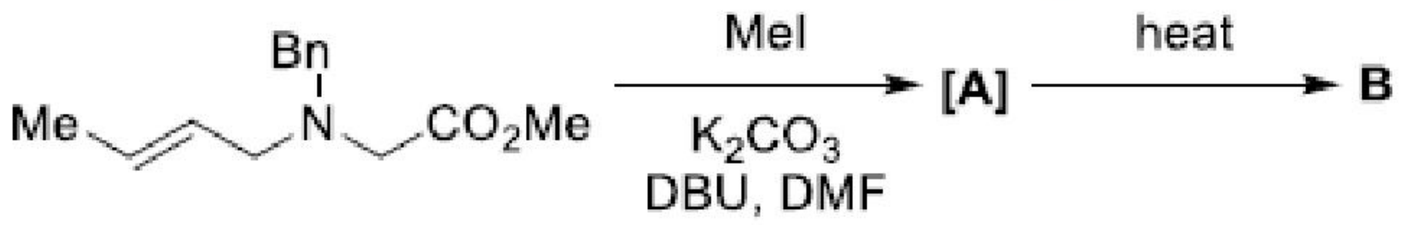
1879806803. 3

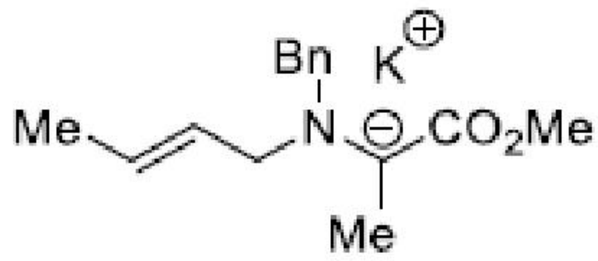
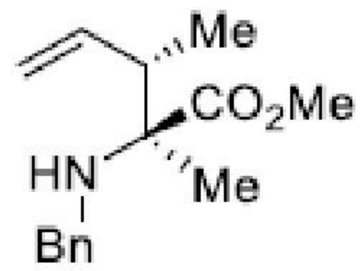
1879806804. 4

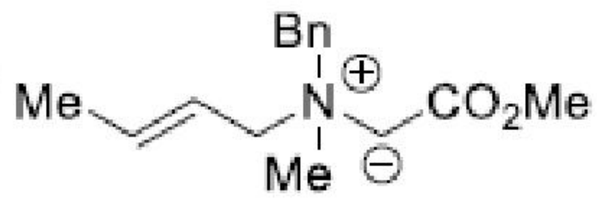
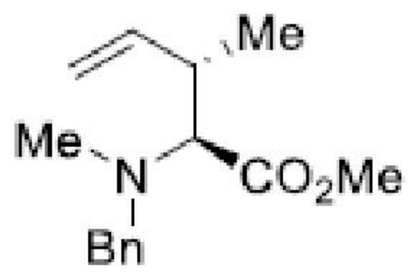
Question Number : 81 Question Id : 1879801701 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

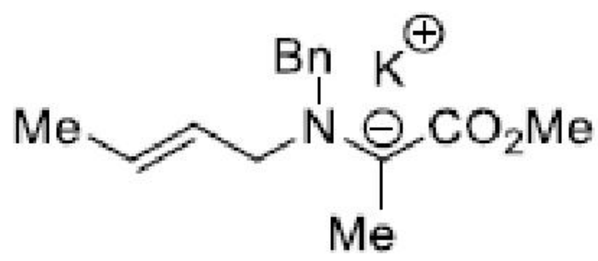
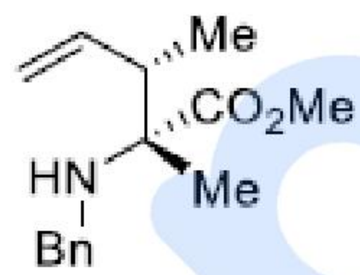
Correct Marks : 4 Wrong Marks : 1

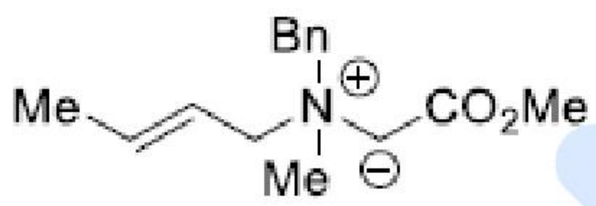
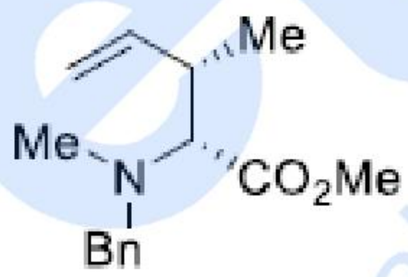
निम्नलिखित अभिक्रिया मे मध्यवर्ती **A** तथा विरचित मुख्य उत्पाद **B** हैं



(1) **[A] =**  **B =** 

(2) **[A] =**  **B =** 

(3) **[A] =**  **B =** 

(4) **[A] =**  **B =** 

Options :

1879806801. 1

1879806802. 2

1879806803. 3

1879806804. 4

Question Number : 82 Question Id : 1879801702 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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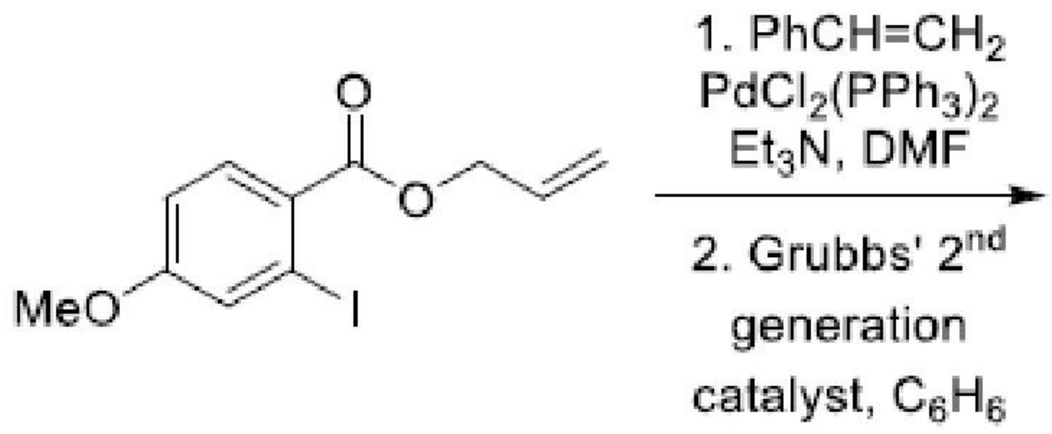
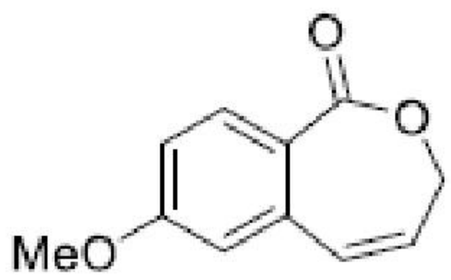
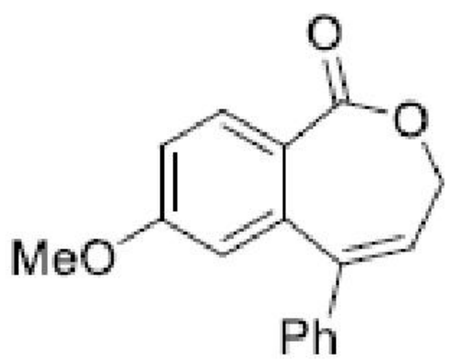
The major product formed in the following reaction is



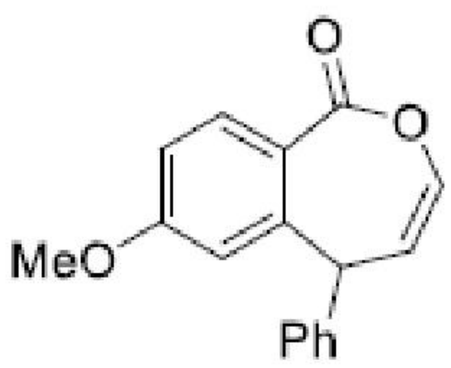
(1)



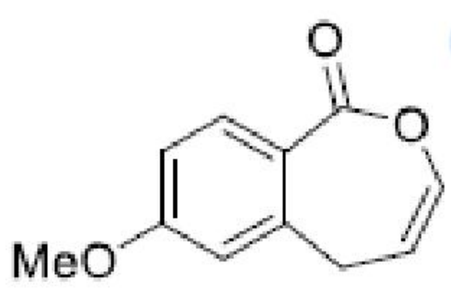
(2)



(3)



(4)



Options :

1879806805. 1

1879806806. 2

1879806807. 3

1879806808. 4

Question Number : 82 Question Id : 1879801702 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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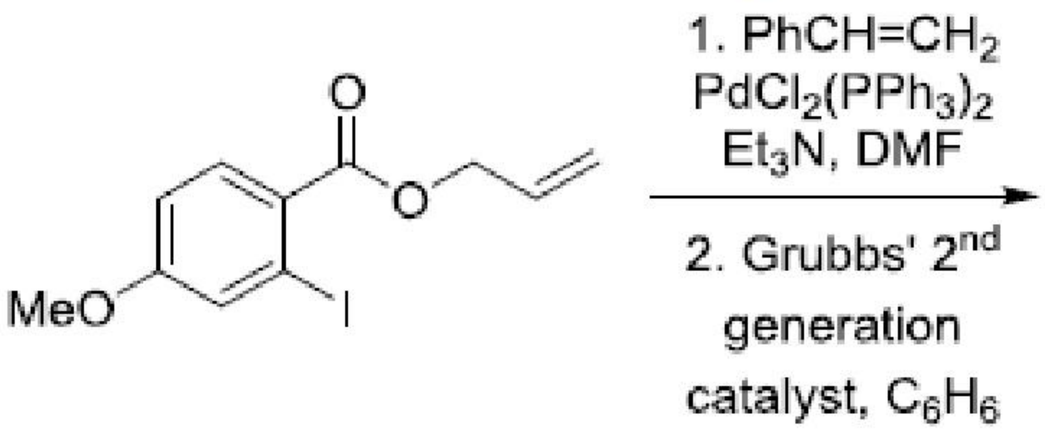
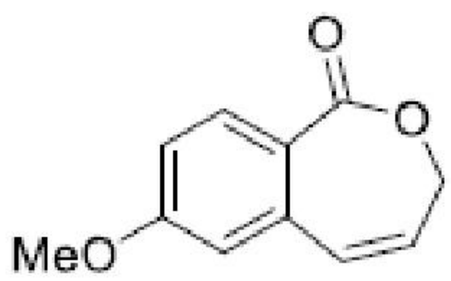
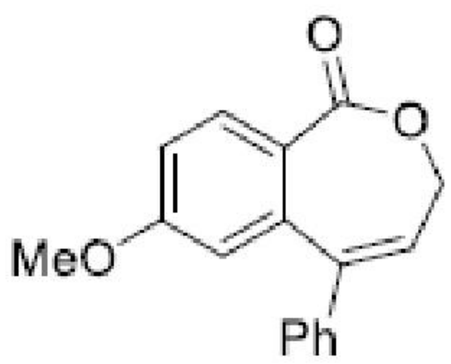
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



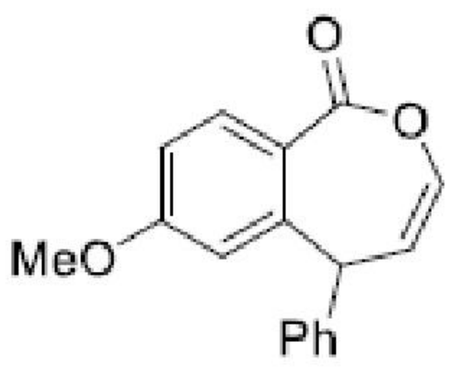
(1)



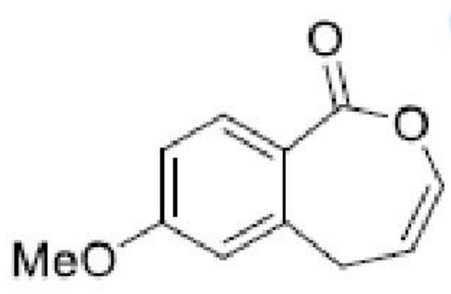
(2)



(3)



(4)



Options :

1879806805. 1

1879806806. 2

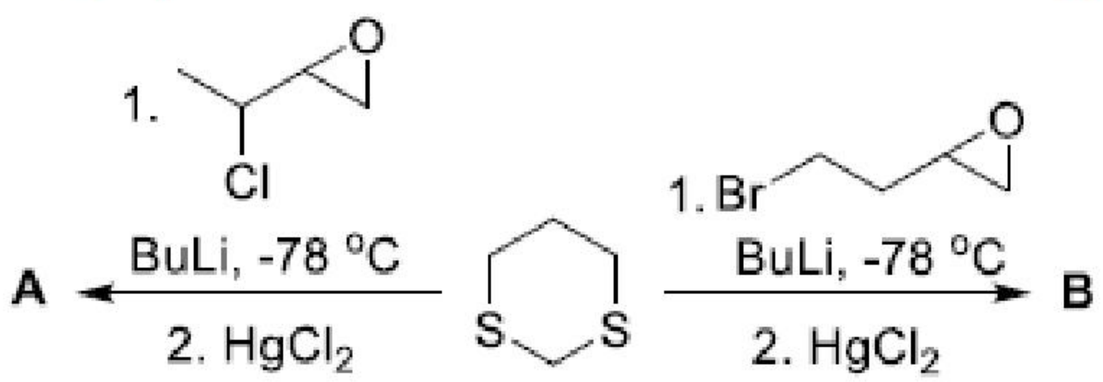
1879806807. 3

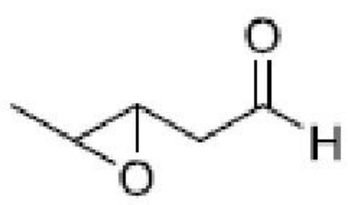
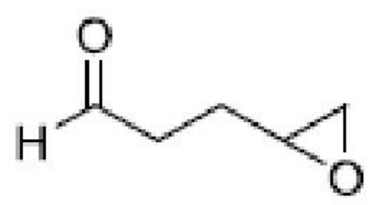
1879806808. 4

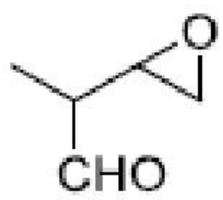
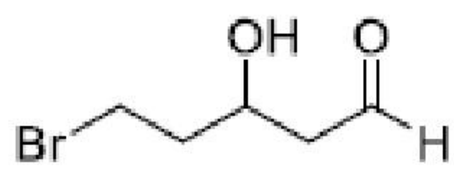
Question Number : 83 Question Id : 1879801703 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

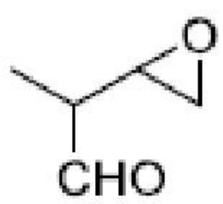
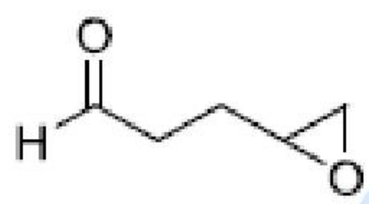
Correct Marks : 4 Wrong Marks : 1

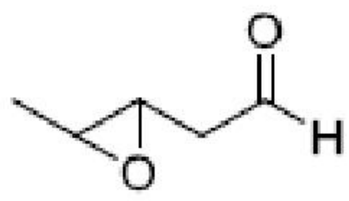
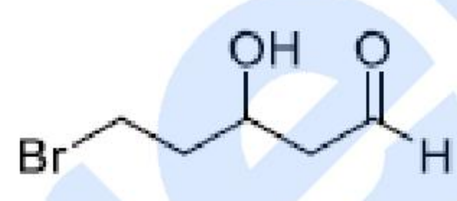
The major products **A** and **B** formed in the following reactions are



(1) **A =**  **B =** 

(2) **A =**  **B =** 

(3) **A =**  **B =** 

(4) **A =**  **B =** 

Options :

1879806809. 1

1879806810. 2

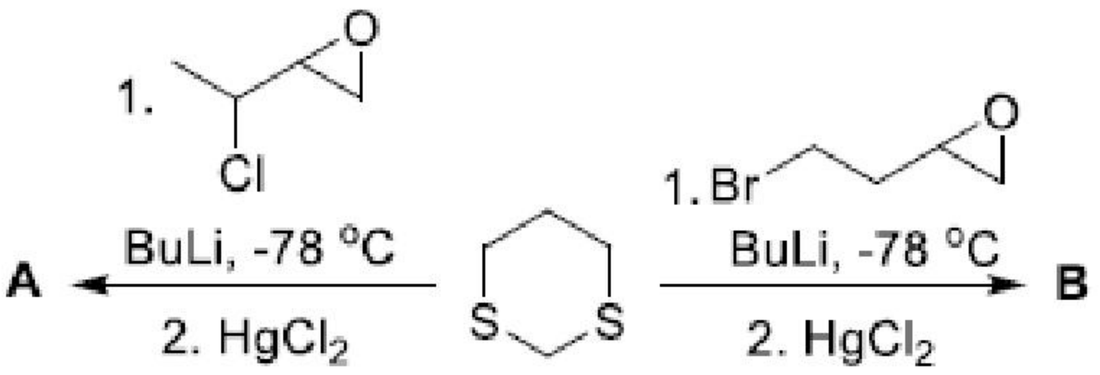
1879806811. 3

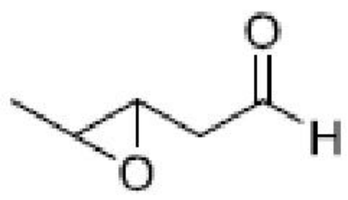
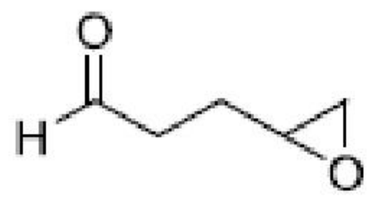
1879806812. 4

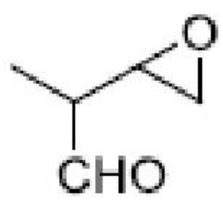
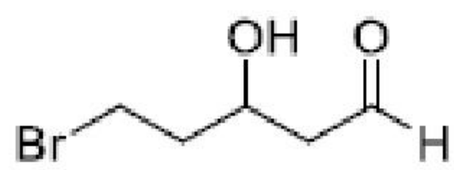
Question Number : 83 Question Id : 1879801703 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

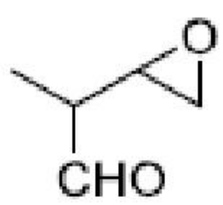
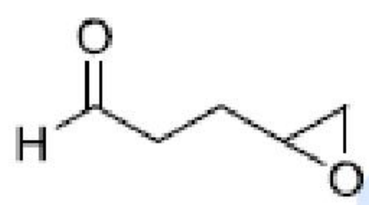
Correct Marks : 4 Wrong Marks : 1

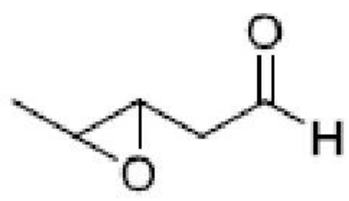
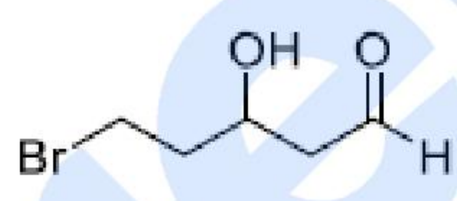
निम्नलिखित अभिक्रियाओं में विरचित मुख्य उत्पाद **A** तथा **B** हैं।



(1) **A =**  **B =** 

(2) **A =**  **B =** 

(3) **A =**  **B =** 

(4) **A =**  **B =** 

Options :

1879806809. 1

1879806810. 2

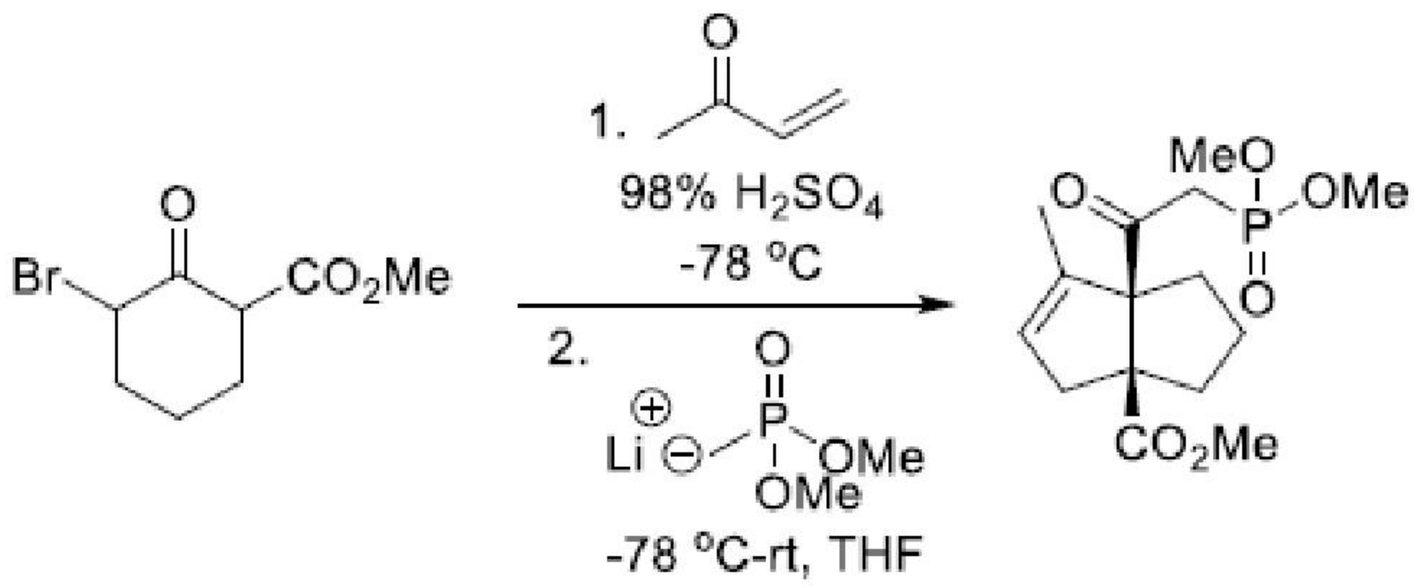
1879806811. 3

1879806812. 4

Question Number : 84 Question Id : 1879801704 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct order of the reactions involved in the following transformation is



(1) Michael addition, Quasi-Favorskii rearrangement, Aldol condensation

(2) Quasi-Favorskii rearrangement, Michael addition, Aldol condensation

(3) Michael addition, Aldol condensation, Quasi-Favorskii rearrangement

(4) Aldol condensation, Quasi-Favorskii rearrangement, Michael addition

Options :

1879806813. 1

1879806814. 2

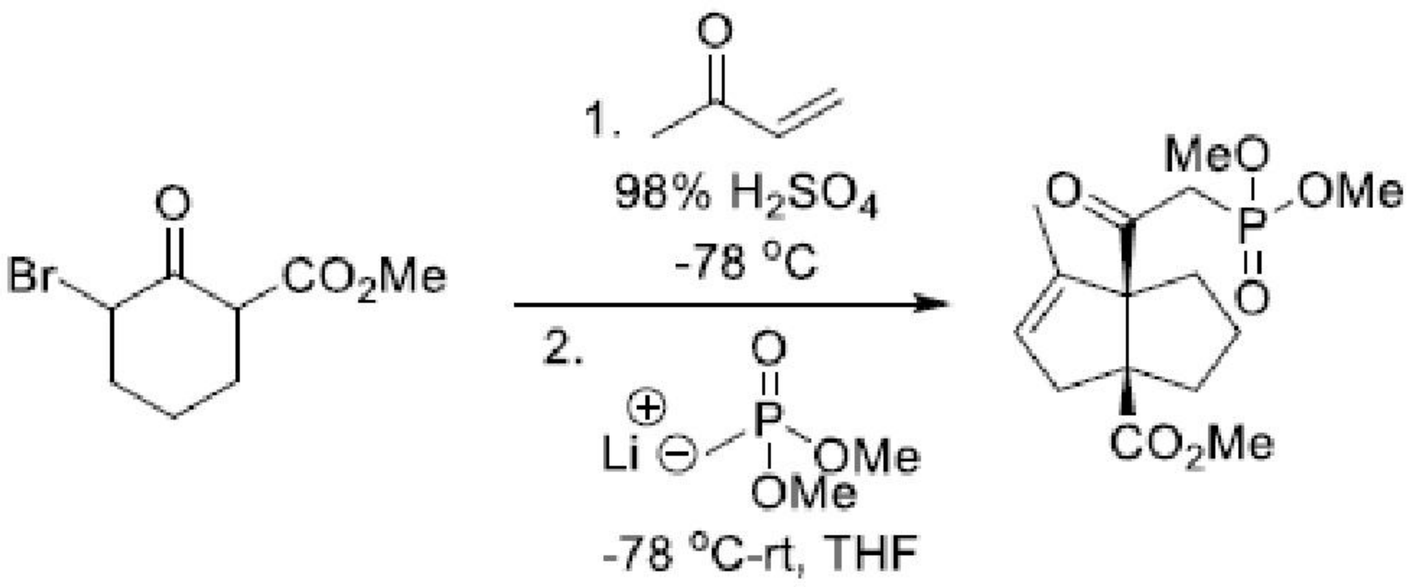
1879806815. 3

1879806816. 4

Question Number : 84 Question Id : 1879801704 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित रूपांतरण में सम्मिलित अभिक्रियाओं का सही क्रम है



(1) माइकेल संकलन, क्वासी–फैवोर्स्की पुनर्विन्यास, ऐल्डोल संघनन

(2) क्वासी–फैवोर्स्की पुनर्विन्यास, माइकेल संकलन, ऐल्डोल संघनन

(3) माइकेल संकलन, ऐल्डोल संघनन, क्वासी–फैवोर्स्की पुनर्विन्यास

(4) ऐल्डोल संघनन, क्वासी–फैवोर्स्की पुनर्विन्यास, माइकेल संकलन

Options :

1879806813. 1

1879806814. 2

1879806815. 3

1879806816. 4

Question Number : 85 Question Id : 1879801705 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

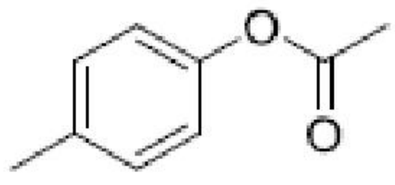
Correct Marks : 4 Wrong Marks : 1

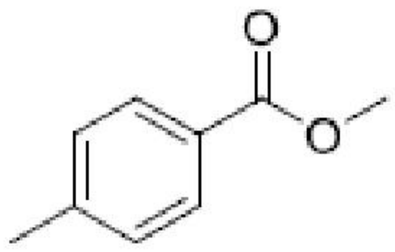
The structure of the compound, which displays the following spectral data is

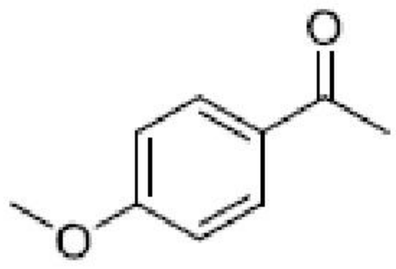
IR = 1690, 1100 cm^{-1}

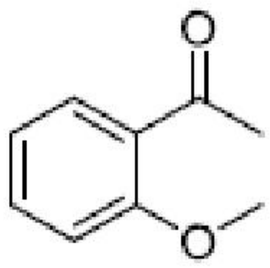
^{1}H NMR: δ 2.8 (s, 3H), 3.8 (s, 3H), 6.9 (d, J = 8 Hz, 2H), 7.8 (d, J = 8 Hz, 2H)

^{13}C NMR: δ 197, 165, 130, 129, 114, 56, 26

(1) 

(2) 

(3) 

(4) 

Options :

1879806817. 1

1879806818. 2

1879806819. 3

1879806820. 4

Question Number : 85 Question Id : 1879801705 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

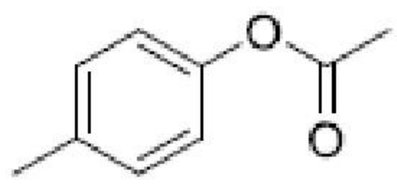
Correct Marks : 4 Wrong Marks : 1

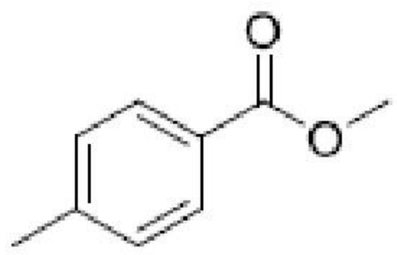
निम्नलिखित स्पेक्ट्रल आँकड़े जो यौगिक प्रदर्शित करता है उसकी संरचना है

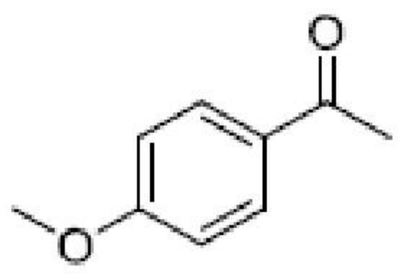
IR = 1690, 1100 cm^{-1}

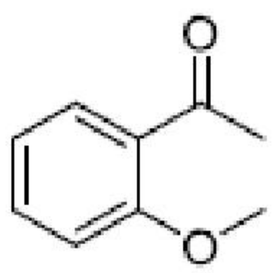
^{1}H NMR: δ 2.8 (s, 3H), 3.8 (s, 3H), 6.9 (d, J = 8 Hz, 2H), 7.8 (d, J = 8 Hz, 2H)

^{13}C NMR: δ 197, 165, 130, 129, 114, 56, 26

(1) 

(2) 

(3) 

(4) 

Options :

1879806817. 1

1879806818. 2

1879806819. 3

1879806820. 4

Question Number : 86 Question Id : 1879801706 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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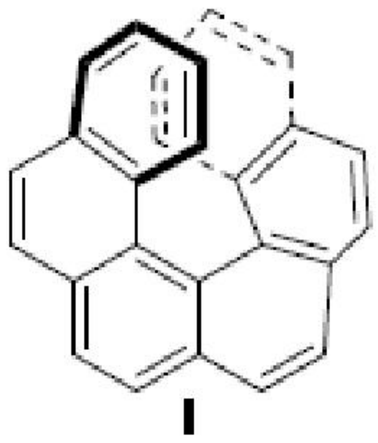
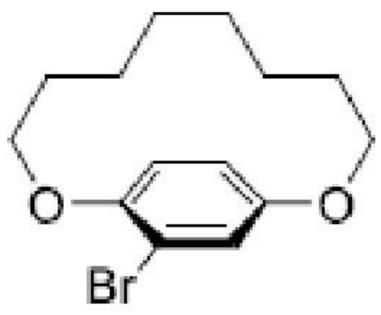
The correct absolute configuration of the following compounds is



I



II

(1) **I**: M; **II**: R

(2) **I**: M; **II**: S

(3) **I**: P; **II**: R

(4) **I**: P; **II**: S

Options :

1879806821. 1

1879806822. 2

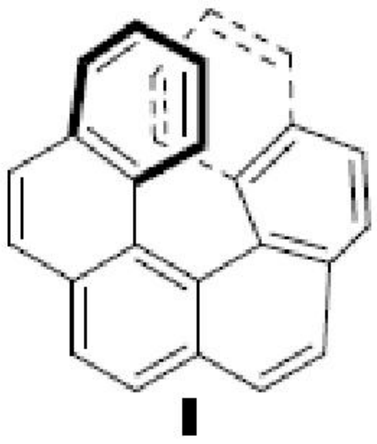
1879806823. 3

1879806824. 4

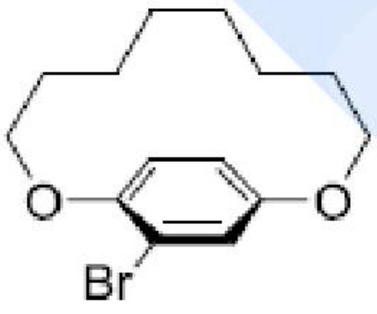
Question Number : 86 Question Id : 1879801706 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित यौगिकों का सही निरपेक्ष विन्यास है



I



II

(1) **I**: M; **II**: R

(2) **I**: M; **II**: S

(3) **I**: P; **II**: R

(4) **I**: P; **II**: S

Options :

1879806821. 1

1879806822. 2

1879806823. 3

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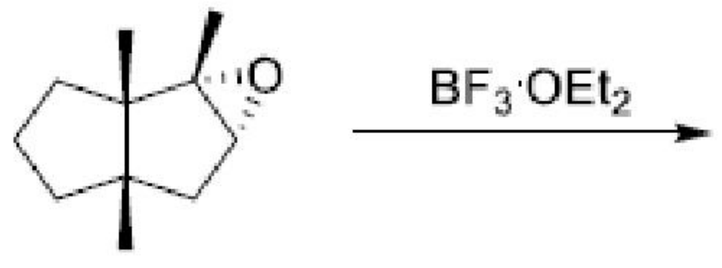
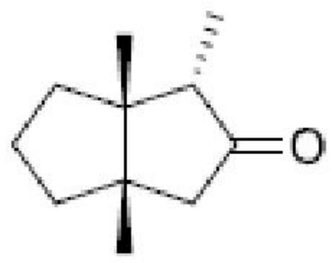
1879806824. 4

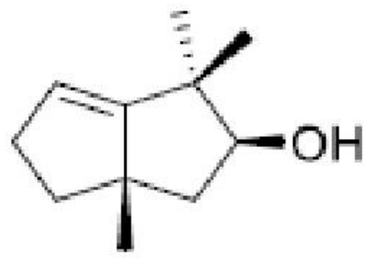
Question Number : 87 Question Id : 1879801707 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

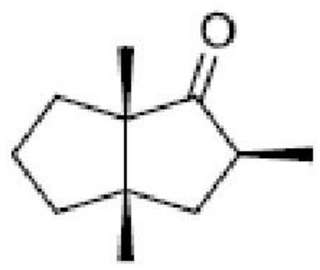
Correct Marks : 4 Wrong Marks : 1

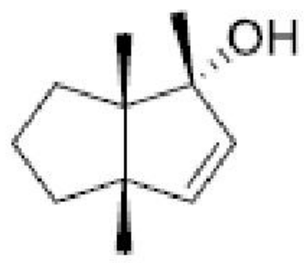
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806825. 1

1879806826. 2

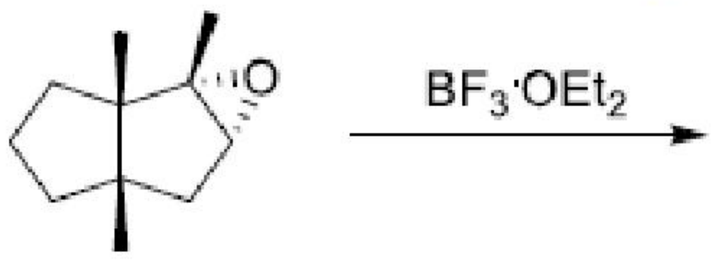
1879806827. 3

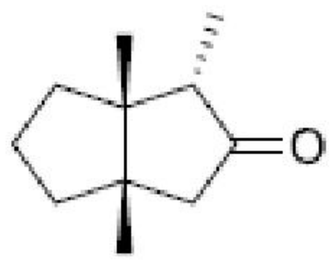
1879806828. 4

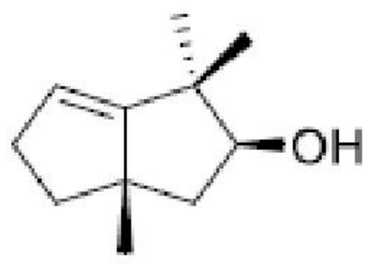
Question Number : 87 Question Id : 1879801707 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

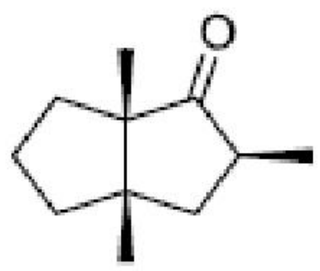
Correct Marks : 4 Wrong Marks : 1

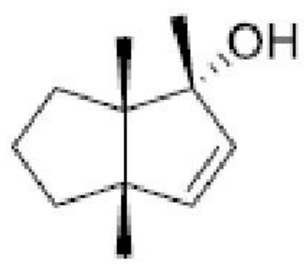
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है।



(1) 

(2) 

(3) 

(4) 

Options :

1879806825. 1

1879806826. 2

1879806827. 3

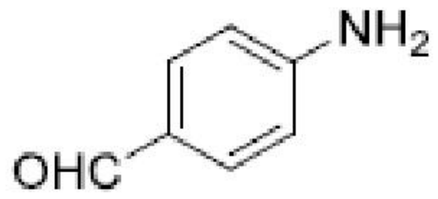
1879806828. 4

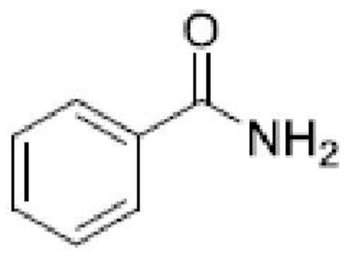
Question Number : 88 Question Id : 1879801708 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

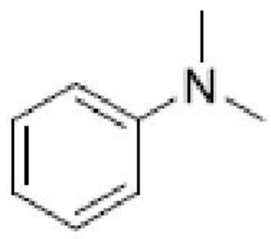
Correct Marks : 4 Wrong Marks : 1

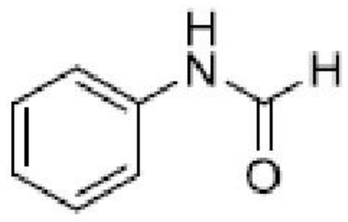
Prepp
Your Personal Exams Guide

The compound that shows peaks in the EI mass spectrum at m/z 121, 105, 77, 44 is

(1) 

(2) 

(3) 

(4) 

Options :

1879806829. 1

1879806830. 2

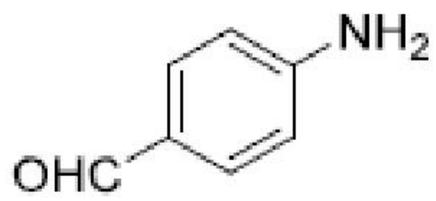
1879806831. 3

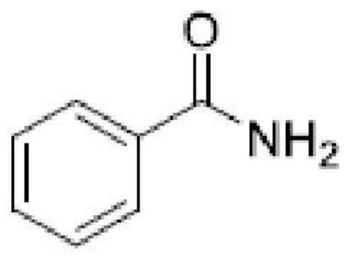
1879806832. 4

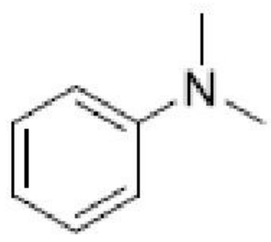
Question Number : 88 Question Id : 1879801708 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

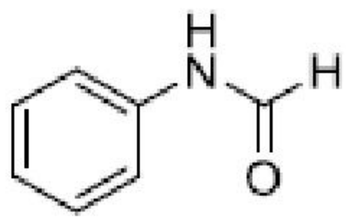
Correct Marks : 4 Wrong Marks : 1

EI द्रव्यमान स्पेक्ट्रम में जो यौगिक m/z 121, 105, 77, 44 पर शिखर दर्शाता है, वह है

(1) 

(2) 

(3) 

(4) 

Options :

1879806829. 1

1879806830. 2

1879806831. 3

1879806832. 4

Question Number : 89 Question Id : 1879801709 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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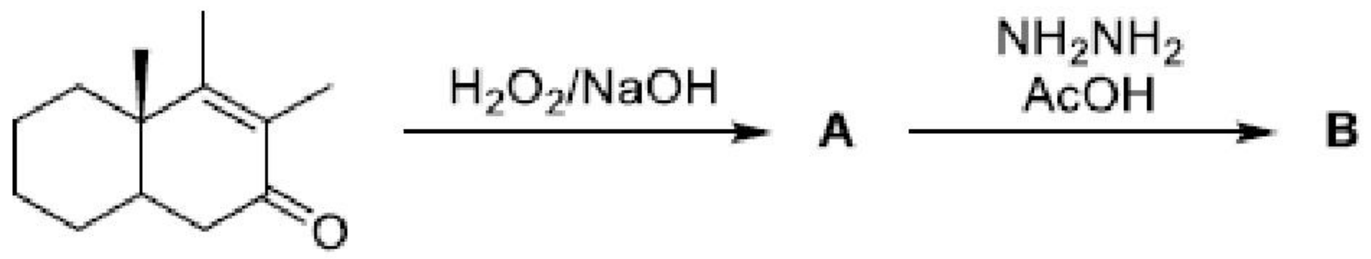
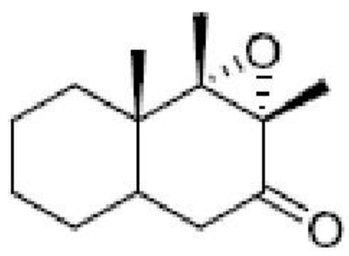
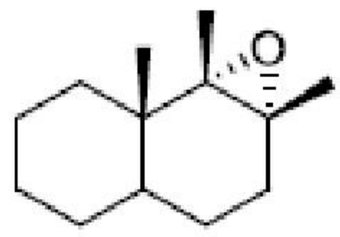
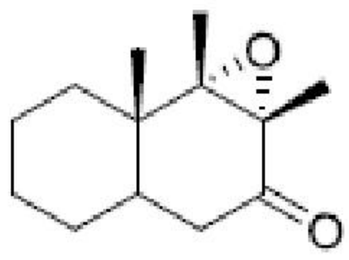
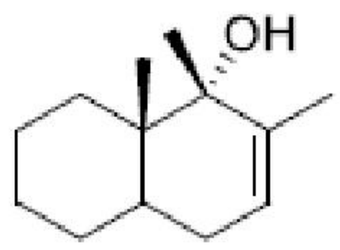
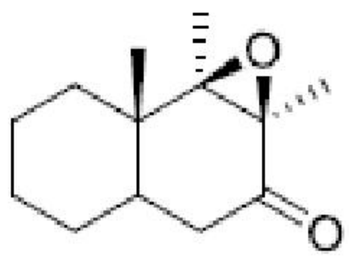
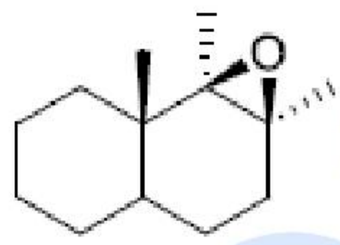
Your Personal Exams Guide

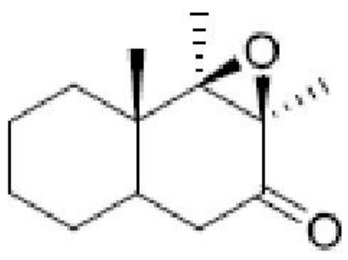
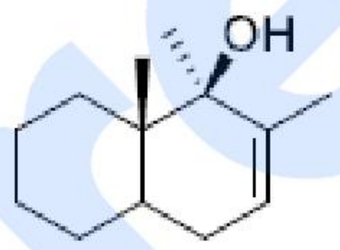
The major products **A** and **B** in the following reaction sequence are



(1) A =  B = 

(2) A =  B = 

(3) A =  B = 

(4) A =  B = 

Options :

1879806833. 1

1879806834. 2

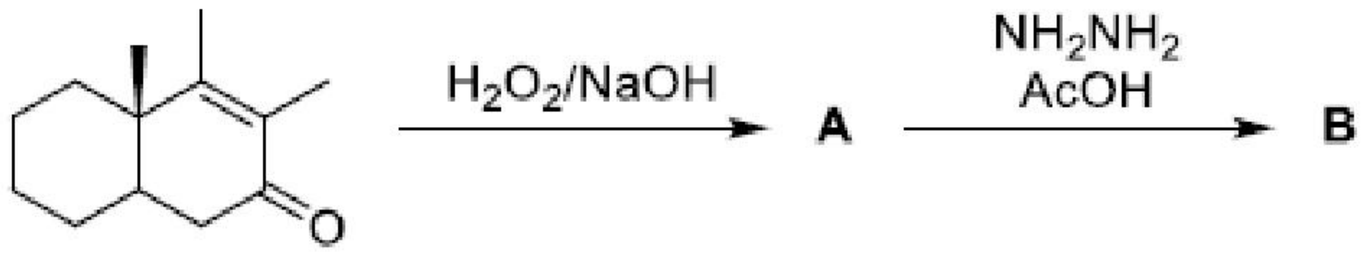
1879806835. 3

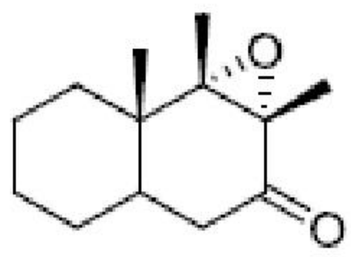
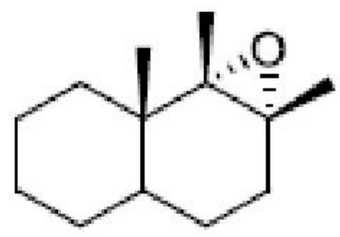
1879806836. 4

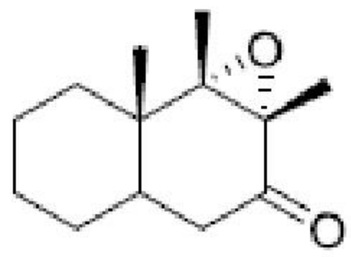
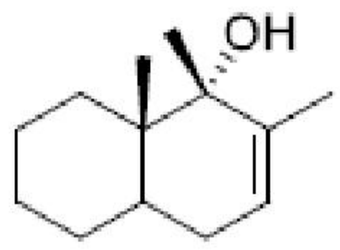
Question Number : 89 Question Id : 1879801709 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

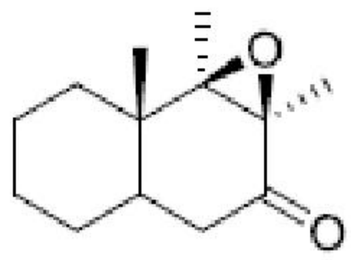
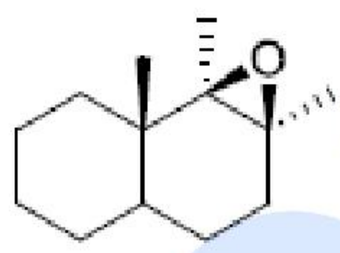
Correct Marks : 4 Wrong Marks : 1

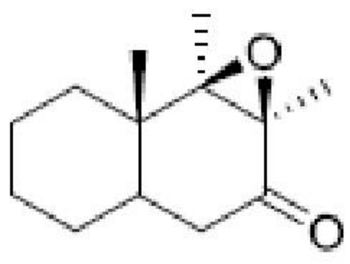
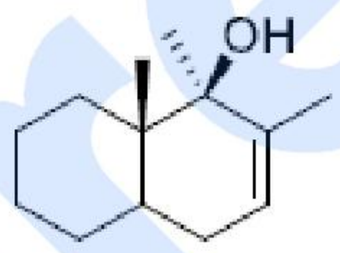
निम्नलिखित अभिक्रिया क्रम में मुख्य उत्पाद **A** तथा **B** हैं



(1) A =  B = 

(2) A =  B = 

(3) A =  B = 

(4) A =  B = 

Options :

1879806833. 1

1879806834. 2

1879806835. 3

1879806836. 4

Question Number : 90 Question Id : 1879801710 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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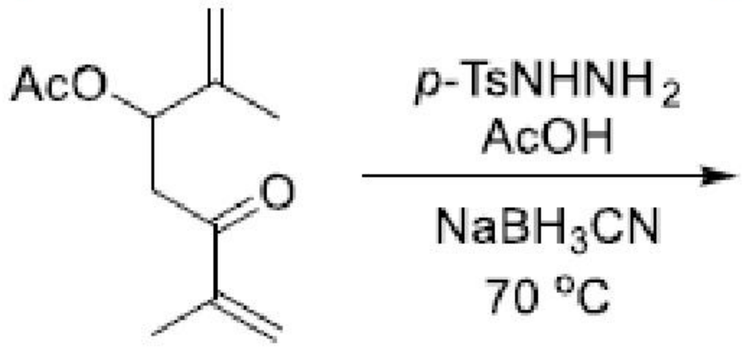
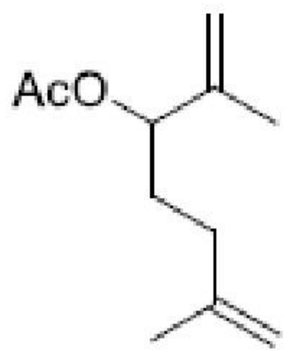
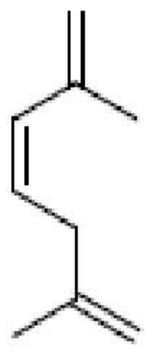
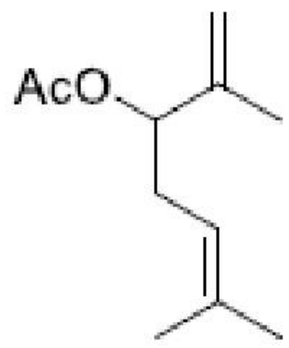
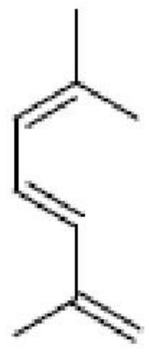
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806837. 1

1879806838. 2

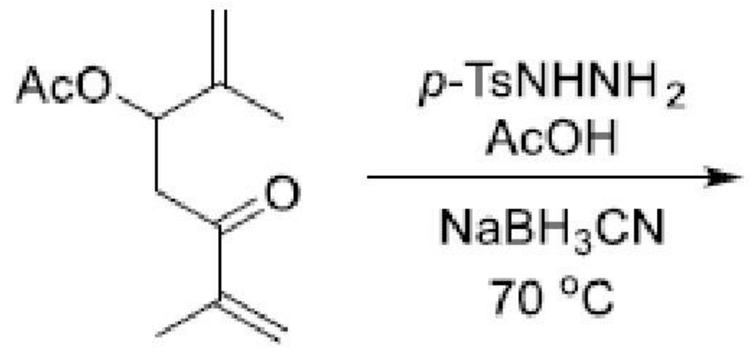
1879806839. 3

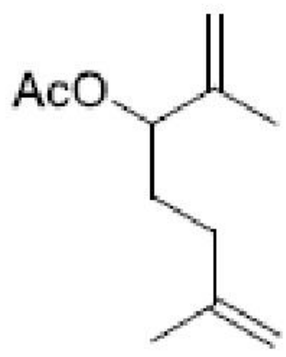
1879806840. 4

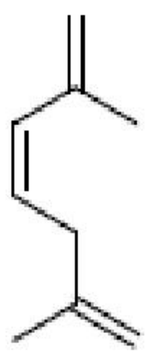
Question Number : 90 Question Id : 1879801710 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

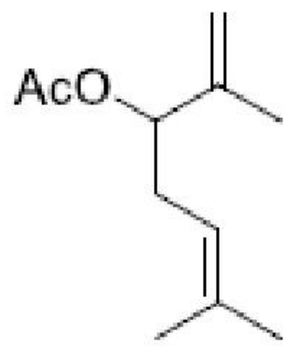
Correct Marks : 4 Wrong Marks : 1

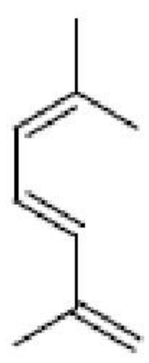
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806837. 1

1879806838. 2

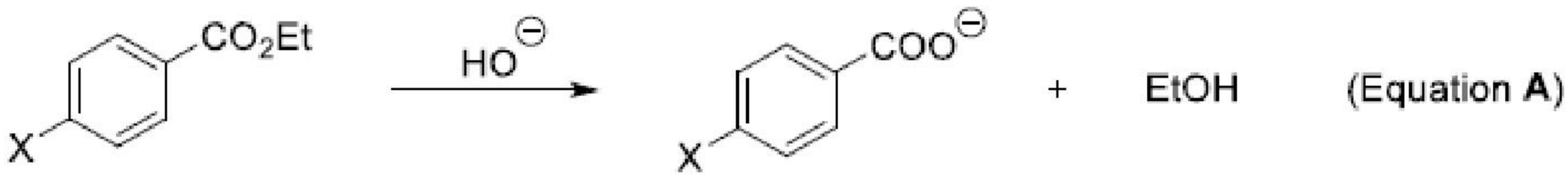
1879806839. 3

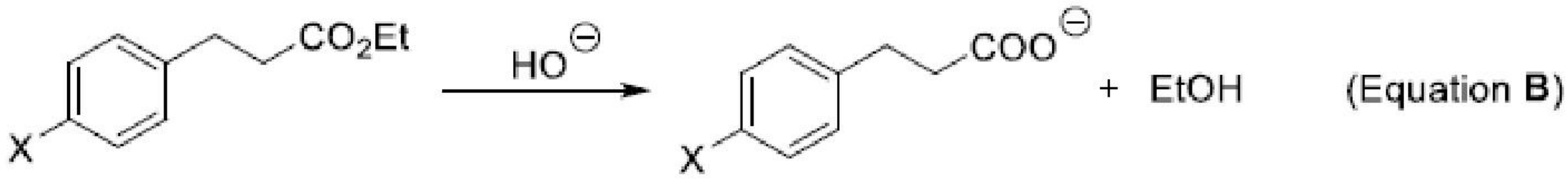
1879806840. 4

Question Number : 91 Question Id : 1879801711 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

TRUE statement regarding Hammett reaction constant (ρ) for the following transformations given in equations **A** and **B** is





(1) ρ for **A** and **B** is same and positive

(2) ρ for **A** and **B** is same and negative

(3) ρ for **A** is larger positive value than for **B**

(4) ρ for **A** is negative and for **B** is positive

Options :

1879806841. 1

1879806842. 2

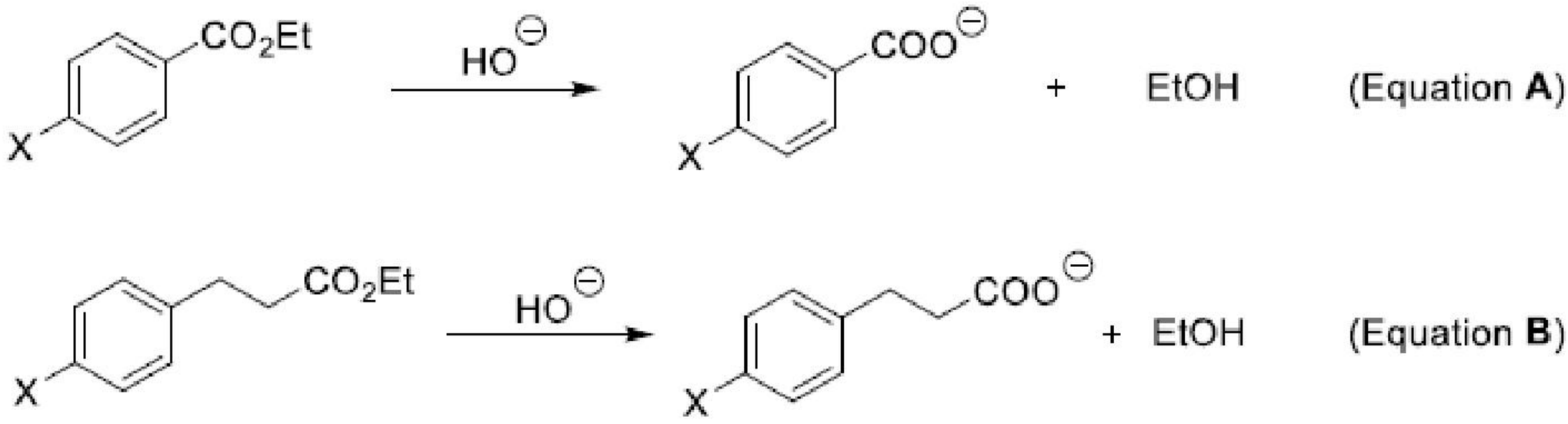
1879806843. 3

1879806844. 4

Question Number : 91 Question Id : 1879801711 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समीकरणों **A** तथा **B** में दिए निम्नलिखित रूपांतरणों के लिए हैमेट अभिक्रिया स्थिरांक (ρ) के संदर्भ में सही कथन है



(1) **A** तथा **B** के लिए ρ समान तथा घनात्मक है।

(2) **A** तथा **B** के लिए ρ समान तथा ऋणात्मक है।

(3) **B** की अपेक्षा **A** के लिए ρ का मान बृहत घनात्मक है।

(4) **A** के लिए ρ का मान ऋणात्मक और **B** के लिए घनात्मक है।

Options :

1879806841. 1

1879806842. 2

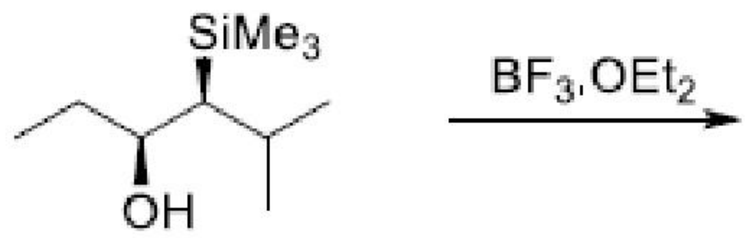
1879806843. 3

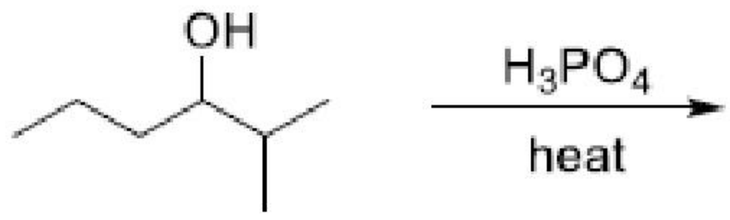
1879806844. 4

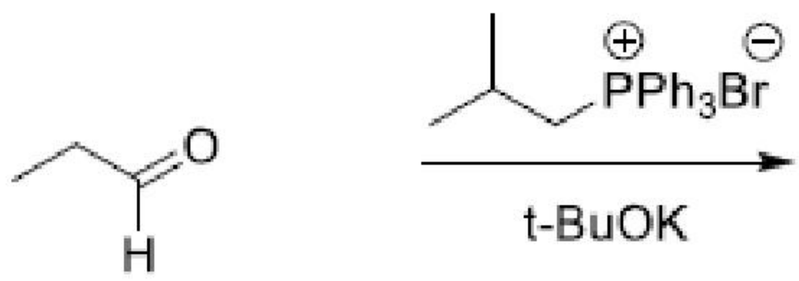
Question Number : 92 Question Id : 1879801712 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

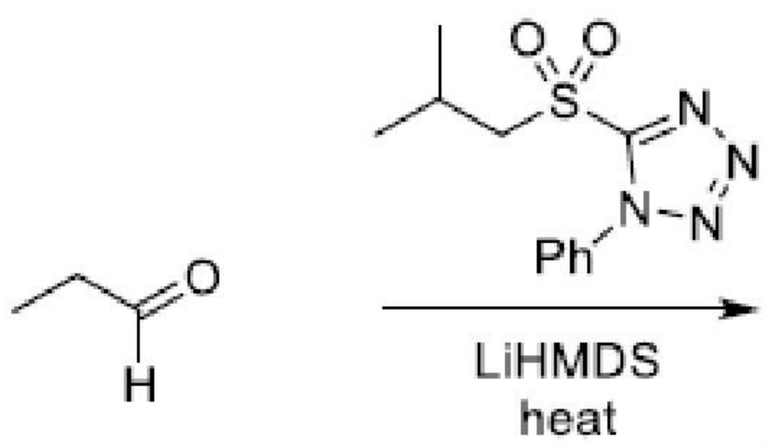
Correct Marks : 4 Wrong Marks : 1

The reaction that gives (*E*)-2-methylhex-3-ene as the major product is

(1) 

(2) 

(3) 

(4) 

Options :

1879806845. 1

1879806846. 2

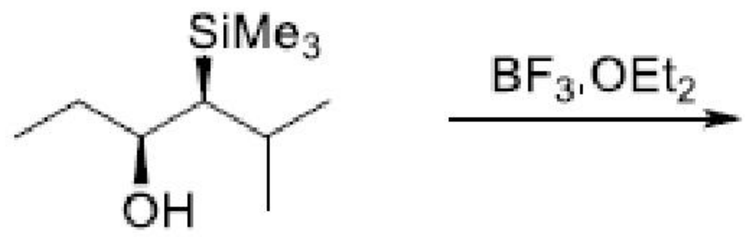
1879806847. 3

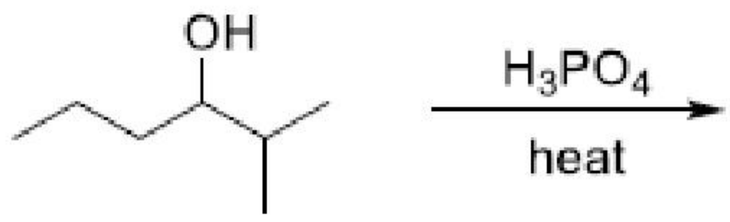
1879806848. 4

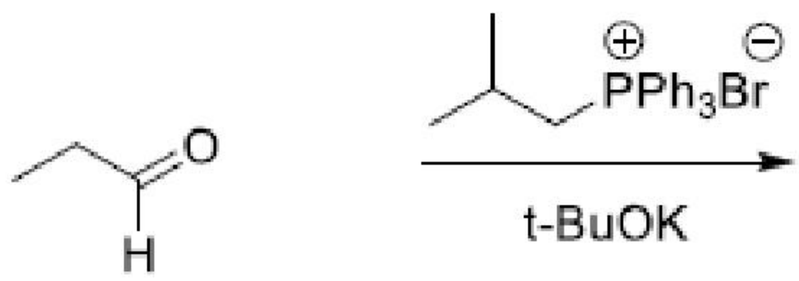
Question Number : 92 Question Id : 1879801712 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

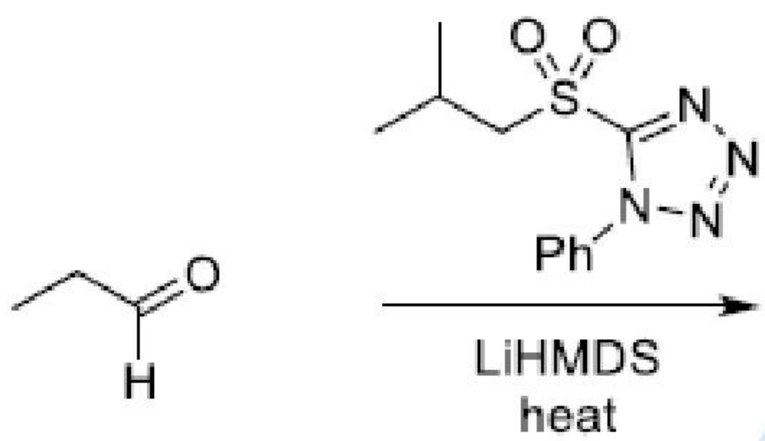
Correct Marks : 4 Wrong Marks : 1

अभिक्रिया जो मुख्य उत्पाद (*E*)-2-मेथिलहेक्स-3-ईन देती है, वह है

(1) 

(2) 

(3) 

(4) 

Options :

1879806845. 1

1879806846. 2

1879806847. 3

1879806848. 4

Question Number : 93 Question Id : 1879801713 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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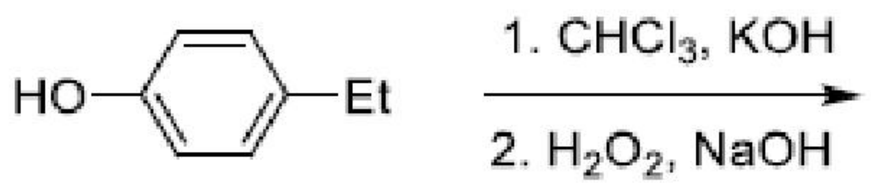
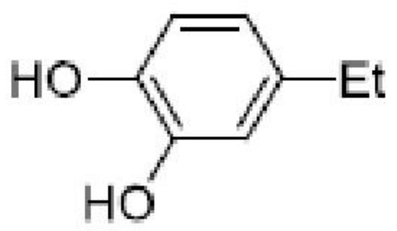
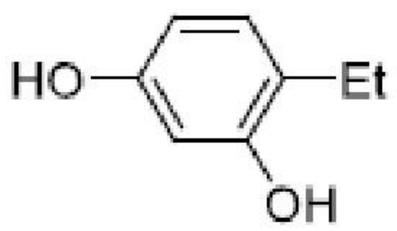
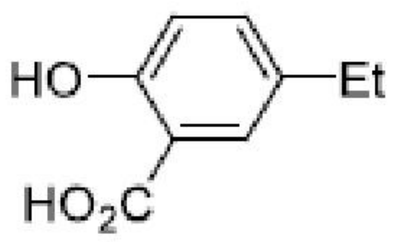
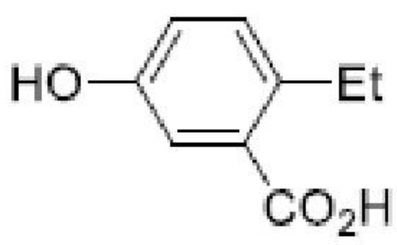
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806849. 1

1879806850. 2

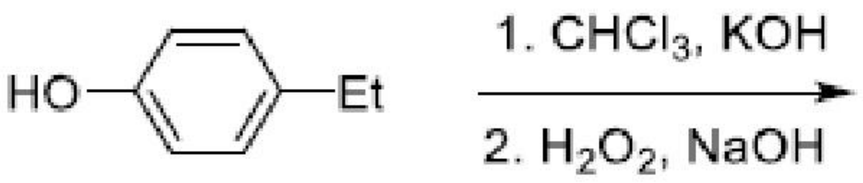
1879806851. 3

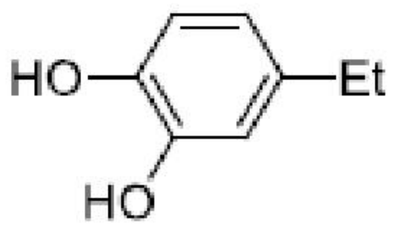
1879806852. 4

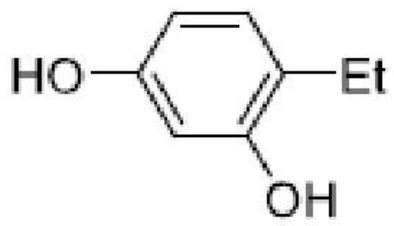
Question Number : 93 Question Id : 1879801713 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

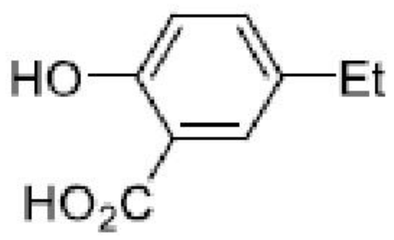
Correct Marks : 4 Wrong Marks : 1

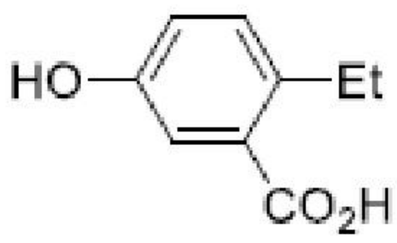
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806849. 1

1879806850. 2

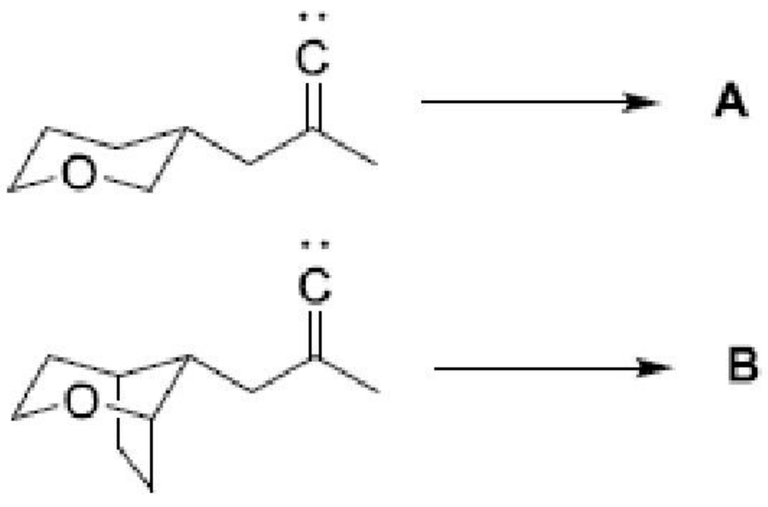
1879806851. 3

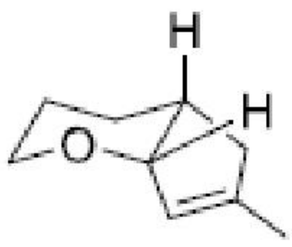
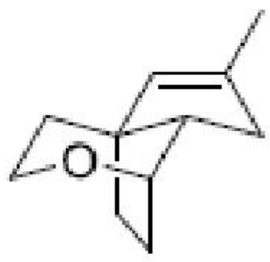
1879806852. 4

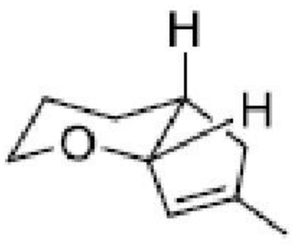
Question Number : 94 Question Id : 1879801714 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

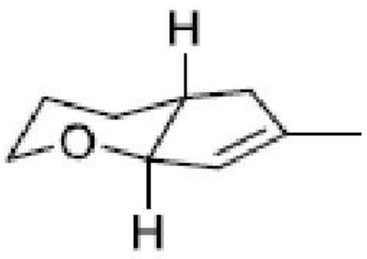
Correct Marks : 4 Wrong Marks : 1

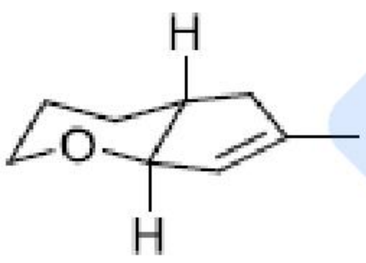
Products A and B formed in the following transformation of alkylidenecarbenes are



(1) A =  B = 

(2) A =  B =

(3) A =  B =

(4) A =  B =

Options :

1879806853. 1

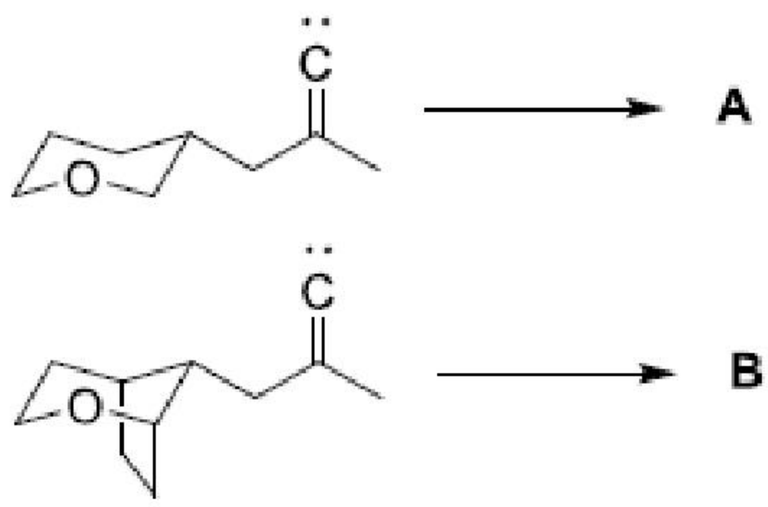
1879806854. 2

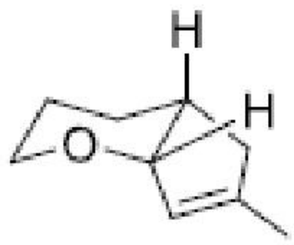
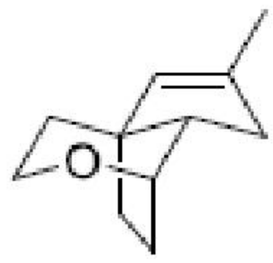
1879806855. 3

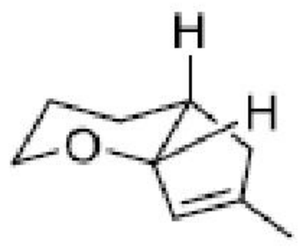
1879806856. 4

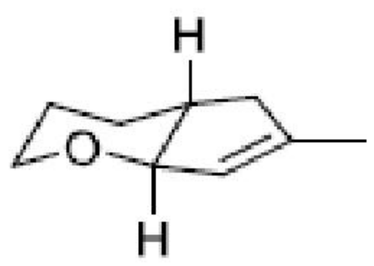
Question Number : 94 Question Id : 1879801714 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

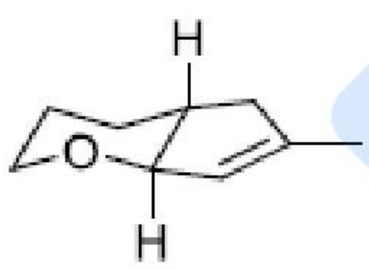
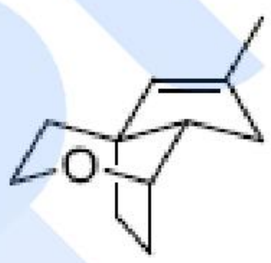
ऐल्किलिडीनकार्बीनों के निम्नलिखित रूपांतरणों मे विरचित **A** तथा **B** हैं



(1) **A =**  **B =** 

(2) **A =**  **B =**

(3) **A =**  **B =**

(4) **A =**  **B =** 

Options :

1879806853. 1

1879806854. 2

1879806855. 3

1879806856. 4

Question Number : 95 Question Id : 1879801715 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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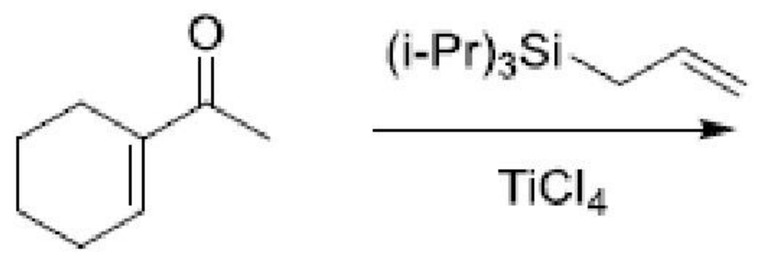
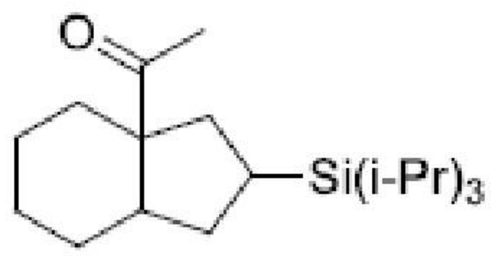
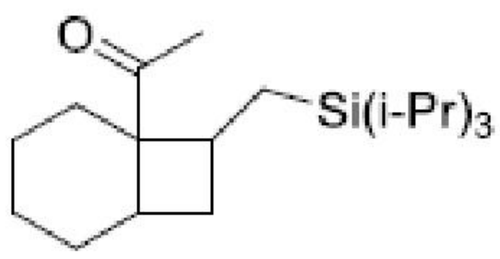
The major product formed in the following reaction is



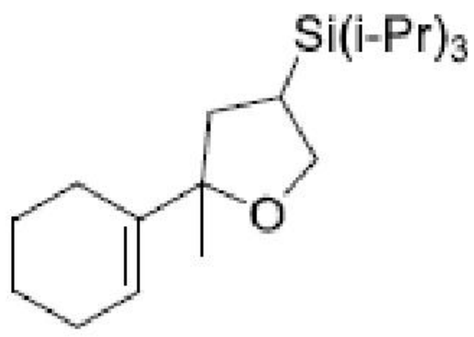
(1)



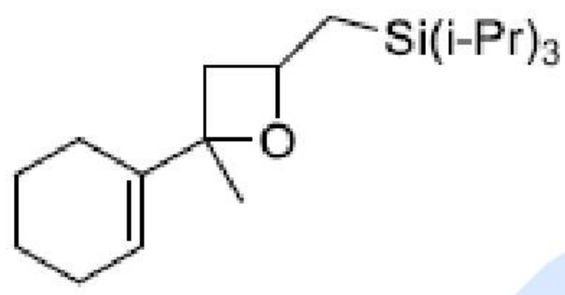
(2)



(3)



(4)



Options :

1879806857. 1

1879806858. 2

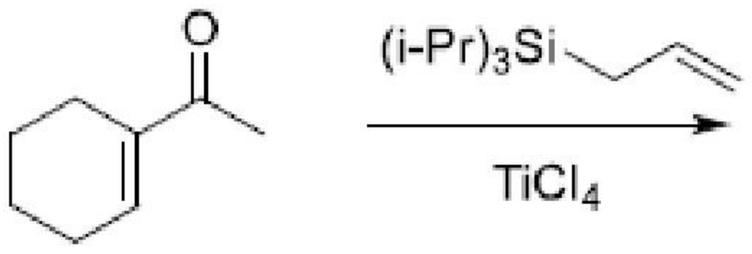
1879806859. 3

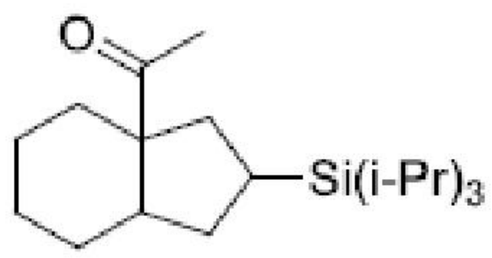
1879806860. 4

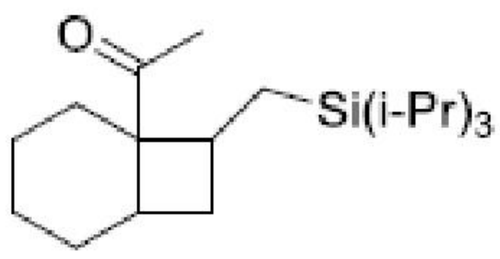
Question Number : 95 Question Id : 1879801715 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

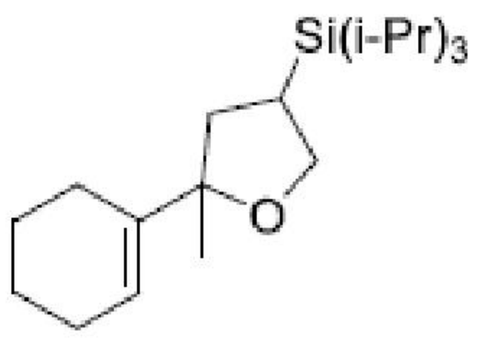
Correct Marks : 4 Wrong Marks : 1

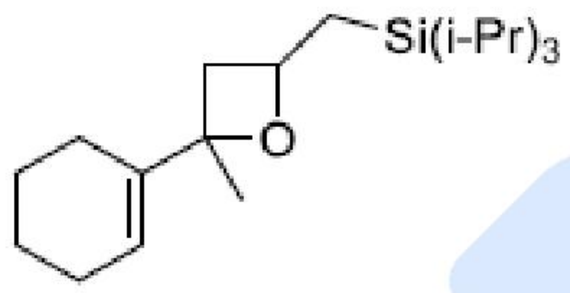
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1)


(2)


(3)


(4)


Options :

1879806857. 1

1879806858. 2

1879806859. 3

1879806860. 4

Question Number : 96 Question Id : 1879801716 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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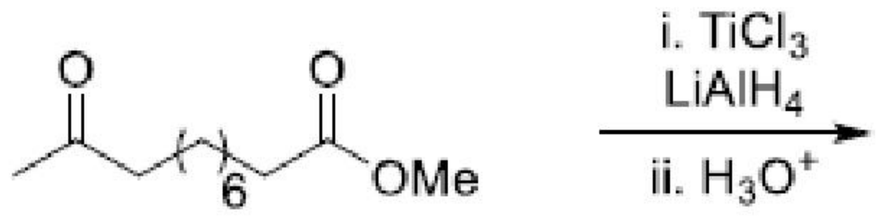
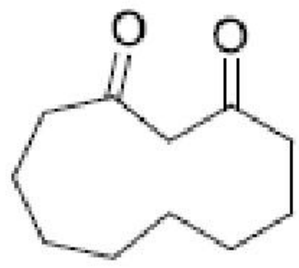
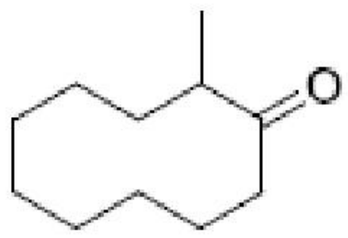
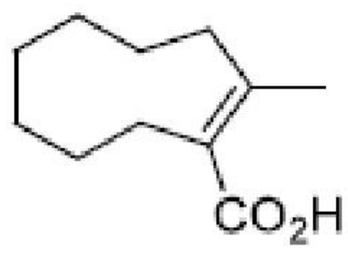
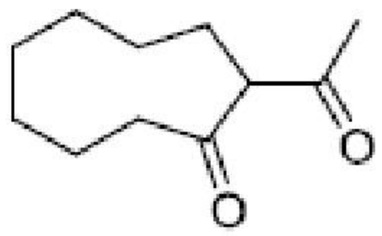
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806861. 1

1879806862. 2

1879806863. 3

1879806864. 4

Question Number : 96 Question Id : 1879801716 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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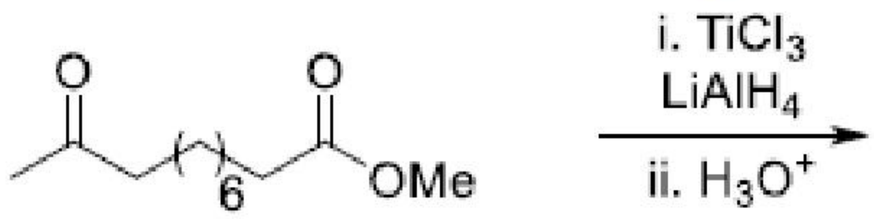
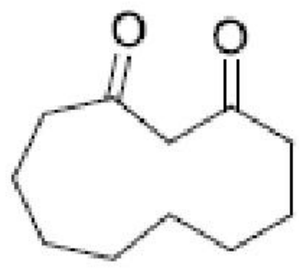
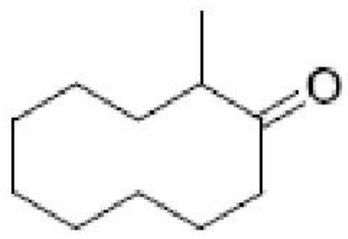
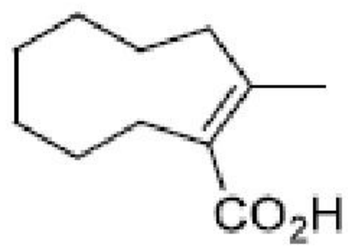
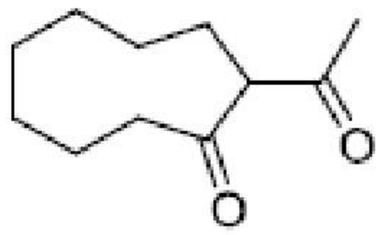
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806861. 1

1879806862. 2

1879806863. 3

1879806864. 4

Question Number : 97 Question Id : 1879801717 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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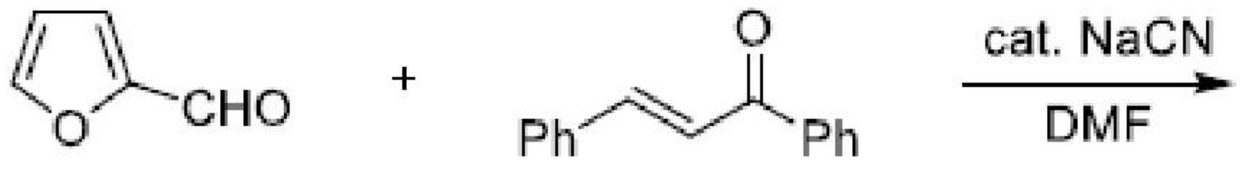
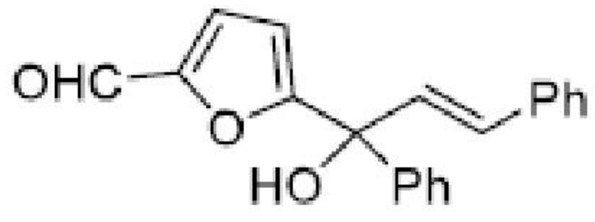
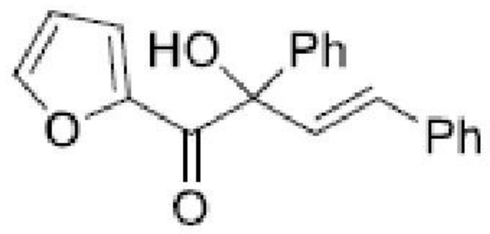
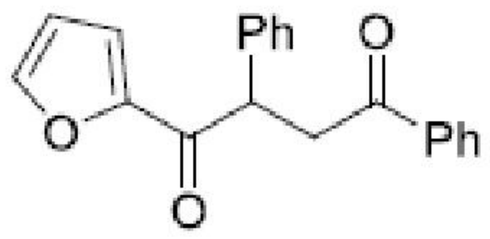
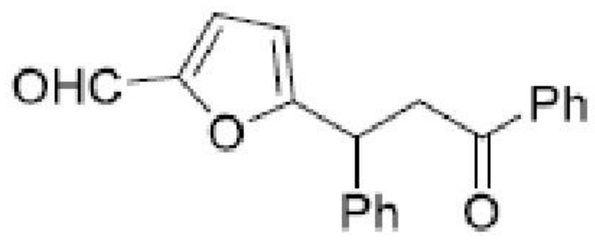
The major product formed in the following reaction is



(1)


(2)


(3)


(4)


Options :

1879806865. 1

1879806866. 2

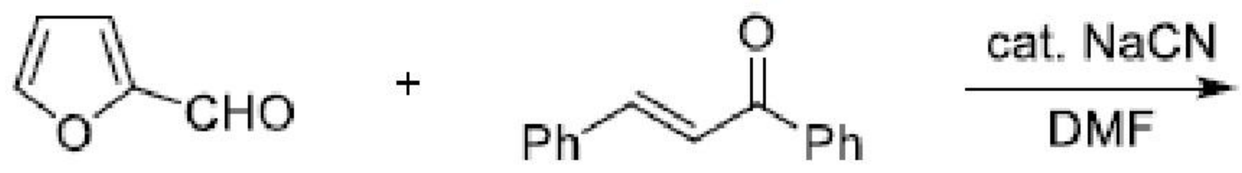
1879806867. 3

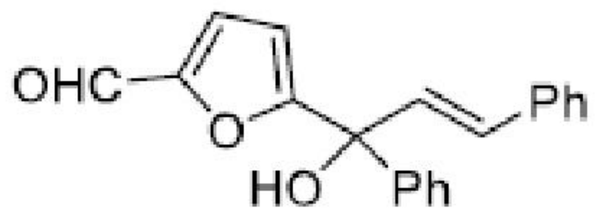
1879806868. 4

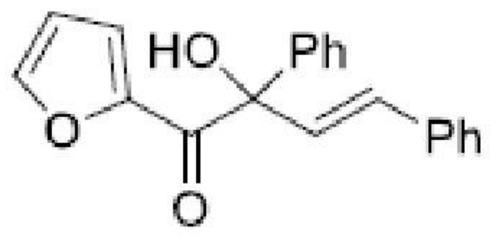
Question Number : 97 Question Id : 1879801717 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

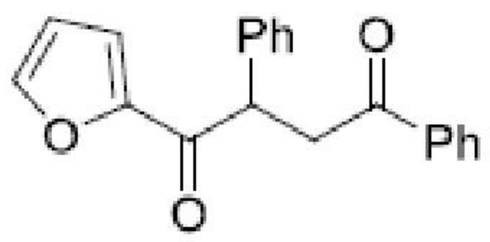
Correct Marks : 4 Wrong Marks : 1

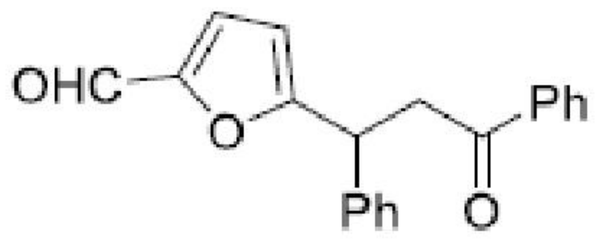
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1)


(2)


(3)


(4)


Options :

1879806865. 1

1879806866. 2

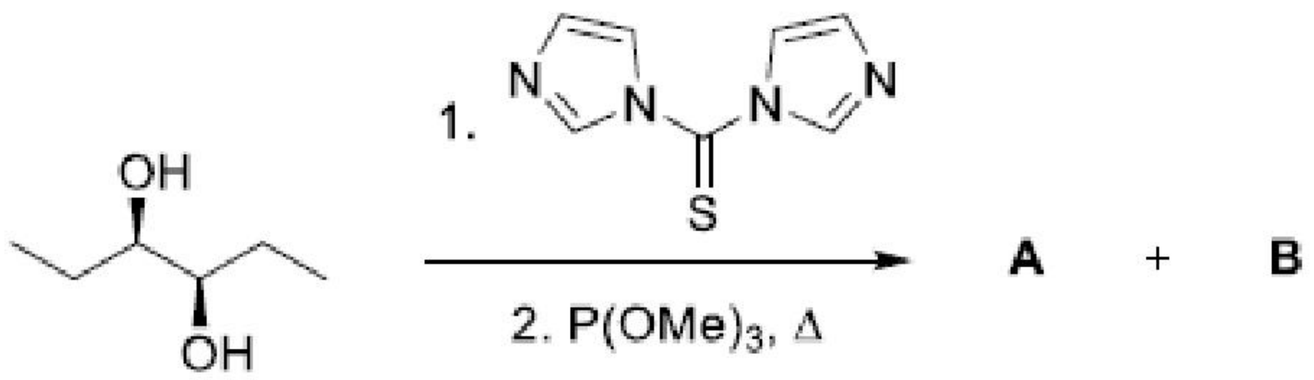
1879806867. 3

1879806868. 4

Question Number : 98 Question Id : 1879801718 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

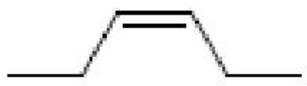
Correct Marks : 4 Wrong Marks : 1

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



(1) **A** = **B** = CO_2, $S{=}P(OMe)_3$

(2) **A** = **B** = $O{=}C{=}S$, $O{=}P(OMe)_3$

(3) **A** =  **B** = CO_2, $S{=}P(OMe)_3$

(4) **A** = **B** = $O{=}C{=}S$, $O{=}P(OMe)_3$

Options :

1879806869. 1

1879806870. 2

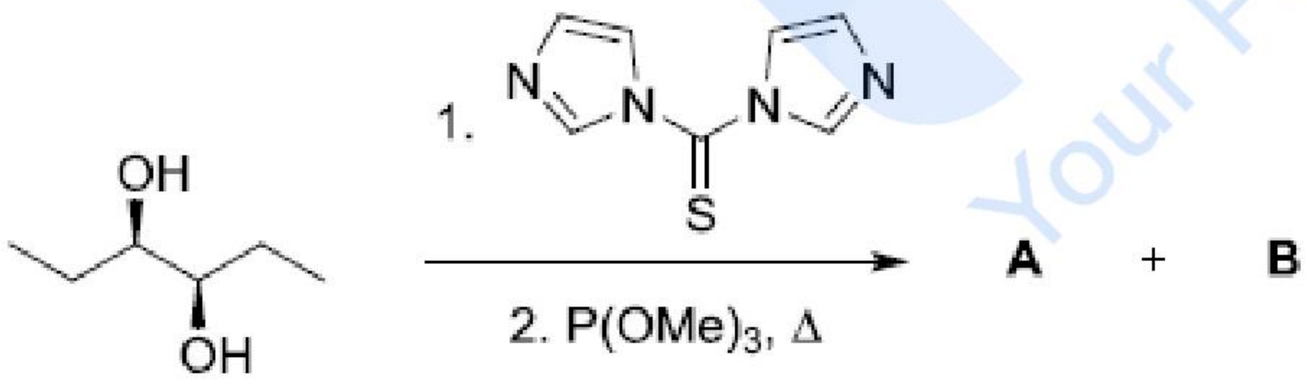
1879806871. 3

1879806872. 4

Question Number : 98 Question Id : 1879801718 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

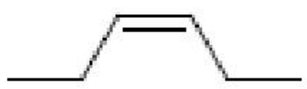
Correct Marks : 4 Wrong Marks : 1

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



(1) **A** = **B** = CO_2, $S{=}P(OMe)_3$

(2) **A** = **B** = $O{=}C{=}S$, $O{=}P(OMe)_3$

(3) **A** =  **B** = CO_2, $S{=}P(OMe)_3$

(4) **A** = **B** = $O{=}C{=}S$, $O{=}P(OMe)_3$

Options :

1879806869. 1

1879806870. 2

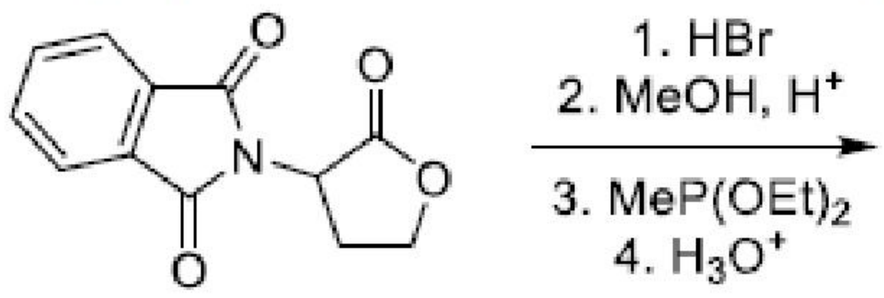
1879806871. 3

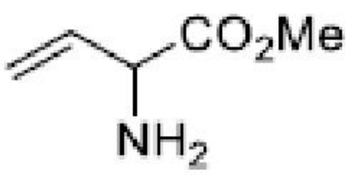
1879806872. 4

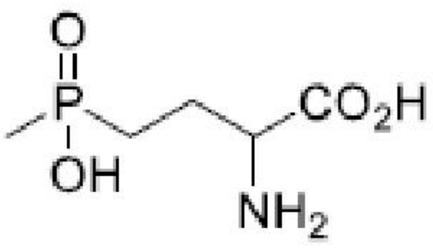
Question Number : 99 Question Id : 1879801719 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

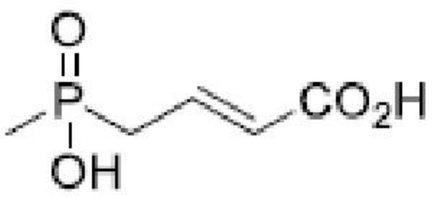
Correct Marks : 4 Wrong Marks : 1

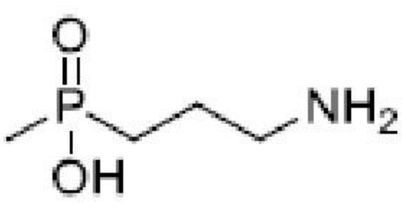
The major product formed in the following reaction is



(1) 

(2) 

(3) 

(4) 

Options :

1879806873. 1

1879806874. 2

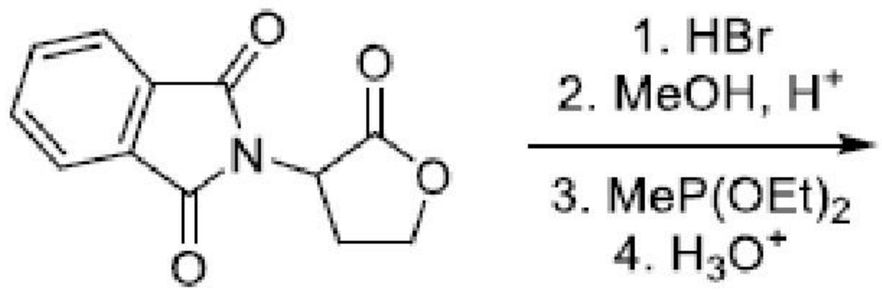
1879806875. 3

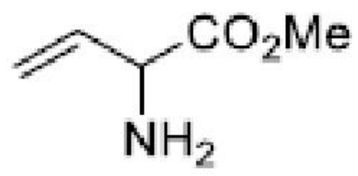
1879806876. 4

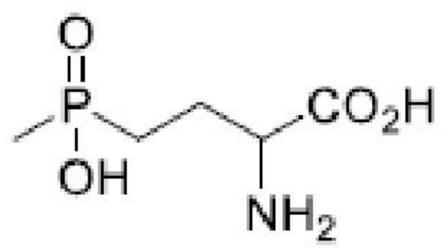
Question Number : 99 Question Id : 1879801719 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

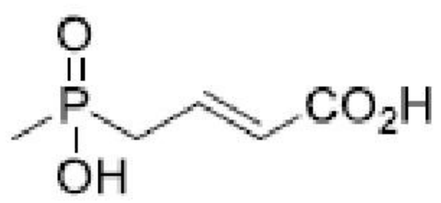
Correct Marks : 4 Wrong Marks : 1

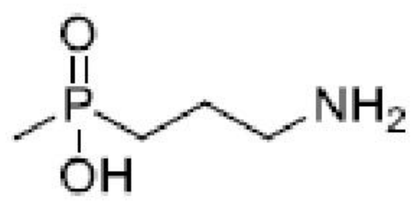
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



(1) 

(2) 

(3) 

(4) 

Options :

1879806873. 1

1879806874. 2

1879806875. 3

1879806876. 4

Question Number : 100 Question Id : 1879801720 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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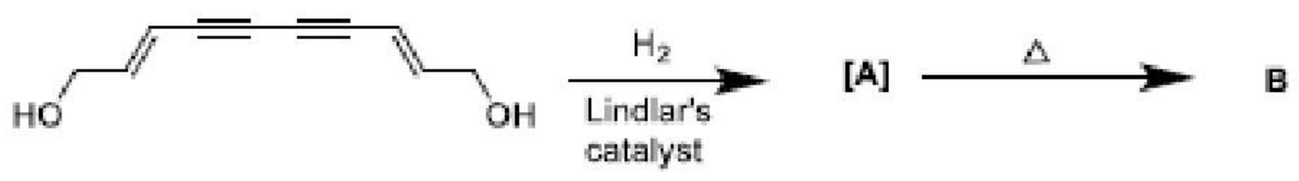
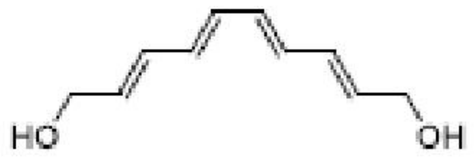
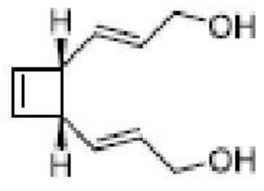
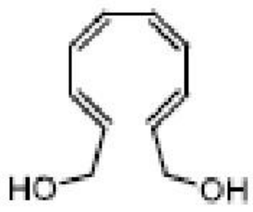
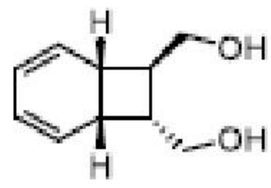
The intermediate **A** and the major product **B** formed in the following reaction are.

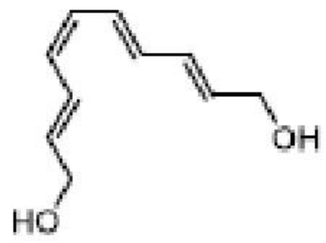


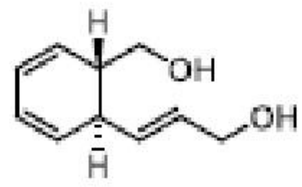
(1) [A] =


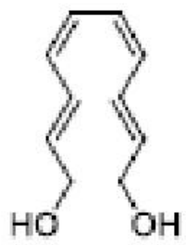
B =


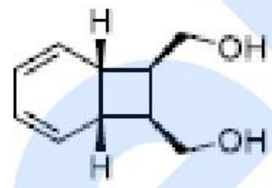
(2) [A] =


B =


(3) [A] =


B =


(4) [A] =


B =


Options :

1879806877. 1

1879806878. 2

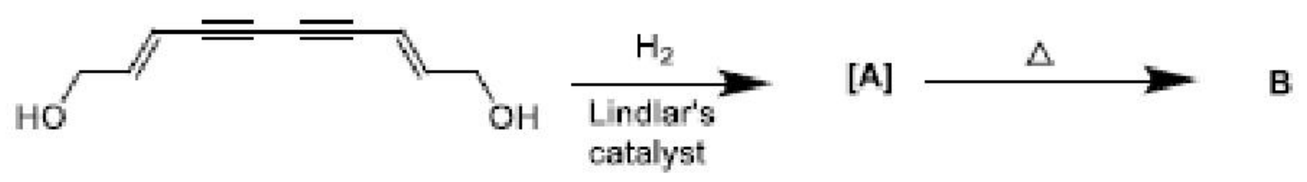
1879806879. 3

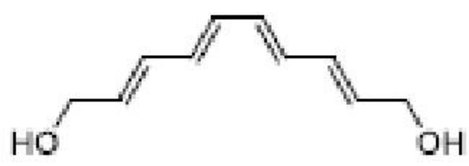
1879806880. 4

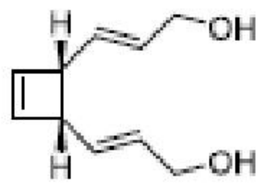
Question Number : 100 Question Id : 1879801720 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

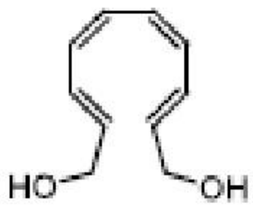
Correct Marks : 4 Wrong Marks : 1

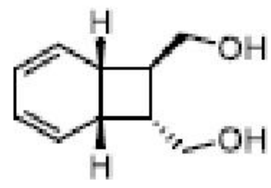
निम्नलिखित अभिक्रिया में मध्यवर्ती **A** तथा विरचित मुख्य उत्पाद **B** हैं।

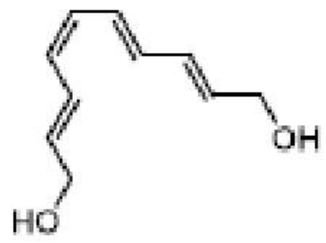


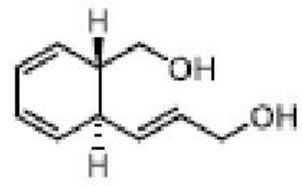
(1) [A] =


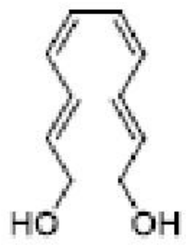
B =


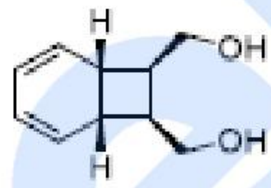
(2) [A] =


B =


(3) [A] =


B =


(4) [A] =


B =


Options :

1879806877. 1

1879806878. 2

1879806879. 3

1879806880. 4

Question Number : 101 Question Id : 1879801721 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The spatial part of the dominant resonance structure of the LiH molecule is (only valance part of the wavefunction is shown).

(1) $2s_{Li}(r_1)\ 2s_{Li}(r_2)$

(2) $2s_{Li}(r_1)\ 1s_H(r_2) + 2s_{Li}(r_2)\ 1s_H(r_1)$

(3) $2s_{Li}(r_1)\ 1s_H(r_2) - 2s_{Li}(r_2)\ 1s_H(r_1)$

(4) $1s_H(r_1)\ 1s_H(r_2)$

Options :

1879806881. 1

1879806882. 2

1879806883. 3

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1879806884. 4

Question Number : 101 Question Id : 1879801721 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अणु LiH की प्रधान अनुनाद संरचना में स्थानिक भाग है (तरंग फलनों के केवल संयोजकता भाग दर्शाये हैं)।

(1) $2s_{Li}(r_1)\ 2s_{Li}(r_2)$

(2) $2s_{Li}(r_1)\ 1s_H(r_2) + 2s_{Li}(r_2)\ 1s_H(r_1)$

(3) $2s_{Li}(r_1)\ 1s_H(r_2) - 2s_{Li}(r_2)\ 1s_H(r_1)$

(4) $1s_H(r_1)\ 1s_H(r_2)$

Options :

1879806881. 1

1879806882. 2

1879806883. 3

1879806884. 4

Question Number : 102 Question Id : 1879801722 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In linear variation method using two orthogonal basis functions, the two roots obtained are ϵ_0 and ϵ_1 ($\epsilon_0 < \epsilon_1$). The correct relation of these with exact ground and first excited state energies, E_0 and E_1, respectively, is

(1) $\epsilon_0 \geq E_0$ and $\epsilon_1 < E_1$

(2) $\epsilon_0 < E_1$ and $\epsilon_1 \geq E_1$

(3) $\epsilon_0 < E_0$ and $\epsilon_1 < E_1$

(4) $\epsilon_0 \geq E_0$ and $\epsilon_1 \geq E_1$

Options :

1879806885. 1

1879806886. 2

1879806887. 3

1879806888. 4

Question Number : 102 Question Id : 1879801722 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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रैखिक विचरण विधि में दो लांबिक आधार फलनों का उपयोग करने पर प्राप्त, दो मूल ϵ_0 तथा ϵ_1 ($\epsilon_0<\epsilon_1$) हैं। इनका यथार्थ निम्नतम तथा प्रथम उत्तेजित अवस्था की ऊर्जाओं, क्रमशः E_0 तथा E_1, से सही संबन्ध है।

(1) $\epsilon_0 \geq E_0$ तथा $\epsilon_1 < E_1$

(2) $\epsilon_0 < E_1$ तथा $\epsilon_1 \geq E_1$

(3) $\epsilon_0 < E_0$ तथा $\epsilon_1 < E_1$

(4) $\epsilon_0 \geq E_0$ तथा $\epsilon_1 \geq E_1$

Options :

1879806885. 1

1879806886. 2

1879806887. 3

1879806888. 4

Question Number : 103 Question Id : 1879801723 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The reducible representation, Γ, in the table is equal to the following superposition of the irreducible representations of C_{2v} point group.

C_{2v}	E	C_2	σ_v	σ'_v
A_1	1	1	1	1
A_2	1	1	–1	–1
B_1	1	–1	1	–1
B_2	1	–1	–1	1
Γ	8	–2	–6	4

(1) $A_1 \oplus 2A_2 \oplus 5B_1$

(2) $A_1 \oplus 2A_2 \oplus 5B_2$

(3) $5A_1 \oplus A_2 \oplus 2B_1$

(4) $A_1 \oplus 5A_2 \oplus 2B_2$

Options :

1879806889. 1

1879806890. 2

1879806891. 3

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1879806892. 4

Question Number : 103 Question Id : 1879801723 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

तालिका में खंडनीय निरूपण, Γ, बिन्दु समूह C_{2v} के अखंडनीय निरूपण के निम्नलिखित अध्यारोपण के समान है

C_{2v}	E	C_2	σ_v	σ'_v
A_1	1	1	1	1
A_2	1	1	–1	–1
B_1	1	–1	1	–1
B_2	1	–1	–1	1
Γ	8	–2	–6	4

(1) $A_1 \oplus 2A_2 \oplus 5B_1$

(2) $A_1 \oplus 2A_2 \oplus 5B_2$

(3) $5A_1 \oplus A_2 \oplus 2B_1$

(4) $A_1 \oplus 5A_2 \oplus 2B_2$

Options :

1879806889. 1

1879806890. 2

1879806891. 3

1879806892. 4

Question Number : 104 Question Id : 1879801724 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In the pure rotational microwave spectrum of a XY molecule, the adjacent lines are separated by 4 cm^{-1}. If the molecule is irradiated by a radiation of 30,000 cm^{-1}, the first Stokes line (in cm^{-1}) appears at

(1) 29988

(2) 30012

(3) 30004

(4) 29996

Options :

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1879806893. 1
1879806894. 2
1879806895. 3
1879806896. 4

Question Number : 104 Question Id : 1879801724 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक अणु XY के शुद्ध माइक्रोवेव घूर्णी स्पेक्ट्रम में निकटवर्ती लाइनें $4\ cm^{-1}$ से पृथक हैं। यदि अणु को $30,000\ cm^{-1}$ के विकिरण से किरणित किया जाए तो प्रथम स्टोक लाइन प्रगट (cm^{-1} में) होती है

(1) 29988 पर

(2) 30012 पर

(3) 30004 पर

(4) 29996 पर

Options :
1879806893. 1
1879806894. 2
1879806895. 3
1879806896. 4

Question Number : 105 Question Id : 1879801725 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The Hückel molecular orbital of benzene that is degenerate with the molecular orbital $\frac{1}{2}(\chi_2 + \chi_3 - \chi_5 - \chi_6)$, is

(1) $\frac{1}{\sqrt{12}}(2\chi_1 + \chi_2 - \chi_3 - 2\chi_4 - \chi_5 + \chi_6)$

(2) $\frac{1}{2}(\chi_2 - \chi_3 + \chi_5 - \chi_6)$

(3) $\frac{1}{\sqrt{12}}(2\chi_1 - \chi_2 - \chi_3 + 2\chi_4 - \chi_5 - \chi_6)$

(4) $\frac{1}{\sqrt{6}}(\chi_1 - \chi_2 + \chi_3 - \chi_4 + \chi_5 - \chi_6)$

Options :
1879806897. 1
1879806898. 2
1879806899. 3

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1879806900. 4

Question Number : 105 Question Id : 1879801725 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$\frac{1}{2}(\chi_2 + \chi_3 - \chi_5 - \chi_6)$, आण्विक आर्बिटल से बेन्ज़ीन का जो हकल आण्विक आर्बिटल अपभ्रष्ट है, वह है

(1) $\frac{1}{\sqrt{12}}(2\chi_1 + \chi_2 - \chi_3 - 2\chi_4 - \chi_5 + \chi_6)$

(2) $\frac{1}{2}(\chi_2 - \chi_3 + \chi_5 - \chi_6)$

(3) $\frac{1}{\sqrt{12}}(2\chi_1 - \chi_2 - \chi_3 + 2\chi_4 - \chi_5 - \chi_6)$

(4) $\frac{1}{\sqrt{6}}(\chi_1 - \chi_2 + \chi_3 - \chi_4 + \chi_5 - \chi_6)$

Options :

1879806897. 1

1879806898. 2

1879806899. 3

1879806900. 4

Question Number : 106 Question Id : 1879801726 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The degeneracy of the state having energy $\frac{27h^2}{8mL^2}$ for a particle in a 3-D cubic box of length L is

(1) 4

(2) 3

(3) 2

(4) 1

Options :

1879806901. 1

1879806902. 2

1879806903. 3

1879806904. 4

Question Number : 106 Question Id : 1879801726 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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लम्बाई L के 3-D घनीय बाक्स में एक $\frac{27h^2}{8mL^2}$ ऊर्जा के कण, की अवस्था अपभ्रष्टता है।

(1) 4

(2) 3

(3) 2

(4) 1

Options :

1879806901. 1

1879806902. 2

1879806903. 3

1879806904. 4

Question Number : 107 Question Id : 1879801727 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Consider the gas phase reaction $2A(g) + 3B(g) \rightleftharpoons 2C(g)$ at a given temperature. When 2.0 moles of A(g) are reacted with 2.0 moles of B(g), 0.8 moles of C(g) are formed at equilibrium at a total pressure of 2.0 bar. The value of the equilibrium constant, K_P of this reaction at the given temperature is closest to

(1) 0.3

(2) 0.9

(3) 2.4

(4) 19.1

Options :

1879806905. 1

1879806906. 2

1879806907. 3

1879806908. 4

Question Number : 107 Question Id : 1879801727 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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एक दिए ताप पर गैसीय प्रावस्था अभिक्रिया $2A(g) + 3B(g) \rightleftharpoons 2C(g)$ पर विचार कीजिए। संपूर्ण दाब 2.0 bar पर जब A(g) के 2.0 मोलों की B(g) के 2.0 मोलों से अभिक्रिया की जाती है तो साम्य अवस्था में C(g) के 0.8 मोलों का विरचन होता है। इस अभिक्रिया के लिए साम्य स्थिरांक K_P का मान दिए ताप पर जिसके निकटतम है, वह है

(1) 0.3

(2) 0.9

(3) 2.4

(4) 19.1

Options :

1879806905. 1

1879806906. 2

1879806907. 3

1879806908. 4

Question Number : 108 Question Id : 1879801728 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The molar residual entropy (in $J\ K^{-1}$) of solid OCS would be closest to

(1) 0

(2) 2.9

(3) 5.8

(4) 8.7

Options :

1879806909. 1

1879806910. 2

1879806911. 3

1879806912. 4

Question Number : 108 Question Id : 1879801728 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ठोस OCS के लिए मोलर अवशिष्ट एन्ट्रापी का मान ($J\,K^{-1}$ में) जिसके निकटतम होगा, वह है

(1) 0

(2) 2.9

(3) 5.8

(4) 8.7

Options :

1879806909. 1

1879806910. 2

1879806911. 3

1879806912. 4

Question Number : 109 Question Id : 1879801729 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The electrolyte solution that has the smallest Debye-length at 298 K is

(1) 0.01 M NaCl

(2) 0.01 M Na_2SO_4

(3) 0.01M $CuCl_2$

(4) 0.01M $LaCl_3$

Options :

1879806913. 1

1879806914. 2

1879806915. 3

1879806916. 4

Question Number : 109 Question Id : 1879801729 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

298 K पर जिस विद्युत–अपघट्य विलयन की डेबाई–लम्बाई न्यूनतम है, वह है

(1) 0.01 M NaCl

(2) 0.01 M Na_2SO_4

(3) 0.01M $CuCl_2$

(4) 0.01M $LaCl_3$

Options :

1879806913. 1

1879806914. 2

1879806915. 3

1879806916. 4

Question Number : 110 Question Id : 1879801730 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The rate constant of a second order reaction $2A \rightarrow Z$ is k_2. If the initial concentration of the reactant is a_0 and the concentration of the product at time t is x, then a linear function of t with the slope $k_2 a_0$ is

(1) $\ln\left(\frac{x}{a_0-x}\right)$

(2) $\frac{x}{a_0(a_0-x)}$

(3) $\frac{x}{a_0-x}$

(4) $\ln\left(\frac{x}{a_0(a_0-x)}\right)$

Options :

1879806917. 1

1879806918. 2

1879806919. 3

1879806920. 4

Question Number : 110 Question Id : 1879801730 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

द्वितीय कोटि की अभिक्रिया $2A \rightarrow Z$ का वेग नियतांक k_2 है। यदि अभिकर्मक की प्रारंभिक सान्द्रता a_0 है तथा समय t पर उत्पाद की सान्द्रता x है तो t का, स्लोप $k_2 a_0$ के साथ रैखिक फलन है

(1) $\ln\left(\frac{x}{a_0 - x}\right)$

(2) $\frac{x}{a_0(a_0 - x)}$

(3) $\frac{x}{a_0 - x}$

(4) $\ln\left(\frac{x}{a_0(a_0 - x)}\right)$

Options :

1879806917. 1

1879806918. 2

1879806919. 3

1879806920. 4

Question Number : 111 Question Id : 1879801731 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

X-rays of 173 pm wavelength are reflected by the (111) plane of a cubic primitive crystal at $\theta = 30^0$. The unit cell length (in pm) is closest to

(1) 173

(2) 300

(3) 346

(4) 600

Options :

1879806921. 1

1879806922. 2

1879806923. 3

1879806924. 4

Question Number : 111 Question Id : 1879801731 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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उक आद्य घनीय क्रिस्टल के (111) समतल से 173 pm तरंगदैर्ध्य की X–किरण का परावर्तन $\theta = 30^0$ पर होता है। एकक सेल की लम्बाई (pm में) जिसके निकटतम है, वह है

(1) 173

(2) 300

(3) 346

(4) 600

Options :

1879806921. 1

1879806922. 2

1879806923. 3

1879806924. 4

Question Number : 112 Question Id : 1879801732 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In a polymer of N monomer units, the root mean square separation between the two ends is proportional to

(1) $N^{\frac{1}{2}}$

(2) N

(3) $N^{\frac{3}{2}}$

(4) N^2

Options :

1879806925. 1

1879806926. 2

1879806927. 3

1879806928. 4

Question Number : 112 Question Id : 1879801732 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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एक बहुलक में N एकलक हैं, दो अंत्यों के मध्य वर्ग माध्य मूल पृथकन जिसके समानुपाती है, वह है

(1) $N^{\frac{1}{2}}$

(2) N

(3) $N^{\frac{3}{2}}$

(4) N^2

Options :

1879806925. 1

1879806926. 2

1879806927. 3

1879806928. 4

Question Number : 113 Question Id : 1879801733 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$(C_p - C_v)$ for a non-ideal gas differs from $(C_p - C_v)$ for a perfect gas by the expression

(1) $\left(\frac{\partial P}{\partial T}\right)_V \left(\frac{\partial U}{\partial P}\right)_S$

(2) $\left(\frac{\partial V}{\partial T}\right)_P \left(\frac{\partial U}{\partial V}\right)_T$

(3) $-\frac{1}{T}\left(\frac{\partial V}{\partial T}\right)_P \left(\frac{\partial U}{\partial V}\right)_T$

(4) $\left(\frac{\partial P}{\partial T}\right)_V \left(\frac{\partial U}{\partial T}\right)_P$

Options :

1879806929. 1

1879806930. 2

1879806931. 3

1879806932. 4

Question Number : 113 Question Id : 1879801733 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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एक अनादर्श गैस के लिए $(C_p - C_v)$, एक आदर्श गैस की $(C_p - C_v)$ से जिस व्यंजक से भिन्न है, वह है

(1) $\left(\frac{\partial P}{\partial T}\right)_V \left(\frac{\partial U}{\partial P}\right)_S$

(2) $\left(\frac{\partial V}{\partial T}\right)_P \left(\frac{\partial U}{\partial V}\right)_T$

(3) $-\frac{1}{T}\left(\frac{\partial V}{\partial T}\right)_P \left(\frac{\partial U}{\partial V}\right)_T$

(4) $\left(\frac{\partial P}{\partial T}\right)_V \left(\frac{\partial U}{\partial T}\right)_P$

Options :

1879806929. 1

1879806930. 2

1879806931. 3

1879806932. 4

Question Number : 114 Question Id : 1879801734 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For the electrochemical cell Ag|AgCl|MCl(0.01M)|MCl(0.02M)|AgCl|Ag, the junction potential is the highest when M^+ is

(1) H^+

(2) Li^+

(3) Na^+

(4) K^+

Options :

1879806933. 1

1879806934. 2

1879806935. 3

1879806936. 4

Question Number : 114 Question Id : 1879801734 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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विद्युत रासायनिक सेल Ag|AgCl|MCl(0.01M)|MCl(0.02M)|AgCl|Ag, के लिए संधि विभव सर्वाधिक है जब M^+है

(1) H^+

(2) Li^+

(3) Na^+

(4) K^+

Options :

1879806933. 1

1879806934. 2

1879806935. 3

1879806936. 4

Question Number : 115 Question Id : 1879801735 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The function, which is **NOT** an eigenfunction of the indicated operator, is

	Operator	Function
(1)	$\frac{d^2}{dx^2} - x^2$	$e^{-x^2/2}$
(2)	$\frac{d^2}{dx^2} + x^2$	$e^{-x^2/2}$
(3)	$\frac{d^2}{dx^2}$	$\cos\frac{\pi x}{4}$
(4)	$\frac{d^2}{dx^2}$	e^{4ix}

Options :

1879806937. 1

1879806938. 2

1879806939. 3

1879806940. 4

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Question Number : 115 Question Id : 1879801735 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

फलन (Function) जो सूचित आपरेटर का आइगन फलन नहीं है, वह है

	Operator	Function
(1)	$\frac{d^2}{dx^2} - x^2$	$e^{-x^2/2}$
(2)	$\frac{d^2}{dx^2} + x^2$	$e^{-x^2/2}$
(3)	$\frac{d^2}{dx^2}$	$\cos\frac{\pi x}{4}$
(4)	$\frac{d^2}{dx^2}$	e^{4ix}

Options :

1879806937. 1

1879806938. 2

1879806939. 3

1879806940. 4

Question Number : 116 Question Id : 1879801736 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The order of a surface catalyzed unimolecular reaction, at very low and very high pressures of the reactant, would be, respectively

(1) 0, 0

(2) 1, 0

(3) 0, 1

(4) 1, 1

Options :

1879806941. 1

1879806942. 2

1879806943. 3

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1879806944. 4

Question Number : 116 Question Id : 1879801736 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक पृष्ठ उत्प्रेरित एकाण्विक अभिक्रिया की कोटि अभिकर्मक के अति न्यून तथा अति उच्च दाब पर होगी, क्रमशः

(1) 0, 0

(2) 1, 0

(3) 0, 1

(4) 1, 1

Options :

1879806941. 1

1879806942. 2

1879806943. 3

1879806944. 4

Question Number : 117 Question Id : 1879801737 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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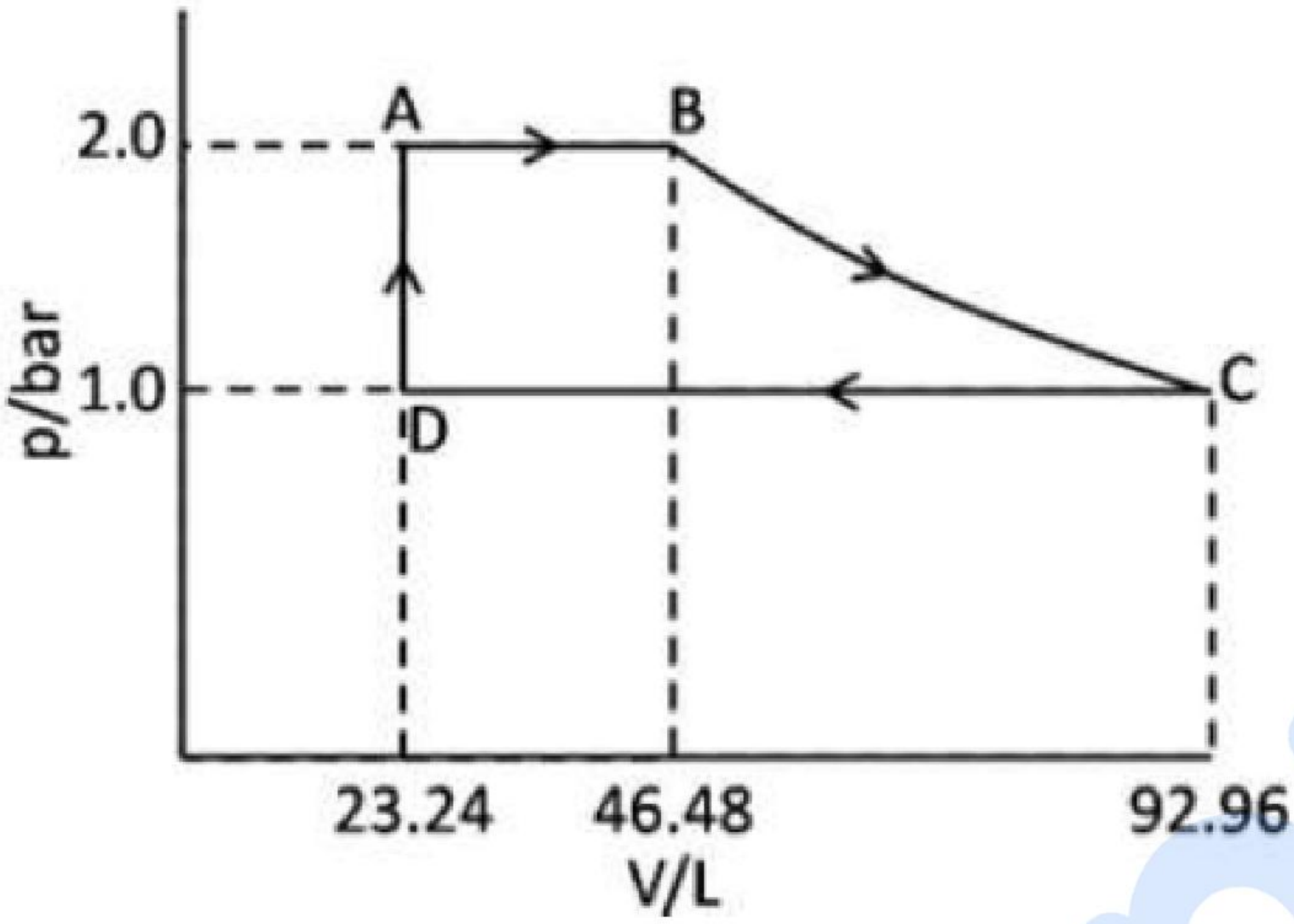
1.0 mol of a perfect monatomic gas is put through the cycle shown in the figure. The total work (in J) done during the cycle is
(use 1L-bar = 100 J, R = 8.3 J K^{-1} mol^{-1} = 0.083 L-bar K^{-1} mol^{-1}, ln 2 = 0.7)



(1) 930

(2) −4183

(3) 8831

(4) −5113

Options :

1879806945. 1

1879806946. 2

1879806947. 3

1879806948. 4

Question Number : 117 Question Id : 1879801737 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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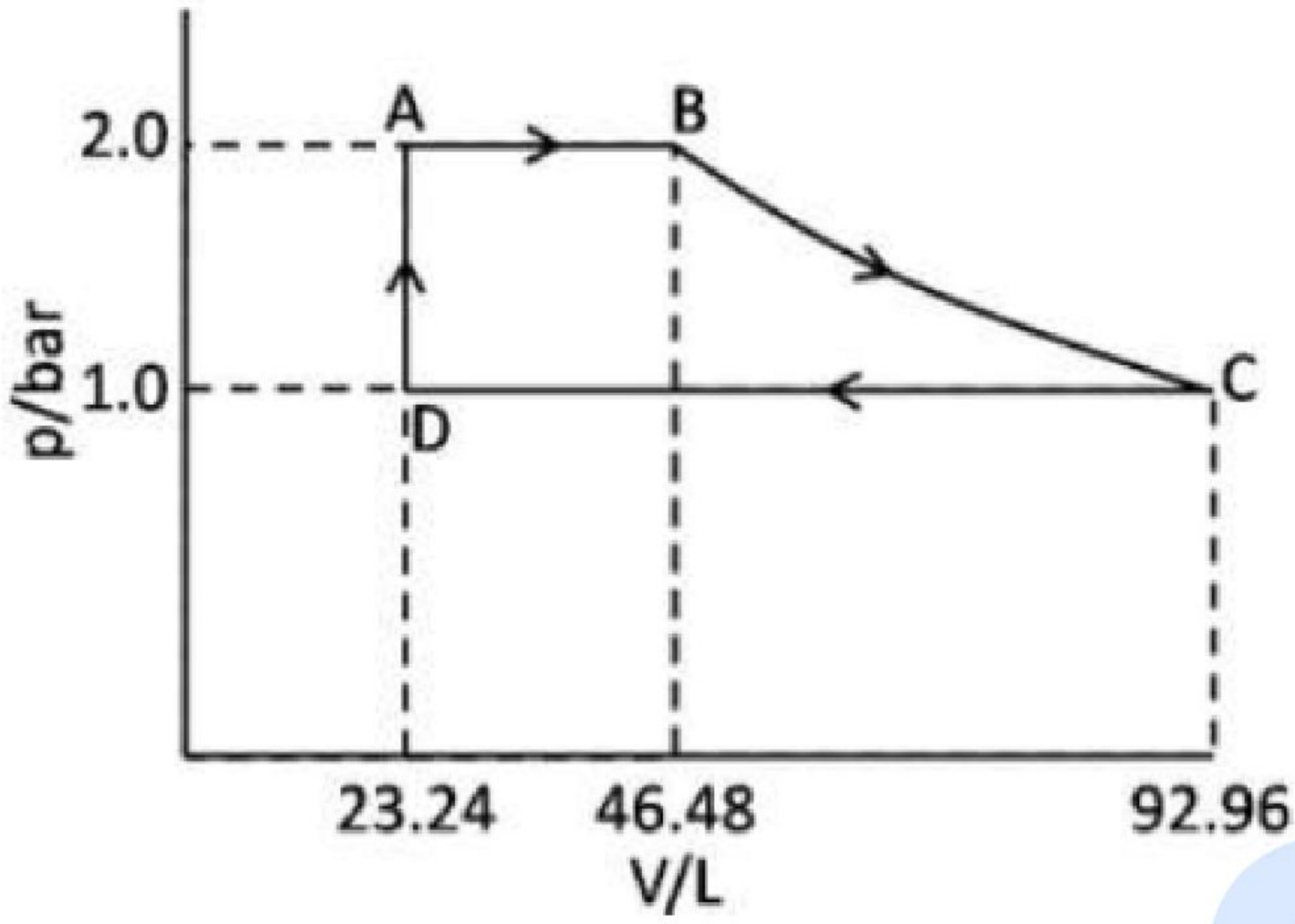
एक परमाण्विक आदर्श गैस के 1.0 मोल को चित्र में दिखाए चक्र से गुजारा गया है। चक्र की अवधि में किया गया संपूर्ण कार्य (J में) है

(प्रयोग कीजिए 1L-bar = 100 J, R = 8.3 J K^{-1} mol^{-1} = 0.083 L-bar K^{-1} mol^{-1}, ln 2 = 0.7)



(1) 930

(2) – 4183

(3) 8831

(4) – 5113

Options :

1879806945. 1

1879806946. 2

1879806947. 3

1879806948. 4

Question Number : 118 Question Id : 1879801738 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The oxidation of NO to NO_2 occurs *via* the mechanism given below.

$$2NO \underset{k_{-1}}{\overset{k_1}{\rightleftharpoons}} N_2O_2$$

$$N_2O_2 + O_2 \xrightarrow{k_2} 2NO_2$$

$\frac{d[NO_2]}{dt}$ in the presence of large excess of O_2 can be written as

(1) $2k_1(NO)^2$

(2) $2k_1k_2(NO)^2(O_2)$

(3) $\frac{k_1}{k_2}(NO)^2$

(4) $2k_2(NO)^2$

Options :

1879806949. 1

1879806950. 2

1879806951. 3

1879806952. 4

Question Number : 118 Question Id : 1879801738 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

NO का NO_2 में ऑक्सीकरण निम्नलिखित क्रियाविधि से होता है

$$2NO \underset{k_{-1}}{\overset{k_1}{\rightleftharpoons}} N_2O_2$$

$$N_2O_2 + O_2 \xrightarrow{k_2} 2NO_2$$

O_2 की बहुत अधिकता में $\frac{d[NO_2]}{dt}$ को जिस प्रकार लिख सकते हैं, वह है

(1) $2k_1(NO)^2$

(2) $2k_1k_2(NO)^2(O_2)$

(3) $\frac{k_1}{k_2}(NO)^2$

(4) $2k_2(NO)^2$

Options :

1879806949. 1

1879806950. 2

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1879806951. 3

1879806952. 4

Question Number : 119 Question Id : 1879801739 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In trans 1,2-dichloroethylene, the IR **inactive** mode is

(1) C – Cl symmetric stretch

(2) C – Cl asymmetric stretch

(3) C – H asymmetric stretch

(4) In phase out of plane C – Cl bend

Options :

1879806953. 1

1879806954. 2

1879806955. 3

1879806956. 4

Question Number : 119 Question Id : 1879801739 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

trans 1,2-डाइक्लोरोएथिलीन में **असक्रिय IR** मोड है

(1) C – Cl सममित तनन

(2) C – Cl असममित तनन

(3) C – H असममित तनन

(4) समतल की प्रावस्था से बाहर C – Cl बंकन

Options :

1879806953. 1

1879806954. 2

1879806955. 3

1879806956. 4

Question Number : 120 Question Id : 1879801740 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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For the reaction $K + Br_2 \rightarrow KBr + Br$, which follows the harpoon mechanism, the reactive cross section is closest to
(Use $\frac{e^2}{4\pi\varepsilon_0} = 2.3 \times 10^{-28}$ J m, Ionization energy of K = 422.5 kJ mol^{-1}, electron affinity of Br_2 = 250 kJ mol^{-1} and $N_A = 6 \times 10^{23}$ mol^{-1})

(1) 50×10^{-18} m^2

(2) 2×10^{-18} m^2

(3) 64×10^{-18} m^2

(4) 16×10^{-18} m^2

Options :
1879806957. 1
1879806958. 2
1879806959. 3
1879806960. 4

Question Number : 120 Question Id : 1879801740 Question Type : MSQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

अभिक्रिया $K + Br_2 \rightarrow KBr + Br$, जो हारपून क्रियाविधि का अनुसरण करती है, के लिए अभिक्रियाशील अनुप्रस्थ परिच्छेद जिसके निकटतम है, वह है
(प्रयोग कीजिए $\frac{e^2}{4\pi\varepsilon_0} = 2.3 \times 10^{-28}$ J m, K की आयनन ऊर्जा = 422.5 kJ mol^{-1}, Br_2 की इलेक्ट्रान बंधुता = 250 kJ mol^{-1} तथा $N_A = 6 \times 10^{23}$ mol^{-1})

(1) 50×10^{-18} m^2

(2) 2×10^{-18} m^2

(3) 64×10^{-18} m^2

(4) 16×10^{-18} m^2

Options :
1879806957. 1
1879806958. 2
1879806959. 3
1879806960. 4