



Your Personal Exams Guide



NDA



CDS



SSC CGL



CBSE UGC NET



IAS



SSC CHSL



CTET



MPSC



AFCAT



CSIR UDC NET



IBPS PO



UP POLICE



SSC MTS



SBI PO



BPSC



UP TET



IBPS RRB



IBPS CLERK



IES



UPSC CAPF



SSC Stenogr..



RRB NTPC



SSC GD



RBI GRADE B



RBI Assistant



DSSSB

RRB Group D 2018 Previous Year Paper (08-Oct-2018) (Shift 2)

Total Time: 1 Hour : 30 Minute

Total Marks: 100

Instructions

Sl No.	Section Name	No. of Question	Maximum Marks	Negative Marks	Positive Marks
1	CBT	100	100	0.33	1

- 1.) A total of 90 minutes is allotted for the examination.
- 2.) The server will set your clock for you. In the top right corner of your screen, a countdown timer will display the remaining time for you to complete the exam. Once the timer reaches zero, the examination will end automatically. The paper need not be submitted when your timer reaches zero.
- 3.) There will, however, be sectional timing for this exam. You will have to complete each section within the specified time limit. Before moving on to the next section, you must complete the current one within the time limits.

Your Personal Exams Guide

CBT

1. Birds have: (+1, -0.33)
- a. two-chambered heart
 - b. one-chambered heart
 - c. four-chambered heart
 - d. three-chambered heart
-
2. If the resistance is halved the current gets _____. (+1, -0.33)
- a. remains same
 - b. doubled
 - c. tripled
 - d. halved
-
3. As of September 2018, who is the Director General of Doordarshan? (+1, -0.33)
- a. Supriya Sahu
 - b. Deepa Chandra
 - c. Deepak Ashish Kaul
 - d. PK Subhash
-
4. Pinna is the external part of _____. (+1, -0.33)

- a. ears
 - b. nose
 - c. fingers
 - d. eyes
-

5. What will be 0.008594, correct to three significant figures, be equal to? (+1, -0.33)

- a. 0.00859
 - b. 0.009
 - c. 0.00860
 - d. 0.008
-

6. Which of the following sport is Angha Deshpande related to? (+1, -0.33)

- a. Athletics
 - b. Cricket
 - c. Archery
 - d. Table Tennis
-

7. A bullet, of mass 40 g is horizontally fired with a velocity 150 ms^{-1} from a pistol of mass 3 kg. What is the recoil velocity of the pistol? (+1, -0.33)

- a. 1.25 ms^{-1}
- b. 3.0 ms^{-1}

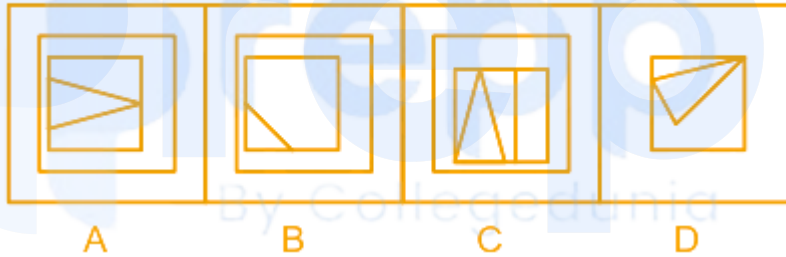
- c. 1.5 ms^{-1}
- d. 2.0 ms^{-1}

8. Which of the answer figure is formed from the shapes given in the problem figure? (+1, -0.33)
figure?

Problem Figure



Answer Figure



- a. C
- b. D
- c. B
- d. A

9. Which of the following is India's fastest and first multi-petaflops (PF) supercomputer unveiled at Pune-based Indian Institute of Tropical Meteorology (IITM)? (+1, -0.33)

- a. Pratyush

- b. Poonam
- c. Surya
- d. Aditya

-
10. Given below is a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumptions is implicit in the statement. (+1, -0.33)

Statement: The healthiest cooking oil for the whole family an advertisement states.

Assumptions:

- I. There are other cooking oils available in the Market.
- II. The health of the family is the priority for any individual.

- a. Only assumption II is implicit
- b. Only assumption I is implicit
- c. Neither I nor II is implicit
- d. Both I and II are implicit.

-
11. If $\tan f + \cot f = 5$, then find the value of $(\tan^2 f + \cot^2 f)$ (+1, -0.33)

- a. 21
- b. 27
- c. 25
- d. 23

12. In _____, carbon atoms are arranged in the shape of a football. (+1, -0.33)

- a. Fullerenes
- b. Methane
- c. Benzene
- d. Ethane

13. Who among the following has compiled 'Raghuvamsham'? (+1, -0.33)

- a. Surdas
- b. Kabirdas
- c. Kalidas
- d. Tulsidas

14. The melting point of ice is: (+1, -0.33)

- a. 373 C
- b. 273 K
- c. 273 C
- d. 273 F

15. The maximum permissible strength of the Rajya Sabha is: (+1, -0.33)

- a. 250

- b. 260
- c. 300
- d. 225

16. Read the given statement and course of action carefully and select which action logically follow(s) for the statement. (+1, -0.33)

Statement:

Footpath of few famous tourist places are filled with beggars.

Course of action:

1. With the help of police these beggars should be driven away.
2. The government should consider the beggars rehabilitation and improve their social status.

- a. Both 1 and 2 follows
- b. Only 1 follows
- c. Neither 1 nor 2 follows
- d. Only 2 follows

17. If $49 \times 17 = 833$, then the value of $0.0833 \div 4.9$ is: (+1, -0.33)

- a. 0.17
- b. 0.0017
- c. 1.7

d. 0.017

18. Which of the following water bodies separates Australia from New Zealand? (+1, -0.33)

a. Baltic Sea

b. Tasman Sea

c. Red Sea

d. Bering Sea

19. From the top of a 150 m tall building A, the angle of elevation to the top of the building B is 45 degrees and the angle of depression to the bottom of the building B is 30 degrees. What is the height of the building B? (+1, -0.33)

a. 250 m

b. $450/\sqrt{3}$ m

c. $150\sqrt{3}$ m

d. $150(1 + \sqrt{3})$ m

20. If the work done is zero, then the angle between the force and displacement is: (+1, -0.33)

a. 45 degrees

b. 180 degrees

c. 0degree

d. 90degrees

21. A person driving at a speed of 42 km/h reaches office 1 minute early, (+1, -0.33)
whereas if driving at a speed of 36 km/h, the person reaches office 3
minutes late. What is the distance (in km) that the person is covering?

a. 15.4

b. 16.8

c. 12.9

d. 18.2

22. Which of the two conclusions can be concluded on basis of given (+1, -0.33)
statements?

Statement:

All parrots are camels.

All camels are wolves.

Conclusions:

1. Some parrots are not wolves

2. Some wolves are parrots

a. Either (1) or (2) follows

b. Neither (1) nor (2) follows

c. Only (1) follows

d. Only (2) follows

23. 15 experts can do as much work as 25 trainees in a given period of time. A piece of work is to be done by 8 experts and 15 trainees. How many trainees alongside 11 experts would one need to complete a similar work in the same duration of time? (+1, -0.33)

- a. 10
- b. 9
- c. 11
- d. 12

24. Which of the following statements is/are true? (+1, -0.33)

- A. Rigidity: It is the property of matter to maintain its shape even if external force work on it and solids show this property.
- B. Fluidity: It is the property of a substance to easily flow and allow change in its shape under external forces and this property is exhibited both by liquids and gasses.

- a. Only A is true
- b. A and B both are true
- c. A and B both are false
- d. Only B is true

25. While white washing, Ca(OH)_2 reacts slowly with CO_2 in air to form a thin layer of _____ on the walls. (+1, -0.33)

- a. CaO

b. CaSO_4

c. CaCl_2

d. CaCO_3

26. Who was included in Badminton association of India's coach panel in 2017? (+1, -0.33)

a. Saina Nehwal

b. PV Sindhu

c. KM Anisha

d. Jwala Gutta

27. Who among the following is the current prime minister of China? (+1, -0.33)

a. Xi Jinping

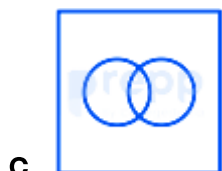
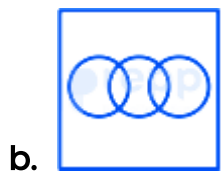
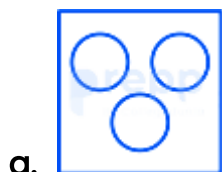
b. Li Keqiang

c. Hu Jintao

d. Wang Qishan

28. Choose the best suitable Venn diagram for the following words: (+1, -0.33)

"Flowers, Fruits, Leaves"



29. If the roots of the quadratic equation $x^2 + kx + 9$ are equal, then find the value of K? (+1, -0.33)

a. 81

b. ± 8

c. ± 6

d. $\frac{1}{81}$

30. In _____, each carbon atom is bonded to four other carbon atoms forming a rigid three dimensional structure. (+1, -0.33)

a. Graphite

- b. Ethane
 - c. Diamond
 - d. Methane
-

31. Which award is bestowed upon coaches for producing medal winners at prestigious international sport events? (+1, -0.33)

- a. Arjuna Award
 - b. Dronacharya Award
 - c. Rajiv Gandhi Khel Ratna Award
 - d. Dhyan Chand Award
-

32. The difference between the CI compounded annually and SI on a certain sum for 2 years at 15% per annum is Rs. 180. Find the sum. (+1, -0.33)

- a. Rs. 7000
 - b. Rs. 8000
 - c. Rs. 9000
 - d. Rs. 6000
-

33. In some females, due to some problem, fertilization cannot take place. In such cases, freshly released egg and sperms are kept together for few hours for fertilization to occur outside the body. This is called: (+1, -0.33)

- a. Regeneration

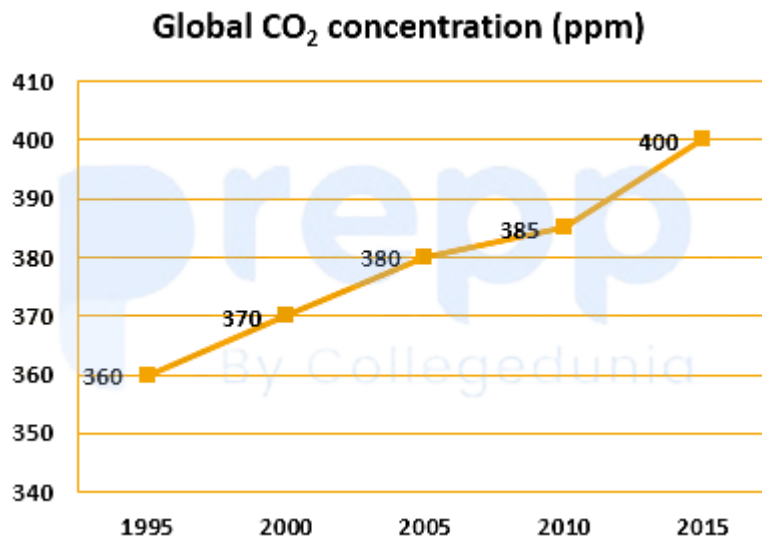
- b. Vegetative reproduction
 - c. In vitro fertilisation
 - d. Fertilisation
-

34. The value of 'g' decreases with _____. (+1, -0.33)

- a. mass
 - b. amplitude
 - c. weight
 - d. altitude
-

35. Two numbers differ by 2. The difference of squares of both is 100. The sum of the number is: (+1, -0.33)

- a. 38
 - b. 40
 - c. 50
 - d. 48
-



36. (+1, -0.33)

Based on the given graph, which statement correctly describes the pattern?

- a. There is increase in CO₂ concentration over the years.
- b. There is decrease in CO₂ concentration over the years.
- c. There is no change in CO₂ concentration over the years.
- d. The CO₂ concentration fluctuates over these years.

37. Two numbers are such that the ratio between them is 3 : 4 if 3 is added to each of them becomes 10 : 13. The original numbers are: (+1, -0.33)

- a. 9, 12
- b. 20, 25
- c. 12, 16
- d. 27, 36

38. A tank has two inlets which can fill it in 6 hours and 8 hours, respectively. (+1, -0.33)
An outlet can empty the full tank in 10 hours, if all three pipes are opened together in an empty tank how much time will they take to fill the tank completely?

- a. $5\frac{5}{46}$ hours
- b. $6\frac{5}{23}$ hours
- c. $6\frac{5}{46}$ hours
- d. $5\frac{5}{23}$ hours

39. _____ instrument is used to measure potential difference. (+1, -0.33)

- a. Thermometer
- b. Ammeter
- c. Galvanometer
- d. Voltmeter

40. _____ is NOT a compound. (+1, -0.33)

- a. Hydrogen sulfide
- b. Chalk
- c. Sulphur dioxide
- d. Lead

41. Find the odd one out.

(+1, -0.33)



- a. D
- b. A
- c. C
- d. B

42. A car accelerates uniformly from 18 kmh^{-1} to 72 kmh^{-1} in 10 s. Calculate the acceleration of the car.

(+1, -0.33)

- a. 1.5 ms^{-2}
- b. 15 ms^{-2}
- c. 15 ms^{-1}
- d. 1.5 ms^{-2}

43. In the center of square room with sides 10 m, there is a square of turkey carpet and the rest of the floor is covered with oil cloth. The carpet and the oil cloth cost Rs. 15 Rs. 6.50 respectively per square meter and the total cost of the carpet and the oil cloth is 1,338.50. What is the width of the Oil cloth border?

(+1, -0.33)

- a. 2 meter
- b. 1 meter

c. $\frac{1}{2}$ meter

d. 5 meter

44. Find the similar pair:

(+1, -0.33)



45. Find the word that does NOT belong to the group.

(+1, -0.33)

Blanket, Sheet, Pillow, Cot

a. Blanket

b. Sheet

c. Cot

d. Pillow

46. 18 people could complete the task in 12 days. After 4 days of work, 2 of the workers left. How many days from the time the worker left will it take to complete the task now? (+1, -0.33)

a. 6

b. 9

c. 10

d. 8

47. Which of the following is a physical change? (+1, -0.33)

a. Melting of ice

b. Milk is set into curd

c. Ripening of fruits

d. Grapes get fermented

48. The _____ character is recessive in garden pea plants. (+1, -0.33)

a. yellow seed

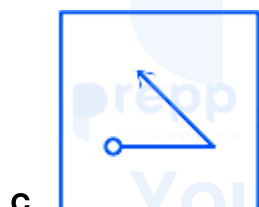
b. green pod

c. wrinkled seed

d. round seed

49. Choose the mirror image for the following figure

(+1, -0.33)



50. _____ is the only non-metal placed with alkali metals.

(+1, -0.33)

- a. Francium
- b. Hydrogen

- c. Rubidium
 - d. Caesium
-

51. The number of diagonals in a 19 – gon is: (+1, -0.33)

- a. 152
 - b. 76
 - c. 144
 - d. 304
-

52. The author of the book 'Ace against Odds' is: (+1, -0.33)

- a. Rohan Bopanna
 - b. Leander Paes
 - c. Yuki Bhambri
 - d. Sania Mirza
-

53. Find the next letter in the series: (+1, -0.33)

JR, KS, LT, ?

- a. MU
- b. UG
- c. MP

d. UK

54. A pearl set broke, with one-eighth of pearls falling onto the floor, a fourth going under a chair, two-fifths staying on the sofa, and eighteen pieces staying on the strand. How many pearls fell on the floor? **(+1, -0.33)**

a. 8

b. 9

c. 10

d. 12

55. Two cubes each of volume 343 cu. cm are joined end to end. The total surface area of the resulting cuboid is: **(+1, -0.33)**

a. 346 sq cm

b. 490 sq cm

c. 466 sq cm

d. 436 sq cm

56. Which of the following Union Ministries launched 'Mission Fingerling' in March 2017 to achieve Blue Revolution? **(+1, -0.33)**

a. Ministry of Defence

b. Ministry of Agriculture & Farmers, Welfare

c. Ministry of Finance

d. Ministry of Home Affairs

57. Select the term that relates to the third term in the same way that the second term relates to the first term. (+1, -0.33)

Players: Team :: Minister: ?

- a. Mob
 - b. Council
 - c. Chest
 - d. Colony
-

58. A statement is followed by two arguments. Decide which of the arguments is/are strong with respect to the statement. (+1, -0.33)

Statement:

Should Bihar ban alcohol?

Argument:

1. Yes, government should not promote alcohol and consider the development of state.
 2. No, government will lose large revenue from beaming and banning cannot be implemented 100%.
- a. Only argument 1 is strong
 - b. Both argument 1 and 2 is strong
 - c. Only argument 2 is strong

d. Either argument 1 or 2 is strong

59. Who became the Chief Justice of the Madras High court in March 2017? (+1, -0.33)

- a. Chief Justice Askok Kumar Ganguly
 - b. Chief Justice Sanjay Kaul
 - c. Chief Justice Indira Banerjee
 - d. Chief Justice Rajesh Kumar Agrawal
-

60. Name the late Kannada journalist who was awarded the prestigious Reach All Women in WAR (RAW in WAR) Anna Polikovskya Award on 7th October 2017. (+1, -0.33)

- a. Kusum Nair
 - b. Sucheta Dalal
 - c. Gauri Lankesh
 - d. Malini Parthasarathy
-

61. Where is the Yellowstone National Park situated? (+1, -0.33)

- a. United Kingdom
 - b. United States
 - c. France
 - d. South Africa
-

62. A frequency of ____ is NOT audible to human beings. (+1, -0.33)

- a. 100 Hz
- b. 18000 Hz
- c. 20000 Hz
- d. 22000 Hz

63. The value of acceleration due to gravity does not depend upon: (+1, -0.33)

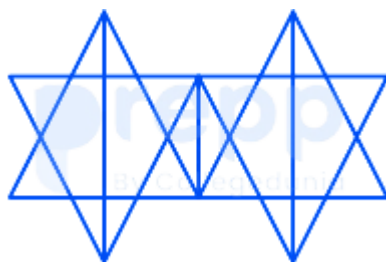
- a. Mass of the earth 'M'
- b. Constant of gravitation 'G'
- c. Radius of the earth 'R'
- d. Mass of the falling object 'm'

64. Evaluate the below expression. (+1, -0.33)

$$21 + [5 \text{ of } \{15 + (18 - 17)\}]$$

- a. 100
- b. 99
- c. 102
- d. 101

65. How many triangles are there in the following figure? (+1, -0.33)



- a. 29
- b. 38
- c. 40
- d. 30

66. Sundar earns by conducting coaching classes. 10% of his income goes into varied costs involved in running his classes. Below is the table showing his 5-year income (in lakh) (+1, -0.33)

Your Personal Exams Guide

Year	Sundar's Yearly Income in (lakh) Rs.
2012	2.5
2013	3
2014	3
2015	2.5
2016	4

On an average, how much does Sundar spend in a year as varied cost in maintaining his classes?

- a. Rs. 40,000
- b. Rs. 20,000
- c. Rs. 25000
- d. Rs. 30,000

67. Name the city which was recently included in the United Nations Educational, Scientific and Cultural Organization's (UNESCO's) Creative Cities Network for contribution in Music. (+1, -0.33)

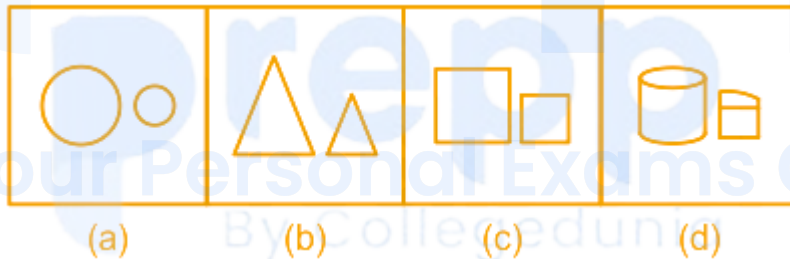
- a. Bengaluru

- b. Chennai
- c. Kolkata
- d. Mumbai

68. If $31 \times 23 = 713$, then what is value of 3100×0.00023 ? (+1, -0.33)

- a. 7.13
- b. 0.0713
- c. 71.3
- d. 0.713

69. Find the ODD one: (+1, -0.33)



- a. A
- b. B
- c. C
- d. D

70. Who is the author of 'Panchatantra'? (+1, -0.33)

- a. Kalidas
 - b. Valmiki
 - c. Vishnu Sharma
 - d. Sri Harhsa
-

71. The foundation of Buddhism are the ____ noble truths and the _____ fold path. (+1, -0.33)

- a. six, four
 - b. eight, six
 - c. two, eight
 - d. four, eight
-

72. Taps A and B can fill a tank in 2 and 8 hours, respectively. Tap C can empty the filled tank in 4 hours. If all the three taps are turned on simultaneously, how much time will it take to fill the tank completely? (+1, -0.33)

- a. 3 hours
 - b. $9/2$ hours
 - c. $3/8$ hours
 - d. $8/3$ hours
-

73. Sunder and Prakash are playing carom. If Prakash faces south – east direction, then his opponent Sunder is facing which direction? (+1, -0.33)

- a. South – west
 - b. South – east
 - c. North – east
 - d. North – west
-

74. Which of the following does NOT possess kinetic energy? (+1, -0.33)

- a. A rolling stone
 - b. A falling coconut
 - c. A raised hammer
 - d. A speeding car
-

75. Find the missing term in the give series: (+1, -0.33)

L - 169, J - 196, ?, F - 256

- a. F - 140
 - b. H - 225
 - c. T - 92
 - d. S - 101
-

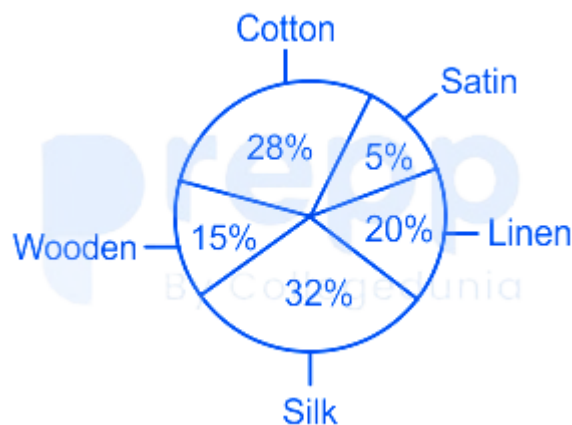
76. Atomic numbers of Actinoides are from _____. (+1, -0.33)

- a. 57 - 70

- b. 58 – 71
- c. 89 – 103
- d. 89 – 102

77. You want to decorate your house with 300 light bulbs of four selected colors. You already have 32 red, 26 green and 9 yellow bulbs. You have no blue bulbs, each bulb costs Rs. 15 and you get 20% discount if you purchase 50 or more bulbs of the same color and 30% discount when you purchase 70 or more bulbs of new color. How much would you spend if you decorated your house with an equal number of bulbs of each color? (+1, -0.33)
- a. Rs. 2959.50
 - b. Rs. 2970
 - c. Rs. 2680.50
 - d. Rs. 2780

78. The following pie diagram shown information about different types of the cloth material produced in company XYZ in 2015 (+1, -0.33)



If the total fabric produced is 1,50,000 tones in the year 2015

How much fabric of satin (in tons) was produced in 2015?

- a. 7500
 - b. 1500
 - c. 30,000
 - d. 60,000
-

79. Select the option that is related to the third word on the same basis as the second word is related to the first word. (+1, -0.33)

Embroidery : Beautiful :: Moonlight : ?

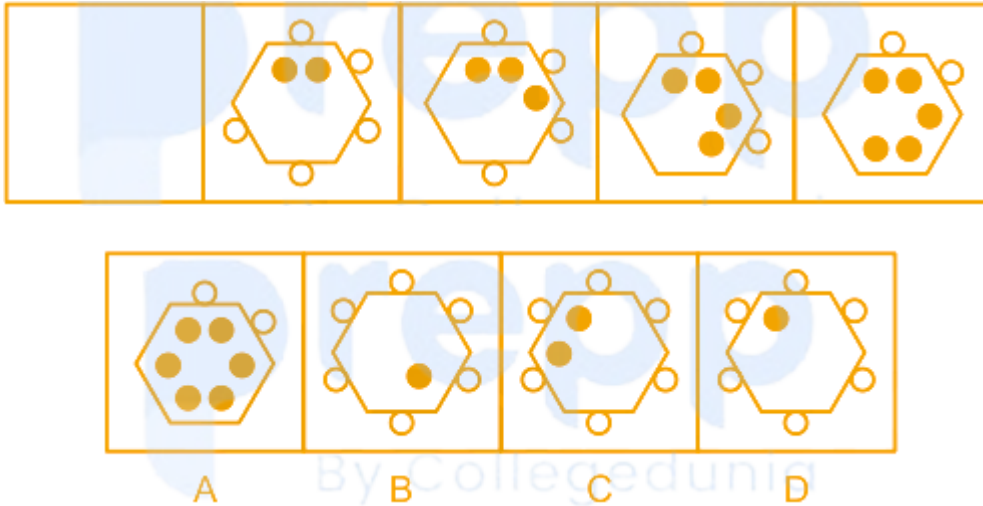
- a. Day
 - b. Dark
 - c. Cool
 - d. Dense
-

80. Which Indian city was ranked first in the 2018 Ease of Living Index prepared by the Ministry of Housing and Urban Affairs? (+1, -0.33)

- a. Chennai
 - b. Navi Mumbai
 - c. Pune
 - d. Kochi
-

81. The missing figure in the above sequence is

(+1, -0.33)



- a. D
- b. A
- c. B
- d. C

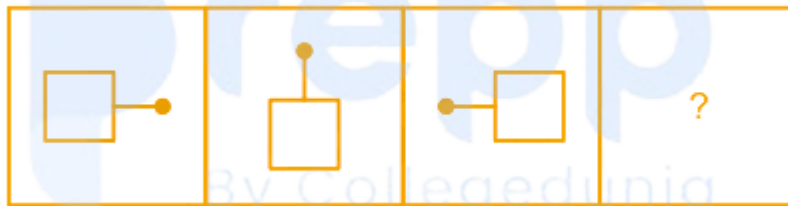
82. The Government of India has launched the Pradhan Mantri Krishi Sinchai Yojana (PMKSY) with an investment of _____ aiming at the development of irrigation sources for providing a permanent solution form drought. (+1, -0.33)

- a. Rs. 50,00,000 crore
- b. Rs. 500,000 crore
- c. Rs. 5,000 crore
- d. Rs. 50,000 crore

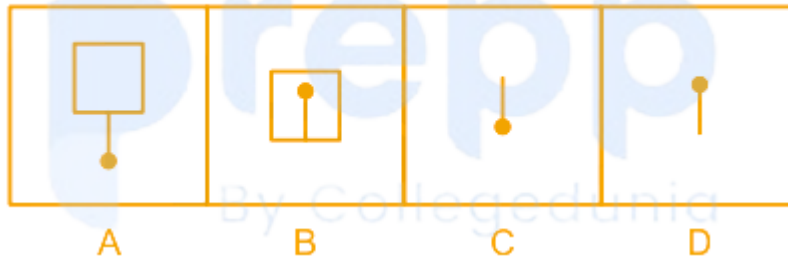
83. Pick the figure that will complete the given series.

(+1, -0.33)

Problem Figures



Answer Figures



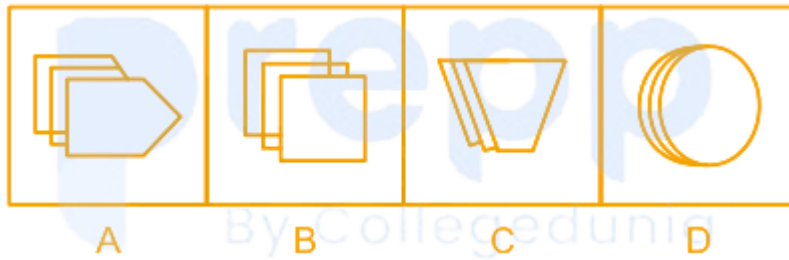
- a. C
- b. A
- c. B
- d. D

84. The Union Ministry of Personnel, Public Grievances and Pensions launched the electronic - Human Resource Management System (e - HRMS) on the occasion of ____ on 25th December. (+1, -0.33)

- a. Good Governance Day
- b. Good Behaviour Day
- c. Good Conduct Day
- d. Good Management Day

85. Find the odd one out:

(+1, -0.33)



- a. C
- b. D
- c. A
- d. B

86. Find the odd one out:

(+1, -0.33)



- a. A
- b. D
- c. C
- d. B

87. Plants that do NOT have a well-differentiated body design fall in the _____ group. (+1, -0.33)

- a. Gymnosperms
- b. Pteridophyta
- c. Thallophyta
- d. Bryophyta

88. You are given a question and two statements. Identify which of the statements is/are necessary/sufficient to answer the question. (+1, -0.33)

Question:

How many daughters does Z have?

Statements:

1. X and Y are only daughters of U.

2. V is brother of X and son of Z.

- a. Either 1 or 2 alone is sufficient
- b. 1 alone is sufficient while 2 alone is not sufficient
- c. 2 alone is sufficient while 1 alone is not sufficient
- d. Both 1 and 2 together are sufficient

89. Read the given statements(s) and conclusions carefully and select which of the conclusions logically follow(s) from the statement(s). (+1, -0.33)

Statements:

I. Some tables are wood.

II. Some wood are brown.

Conclusions:

1. Some brown are tables.

2. Some woods are tables.

a. Conclusion 2 alone follows.

b. Conclusion 1 alone follows.

c. Both 1 and 2 follows.

d. Neither 1 nor 2 follows.

90. The difference between the selling prices of a chair at profits 10% and 14% is Rs. 27. What is the cost price of the chair? (+1, -0.33)

a. Rs. 586

b. Rs. 440

c. Rs. 880

d. Rs. 675

91. A vendor buys pencils at Rs. 25 per dozen and sells them at a rate of 5 pencils for Rs. 12 Find his gain or loss percent? (+1, -0.33)

a. 15.2% gain

b. 15% gain

- c. 15.2% loss
 - d. 15% loss
-

92. What is the HCF of two prime numbers x and y ? (+1, -0.33)

- a. 1
 - b. 2
 - c. x/y
 - d. 0
-

93. Read the given statement(s) and conclusions carefully and select which of the conclusions logically follow(s) from the statement(s) (+1, -0.33)

A job advertisement states: "Suitable candidates with maximum age of 30 years can apply."

Conclusions:

- I. No candidate who is more than 30 years old can apply
- II. The company is specific about the age group of candidates.

- a. Both the conclusion follows.
 - b. Only conclusion II follows
 - c. Only conclusion I follows
 - d. No conclusion follows
-

94. An object of mass 15 kg is moving with a uniform velocity of 5 ms^{-1} . What is the kinetic energy possessed by the object. (+1, -0.33)

- a. 187.5 ms
- b. 187.5 J
- c. 180.5 J
- d. 17.5 J

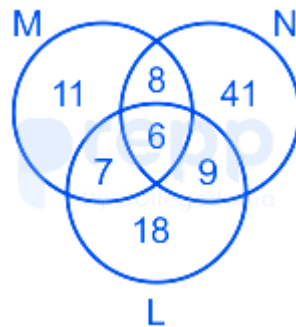
95. Which of the following numbers is irrational? (+1, -0.33)

- a. $\sqrt[6]{1000000}$
- b. $\sqrt{1000000}$
- c. $\sqrt[4]{1000000}$
- d. $\sqrt[3]{1000000}$

96. Calculate the wavelength of a soundwave where frequency is 200 Hz and speed is 400 ms^{-1} in a given medium. (+1, -0.33)

- a. 0.5 m
- b. 0.2 m
- c. 20 m
- d. 2 m

97. The below Venn diagram represents the students who play 3 sports M, N and L in a class, total number of students who play both N & L but not M game is: (+1, -0.33)



- a. 15
- b. 68
- c. 9
- d. 12
-
98. Arjun takes 5 hrs. to swim upstream of 40 km where as he takes only 2 hrs. to swim downstream of 20 km. Find the speed of Arjun in still water. (+1, -0.33)
- a. 15 kmph
- b. 10 kmph
- c. 12 kmph
- d. 9 kmph
-
99. Find the next number in the given series. (+1, -0.33)
- 3, 6, 12, 24, 48, ?

- a. 96
- b. 405
- c. 95
- d. 100

100. If $2x^2 + ax + b$ when divided by $x - 3$ leaves a remainder of 35, and $2x^2 + bx + a$ when divided by $x - 3$ leaves a remainder of 29, then what is the value of $a + b$? (+1, -0.33)

- a. -23
- b. 7
- c. -7
- d. 23

Prepp

Your Personal Exams Guide

Answers

1. Answer: c

Explanation:

The correct answer is option 3, i.e., four-chambered heart.

- **Birds(aves)** have **four-chambered heart**.
- **Chordates** have **closed circulatory system** i.e., heart and blood vessels are found in them, and **Heart** in is divided into chambers like **atriums (auricles)** and **ventricles**.
- **Pisces** have **two-chambered heart**, i.e., one auricle and one ventricle.
- **Amphibians** and **Reptile** have **three-chambered heart**, i.e., two auricles and one ventricle.
- **Aves** and **Mammals** have **four-chambered heart**, i.e., two auricles and two ventricles.
- This kind of system **prevents mixing** of the oxygenated and de-oxygenated blood.

2. Answer: b

Explanation:

The correct answer is option 2, i.e., doubled.

- **If the resistance is halved the current gets doubled .**
- Electrical resistance is the **obstruction** in the flow of current.
- This means that when resistance will be less, the current will be more.
- Also, the formula for the current is, $I = V / R$, where **I = Current, V = Voltage, R = Resistance.**
- **According to question, Resistance (R) is halved.** Now, if the resistance is halved and the voltage remains the same, the new value of current becomes , $I' = 2V/R$, $I' = 2(V/R) = 2I$. Hence, the current will become double.

3. Answer: a

Explanation:

- The correct answer is Option 1, i.e., Supriya Sahu.
- As of September 2018, Supriya Sahu was the **Director-General of Doordarshan**.
- Doordarshan is one of the two divisions of the **Prasar Bharti**.
- It was founded by the **Government of India on 15 September 1959** and is one of the largest broadcasting organizations of India in studio and transmitter infrastructure.
- **Supriya Sahu** is an **IAS officer** and currently serving as the Principal Secretary-cum-Managing Director of The Tamil Nadu Small Tea Growers' Industrial Cooperative Tea Factories' Federation Limited (INDCOSERVE) in Coonoor.
- **A. Surya Prakash** is currently serving as the chairperson of Doordarshan.

4. Answer: a

Explanation:

The correct answer is option 1, i.e., ears.

- **Pinna** is the external part of the ears.
- In **mammals**, an ear has 3 parts, namely **external ear, middle ear, and inner ear**.
- The **external ear** is the outermost part of the ear which is divided into **ear pinna and auditory canal**.
- The ear pinna is the main part and occurs only in mammals. It is due to this fact **mammals** are regarded to have **true external ears**.
- The **muscles of ear pinna** are **vestigial** parts of the human body.
- The parts of **human eyes** include: cornea, sclera, pupil, iris, lens, retina, choroid, etc.

5. Answer: a

Explanation:

Concept Used:

Rules to determine the number of significant figures:

- All non-zero numbers are significant.
- The Zeros between two non-zero digits are significant.
- Leading zeros are not significant.

Calculation:

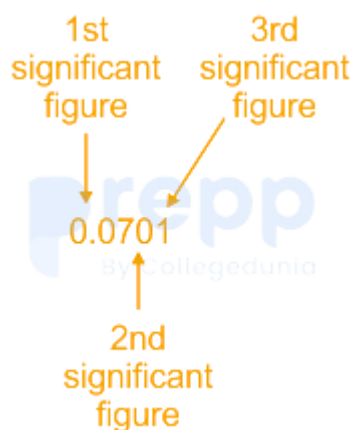
Considering the given value 0.008594

Now, Correct to three significant figures can be written as 0.00859



Additional Information

- Significant figures of a number in notation are digits in the number.
- That is absolutely necessary to indicate the quantity of something in an accurate manner.
- This mainly uses to precise a number.
- For example:



6. Answer: b

Explanation:

The correct answer is option 2, i.e., Cricket.

- **Angha Deshpande** is related to Cricket.
- Angha Deshpande was a **wicket-keeper** and **right-handed batswoman**.
- She made her ODI debut in the year 2008 and played her last ODI in the year 2013.
- She made her T20 debut in the year 2011 and played her last T20 in the year 2014.

Sport	Famous Indian Women Players
Athletics	P.T. Usha (track and field), Anju Bobby George (long jump), Hima Das (track and field), etc.
Cricket	Mithali Raj, Jhulan Goswami, Harmanpreet Kaur, etc.
Archery	Dola Banerjee, Deepika Kumari, Bombayla Devi Laishram, etc.
Table Tennis	Ankita Das, Manika Batra, etc.

Your Personal Exams Guide

7. Answer: d

Explanation:

The correct answer is option 4, i.e., -2.0 ms^{-1} .

- The **recoil velocity** is the **velocity** by which pistol bounces back when a bullet is fired.
- In this case, the **momentum of the bullet** is equal to the **momentum of the pistol**.
- Hence, $m_b v_b = m_p v_p$ (where m_b and m_p are the masses of bullet and pistol respectively and v_b and v_p are the velocities of bullet and pistol respectively).

- $3 \times v_p = 40 \times 10^{-3} \times 150$
- $v_p = 40 \times 10^{-3} \times 50$
- $v_p = 2000 \times 10^{-3}$
- $v_p = 2 \text{ m/s}$
- Here, the **velocity of pistol** is taken with **negative sign** because, it is in the **opposite direction to that of the velocity of the bullet**, i.e., bullet moves forward and pistol moves backwards.

8. Answer: d

Explanation:

The figure which can be formed from the given shapes is,



Hence, option 4 is the correct answer.

9. Answer: a

Explanation:

The correct answer is option 1, i.e., Pratyush.

- Pratyush is India's fastest and first multi-petaflops (PF) supercomputer unveiled at the Pune-based Indian Institute of Tropical Meteorology (IITM).
- The meaning of the word 'Pratyush' is 'rising sun' and the maximum speed of the supercomputer is 4.0 PetaFlops.
- It was inaugurated on 8 January 2018 by the Union Minister of Science and Technology, Dr. Harsh Vardhan.
- Pratyush is used for weather forecasting and climate monitoring.

- After **Japan, the USA, and the UK**, India has become the **fourth country** in the world to have a High-Performance Computing (HPC) facility meant for climate and weather research.
- The team of engineers that built Pratyush was led by **Suryachandra A Rao** at the IITM, Pune.
- **Mihir** is another supercomputer unveiled at the **National Center for Medium Range Weather Forecast (NCMRWF), Noida**. The maximum speed of this supercomputer is **2.8 PetaFlops**. Together they provide a combined output of **6.8 PetaFlops**.
- The purpose of the Mihir supercomputer is the same as that of Pratyush.

10. Answer: d

Explanation:

According to the given information,

Assumption I: This is implicit, because there are other oils available in the market.

Assumption II: This is also implicit, because health is definitely a priority for every individual and their family.

Hence, "both I and II" are implicit.

11. Answer: d

Explanation:

Given:

$$\tan f + \cot f = 5$$

Formula Used:

$$(a + b)^2 = a^2 + b^2 + 2ab$$

$$\tan \theta \times \cot \theta = 1$$

Calculation:

Considering the given statement

$$\tan f + \cot f = 5$$

Applying the formula

$$(\tan f + \cot f)^2 = \tan^2 f + \cot^2 f + 2 \tan f \cot f$$

$$\Rightarrow 25 - 2 = \tan^2 f + \cot^2 f$$

$$\therefore \tan^2 f + \cot^2 f = 23$$

12. **Answer: a**

Explanation:

The correct answer is option 1, i.e., Fullerenes.

- In **Fullerenes**, carbon atoms are arranged in the **shape of a football**.
- Fullerenes are one of the **allotropes of carbon**.
- In fullerenes, carbon atoms are bonded by **single and double bonds** so as to form a **closed or partially closed mesh**, with **fused rings of five to seven atoms**.
- The most famous member of the Fullerenes is **Buckminster Fullerenes**. The molecule has **60 carbon atoms**.
- It is named after **Buckminster Fuller**, because the structure of the molecule is similar to geodesic spheres made by this **American architect**, and is also known as '**Buckyball**' as its shape is similar to that of '**soccer balls**'.
- The accidental synthesis in the year **1985** led to the discovery of fullerenes.
- **Methane** (CH_4) is a hydrocarbon belonging to the family of alkanes and is the first member of the alkane family.
- **Benzene** is an aromatic hydrocarbon with the formula C_6H_6 .
- **Ethane** (C_2H_6) is the second member of the alkane family after Methane.

13. Answer: c

Explanation:

The correct answer is option 3, i.e., Kalidas.

- 'Raghuvansham' is compiled by **Kalidas**.
- 'Raghuvansham' known as 'Raghuvamsa' is a Sanskrit epic poem compiled by Kalidas.
- The poem speaks in **19 sargas**, about the **Raghu dynasty**, which included **Raghu, Dasaratha, Rama**, etc.
- **Kalidas** is assumed to be a **5th-century poet and writer**. His famous works include **Abhijanasakuntalam, Meghaduta**, etc.
- **Surdas** was a 16th-century blind poet whose works were dedicated to the devotion towards **Lord Krishna**. He used to write in **Braj Basha** and 'Sur Sagar' is his most famous composition.
- **Kabirdas** was a 15th-century saint and poet, whose writings were influential in the Bhakti movement. He also wrote in **Braj** and his works were concerned with devotion, mysticism, and discipline. 'Kabir ke dohe' is still very popular.
- **Tulsidas** a devotee of **Lord Rama** was a saint and a renowned poet. He is best known for 'Ramcharitmanas'.

Your Personal Exams Guide

14. Answer: b

Explanation:

The correct answer is option 2, i.e., 273 K.

★ Key Points

- The **melting point of ice** is **273 K**.
- Water can exist in all three forms, i.e., **solid, liquid, and gas**.
- Solid in the form of **ice**, liquid in the form of **water**, and gas in the form of **water vapours**.

- The **melting point** is the **temperature at which a substance changes its state from solid into liquid**.
- For ice, the **temperature in degree Celcius is 0** and in **kelvin, it is 273**.
- **Kelvin is the SI unit of temperature** and $0^{\circ}\text{C} = 273\text{ K}$
- The formula for converting $^{\circ}\text{C}$ into K is: $\text{K} = 273 + \text{temperature in } ^{\circ}\text{C}$
- The temperature at which a liquid transforms into gas is termed as its **boiling point**.
- For water, the boiling point is 100°C , i.e., 373 K .

15. **Answer: a**

Explanation:

The correct answer is 250.

★ **Key Points**

- The **maximum permissible strength of the Rajya Sabha is 250**.
- As per **Article 80** of the Indian Constitution, the maximum permissible strength of the Upper House of the Parliament, i.e., Rajya Sabha is 250.
- Out of the total 250, **238** are representatives from the States and Union Territories and **12** are nominated by the President.
- **Currently, the maximum strength for Rajya Sabha is 245**, of which **233** are elected by the legislatures of the states and union territories and the remaining **12** are nominated by the President.
- The **Vice-President of India is the ex-officio Chairman of the Rajya Sabha**, i.e., whosoever holds the office of Vice-President will automatically become the Chairman of the Rajya Sabha. Currently, Jagdeep Dhankhar is the Chairman of Rajya Sabha.

16. **Answer: a**

Explanation:

According to the given statement,

Course of action 1: This follows, because the footpath is filled with beggars.

Course of action 2: This also follows, because the social status of the beggars should be increased.

Hence, "both 1 and 2" follow.

17. Answer: d

Explanation:

Given

$$49 \times 17 = 833$$

Calculation

$$0.0833 \div 4.9$$

$$= 833/10000 \div 49/10$$

$$= (833/10000) \times (10/49)$$

$$= (49 \times 17)/(1000 \times 49)$$

$$= 17/1000$$

$$= 0.017$$

18. Answer: b

Explanation:

The correct answer is option 2, i.e., Tasman Sea.

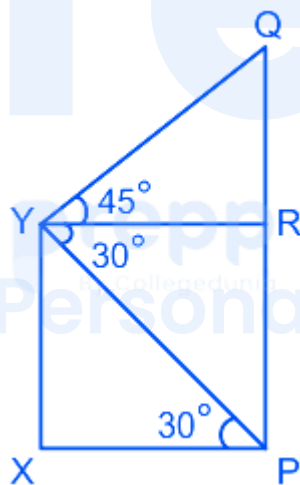
- **Tasman Sea** separates **Australia** from **New Zealand**.
- The Tasman Sea is a section of the Southwestern Pacific Ocean and it is 2800 km long and 2000 km wide.
- Between the southeast coast of Australia and Tasmania to the west and New Zealand to the east.
- The sea was first navigated by Dutch explorer Abel Janszoon Tasman, hence the name the Tasman Sea.

19. Answer: d

Explanation:

Calculation:

From the given information the diagram can be drawn as



Let XY be the length of building A

PQ be the length of building B

$$XP = YR$$

In $\triangle XYP$

$$\tan 30^\circ = XY/XP$$

$$1/\sqrt{3} = 150/XP$$

$$\Rightarrow XP = 150\sqrt{3} \text{ m}$$

Now,

In ΔQYR

$$\tan 45^\circ = QR/YR$$

$$1 = QR/150\sqrt{3}$$

$$\Rightarrow QR = 150\sqrt{3}$$

$\therefore$ Height of building B

$$\Rightarrow PQ = QR + PR = 150 + 150\sqrt{3}$$

$$\Rightarrow PQ = 150 (\sqrt{3} + 1)$$

20. Answer: d

Explanation:

The correct answer is **option 4, i.e., 90degrees**.

- If the work done is zero, then the angle between the force and displacement is **90°**.
- Work is a **scalar quantity**, i.e., it only has magnitude and no direction.
- Work done is a **scalar product** of force and displacement, i.e., **$W = F \cdot s$** or **$W = F s \cos \theta$**
- The value of **$\cos 90^\circ$ is 0**, and as we know when anything is multiplied with 0 the product is 0.
- It is due to this, we say that the **work done** when the angle between force and displacement is **90°**.

21. Answer: b

Explanation:

Given:

By driving at 42 km/hr a person reaches his destination 1 minute early

By driving at 36 km/hr a person reaches his destination 3 minutes late

Concept:

Let the total distance be x

Difference between time both the cases = 4 min

Formula used:

Distance = speed $\times$ time

Calculation:

According to the question,

$$\Rightarrow (x/36) - (x/42) = 4/60 = 2/30$$

LCM of 36, 42, 30 is 1260

$$\Rightarrow 35x - 30x = 84$$

$$\Rightarrow 5x = 84$$

$$\Rightarrow x = 84/5 = 16.8 \text{ km}$$

$\therefore$ Distance the person is covering is 16.8 km



Formula used:

Distance = $\left[\frac{\text{product of two speeds}}{\text{difference between two speeds}} \right] \times \text{Difference in time}$

Calculation:

Total time difference = 1 + 3 = 4 minutes = $\frac{4}{60}$ hours

Distance = $\left[\frac{(42 \times 36)}{(42 - 36)} \right] \times \frac{4}{60}$

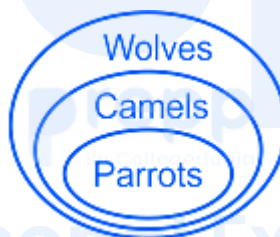
$\Rightarrow \frac{(42 \times 36)}{6} \times \frac{4}{60} = \frac{168}{10} = 16.8 \text{ km}$

$\therefore$ Distance the person is covering is 16.8 km

22. Answer: d

Explanation:

Drawing the Venn diagram,



Conclusion 1: Some parrots are NOT wolves. $\rightarrow$ False (This is definitely false)

Conclusion 2: Some wolves are parrots $\rightarrow$ True (This is definitely true)



Hence, "only conclusion 2" follows.

23. Answer: a

Explanation:

Given:

15 experts = 25 trainees

$\Rightarrow$ Experts/trainees = $5/3$

According to question:

A piece of work is to be done by 8 experts and 15 trainees

Trainees = $(3/5)$ experts

Experts = $(5/3)$ trainees

8 experts and 15 trainees are doing the work

$\Rightarrow$ 8 experts + $15 \times (3/5)$ experts

$\Rightarrow$ 17 experts $\times$ Time = total work ----- (i)

11 experts are already doing work.

6 more experts are required to complete the same work in the same times

$\Rightarrow$ 6 experts = $6 \times (5/3)$ trainees = 10 trainees

$\therefore$ Required number of trainees = 10

24. Answer: b

Explanation:

The correct answer is **option 2, i.e. A and B are both true**.

- **Rigidity** : It is the **property of matter to maintain its shape even if external force works on it and solids show this property**.
 - The **property exhibited by the solids by virtue of which they maintain their shape** is termed as Rigidity.

- This is so because in solids the **particles are closely packed** with very little or no space between the particles and also the **force of attraction between the particles is very high**.
- **Fluidity** : It is the **property of a substance to easily flow** and **allow a change in its shape under external forces** and this property is exhibited both by liquids and gasses .
 - **Fluidity** in simple terms can be defined as the **ability to flow** .
 - The ability of liquids and gases to take the **shape of the container** in which they are kept is because of their fluidity.

25. Answer: d

Explanation:

The correct answer is option 4, i.e., CaCO_3 .

- While whitewashing, $\text{Ca}(\text{OH})_2$ reacts slowly with CO_2 in the air to form a thin layer of CaCO_3 on the walls.
- $\text{Ca}(\text{OH})_2$ is Calcium hydroxide, CO_2 is Carbon dioxide, and CaCO_3 is Calcium carbonate .
- **Calcium carbonate** is formed 2-3 days after whitewashing, and thus we get a **shiny finish on the wall** .
- Following reaction takes place in the given case:
- $\text{Ca}(\text{OH})_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O}$
- The common name of **Calcium hydroxide** is ' **slaked lime** ' and the saturated solution of Calcium hydroxide is known as ' **limewater** '.
- **Calcium carbonate** is commonly known as ' **limestone** '.
- CaO is Calcium oxide.
- CaSO_4 is Calcium sulphate.
- CaCl_2 is Calcium chloride.

26. Answer: d

Explanation:

The correct answer is option 4, i.e., Jwala Gutta.

- **Jwala Gutta** was included in the **Badminton Association of India's** coach panel in 2017.
- The **Badminton Association of India (BAI)** has formed a new panel of 19 **coaches** which include former players like **Jwala Gutta, Arvind Bhat, Chetan Anand**, etc. **Pullela Gopichand** will still remain the Chief National Coach.
- **Jwala Gutta** is a renowned badminton player. She represented India in both mixed doubles and women's doubles at the international stage. She won the bronze medal in the 2011 World Championship.
- Other than Jwala Gutta, the other 3 women players included in the panel are **Madhumita Bisht, Pradnya Gadre, and Oli Deka**.
- **Saina Nehwal** is a former world no. 1 badminton player and has been honored with Rajiv Gandhi Khel Ratna Award and Arjuna Award.
- **PV Sindhu** is also a very famous badminton player and has won silver in the 2016 Summer Olympics and has been felicitated with awards like Rajiv Gandhi Khel Ratna Award, Padma Shri, and Padma Vibhushan.

27. Answer: b

Explanation:

The correct answer is option 2, i.e., Li Keqiang.

- Li Keqiang is the current **Prime Minister of China**.
- Li Keqiang, the incumbent **Premier** of the People's Republic of China, **assumed his office on 15 March 2013**.
- Li Keqiang is not only the head of the government but also one of the leading figures behind China's Financial and Economic Affairs, National Security, Foreign Affairs, etc.
- **Xi Jinping** is the **President** of the People's Republic of China.
- **Hu Jintao** was the **President** of the People's Republic of China **before Xi Jinping**.

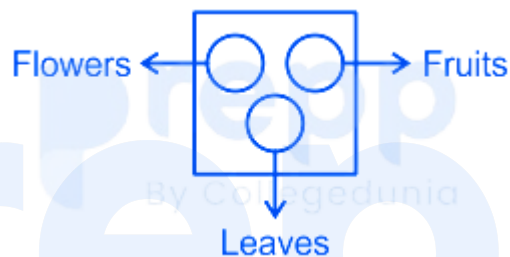
- Wang Qishan is the **Vice-President** of the People's Republic of China.

28. Answer: a

Explanation:

Flowers, fruits and leaves are different elements that we get from plants and they are represented separately.

The correct Venn diagram is,



Hence, option 1 is the correct answer.

29. Answer: c

Explanation:

Given:

$$x^2 + kx + 9$$

Formula Used:

If the roots of the equation are equal then in the given equation

$$a^2 + bx + c = 0$$

$$\Rightarrow b^2 - 4ac = 0$$

Calculation:

Considering the given equation,

$$x^2 + kx + 9$$

$$\Rightarrow k^2 - 4 \times 1 \times 9 = 0$$

$$\Rightarrow k^2 = 4 \times 9$$

$$\Rightarrow k^2 = 36$$

$$\Rightarrow k = \pm 6$$

$$\therefore \text{value of } k = \pm 6$$

30. Answer: c

Explanation:

The correct answer is option 3, i.e., diamond.

- In diamond, each carbon atom is bonded to four other carbon atoms forming a rigid three-dimensional structure .
- Diamond is an **allotrope of carbon** , in which atoms are arranged in a crystal structure called **diamond cubic** .
- Diamond is the **hardest** and has the **highest thermal conductivity** of any natural material. These properties make it very useful for industrial purposes.
- **Graphite** is also an allotrope of carbon in which atoms are arranged in the hexagonal arrangement. Graphite is the most stable form of carbon under the STP (standard temperature and pressure). It is used in pencils and electrodes.
- **Ethane (C₂H₆)** is a hydrocarbon and second member of the alkane family after methane.
- **Methane (CH₄)** is the first member of the alkane family having only one carbon atom.

31. Answer: b

Explanation:

The correct answer is option 2, i.e., Dronacharya Award.

- **Dronacharya Award** is bestowed upon coaches for producing medal winners at prestigious international sport events.
- Dronacharya Award is officially known as **Dronacharya Award for Outstanding Coaches in Sports and Games**.
- The award has been named after "**Guru Dronacharya**" who was the teacher of Kauravas and Pandavas in the Mahabharata and is given for producing medal winners at prestigious international sport events.
- The award is presented **annually** by the **Ministry of Youth Affairs and Sports** and was **first presented in the year 1985**.
- **A bronze statue of Dronacharya, a certificate, ceremonial dress, and a cash prize of Rs. 5 lakhs** is given to the awardee.
- The most recent recipients of the award in the year 2019 are: **Mohinder Singh Dhillon, Rambir Singh Khokar, U. Vimal Kumar, Sandip Gupta, Sanjay Bhardwaj, and Merzban Patel**.
- **Arjuna Award** is also presented by the Ministry of Youth Affairs and Sports to the players for their outstanding achievements in sports.
- **Rajiv Gandhi Khel Ratna Award** is the highest honour given to a sportsperson in India. It is also presented by the Ministry of Youth Affairs and Sports.
- **Dhyan Chand Award** is officially known as the Dhyan Chand Award for Lifetime Achievement in Sports and Games, is the award given for the contribution to the sport during the active career and also after the retirement.

32. Answer: b

Explanation:

Given:

Rate of interest = 15%

Time period = 2 years

Difference between CI and SI for two years = Rs.180

Concept:

To calculate the effective percentage increase in CI we can use successive percentage method.

SI is addition of rate percentage according to number of years

Formula used:

When calculated at simple interest

$$\text{Interest} = (p \times r \times t)/100$$

Where p, r and t respectively are principal, rate of interest and time

When calculate at compound interest

$$\text{Amount (A)} = p (1 + r/100)^n$$

Where p, r and n respectively are principal, rate of interest and time

Calculation:

Let the principal be 100x

When calculated SI

$$\text{Interest} = (100x \times 15 \times 2)/100$$

$$\Rightarrow \text{Interest} = 30x$$

When calculated at CI

$$\text{CI} = 100x (1 + 15/100)^2 - 100x$$

$$\Rightarrow 132.25x - 100x$$

$$\Rightarrow CI = 32.25x$$

According to the question,

$$32.25x - 30x = \text{Rs. } 180$$

$$\Rightarrow 2.25x = \text{Rs. } 180$$

$$\Rightarrow x = 80$$

$$\Rightarrow 100x = 80 \times 100 = \text{Rs. } 8000$$

$\therefore$ Required principal is Rs. 8000

Alternate Method:

$$\{a + b + (a \times b)/100\}$$

$$\Rightarrow \{15 + 15 + (15 \times 15) / 100\}$$

$$\Rightarrow \{30 + 2.25\}$$

$$\Rightarrow 32.25\%$$

Effective rate of percentage to which money grow in 2 year at SI = $(15 + 15) = 30\%$

$$\Rightarrow (32.25 - 30) = 2.25\%$$

According to question:

$$\Rightarrow 2.25\% = 180$$

$$\Rightarrow 1\% = 180 / 2.25$$

$$\Rightarrow 100\% = (180/2.25) \times 100$$

$$\Rightarrow \text{Rs. } 8000$$

$\therefore$ Required principal is Rs. 8000

33. Answer: c

Explanation:

The correct answer is option 3, i.e., In vitro fertilization.

- In some females, due to some problem, fertilization cannot take place. In such cases, **freshly released egg and sperms are kept together for few hours for fertilization to occur outside the body**. This is called: In vitro fertilization.
- The word " **in vitro** " means " **in glass** ", the **artificial fertilization** that takes place outside the body in a **glass test-tube** is known as **In vitro fertilization**.
- In this process, the ovulation cycle of the woman is administered and the egg is taken from the body of the female and it is fertilized with the sperm of the male in the artificial environment.
- **Regeneration** is an asexual mode of reproduction in which a part of the body detaches from the parent to become an independent individual. This generally takes place in lower animals like hydra, sponges, earthworms, starfish, etc.
- **Vegetative reproduction** is also an asexual mode of reproduction in which a plant is grown from a specialized tissue of the parent plant body.
- **Fertilization** is a process of fusion of male and female gametes.

34. Answer: d

Explanation:

The correct answer is option 4, i.e., altitude.

- The value of 'g' decreases with altitude .
- 'g' is the **acceleration due to gravity** .
- The acceleration due to gravity is the acceleration **gained by an object due to the force of gravitation** . The SI unit for the same is **m/s²**.
- Its standard value is **9.8 m/s²** on the surface of the earth at the sea level.
- The formula of 'g' is: **$g = \frac{GM}{R^2}$** (where G is 'gravitational constant', M is the mass of the earth, and R is the radius of the earth)
- The other formula for 'g' is: **$g = \frac{4}{3} \pi \rho R G$**
- The value of 'g' depends on the following:

- altitude above the surface of Earth
- shape of the Earth
- depth below the surface of Earth
- rotational motion of the Earth
- The value of 'g' decreases with altitude because $g_h = g (1 + h/R)^{-2}$ [where g_h is the acceleration due to gravity at height h]. This formula suggests that 'g' decreases with altitude.

35. Answer: c

Explanation:

Given:

Two numbers differ by 2

Formula Used:

$$(a^2 - b^2) = (a - b)(a + b)$$

Calculation:

Let the two numbers be x and y

According to question,

$$x - y = 2$$

$$x^2 - y^2 = 100$$

Now, According to the formula

$$x^2 - y^2 = (x - y)(x + y)$$

$$\Rightarrow 100 = 2 \times (x + y)$$

$$\Rightarrow x + y = 50$$

$\therefore$ Sum of the numbers is 50

36. Answer: a

Explanation:

From the given graph we can say that,

In 1995 concentration of $\text{CO}_2 = 360$

In 2000 concentration of $\text{CO}_2 = 370$

In 2005 concentration of $\text{CO}_2 = 380$

In 2010 concentration of $\text{CO}_2 = 385$

In 2015 concentration of $\text{CO}_2 = 400$

Every year concentration of CO_2 is increasing.

$\therefore$ we can say that option (i) is the right answer

37. Answer: d

Explanation:

Given:

Two numbers are in the ratio 3 : 4

After adding 3 to each number the number become 10 : 13

Calculation:

Let the constant be x

Two are 3x and 4x

According to question:

$$\Rightarrow \{(3x + 3) / (4x + 3)\} = 10/13$$

$$\Rightarrow 39x + 39 = 40x + 30$$

$$\Rightarrow x = 9$$

$$\therefore \text{Original number} = 3 \times 9 = 27$$

$$\Rightarrow 4 \times 9 = 36$$

38. Answer: d

Explanation:

Given:

There are three pipes A, B and C

A can fill the tank = 6 hours

B can fill the tank = 8 hours

C can empty the tank = 10 hours

Calculation:

Let the total quantity be LCM of (6, 8 and 10)

$$\text{LCM of } 6, 8, 10 = 120$$

Total capacity of tank = 120 units

$$\text{Efficiency of A} = 120/6 = 20 \text{ units/min}$$

$$\text{Efficiency of B} = 120/8 = 15 \text{ units/min}$$

$$\text{Efficiency of C} = 120/10 = 12 \text{ units/min}$$

Effective efficiency of tank when these three pipes are opened together:

$$\Rightarrow (20 + 15 - 12)$$

$$\Rightarrow 23 \text{ units/min}$$

$\therefore$ Tank will be filled in

$$\Rightarrow 120/23 = 5\frac{5}{23} \text{ hrs.}$$

39. Answer: d

Explanation:

The correct answer is Voltmeter.

★ Key Points

- A voltmeter is an instrument used to **measure the potential difference** .
- A voltmeter is used **between two points in an electric circuit** to measure the potential difference between those two points.
- Voltmeter was **invented in 1819 by Hans Oersted** .
- The symbol for the voltmeter is shown below:

Your Personal Exams Guide

•



★ Additional Information

- The **ammeter** is the instrument used for measuring current in the electrical circuit.
- The **galvanometer** is the instrument that detects current in the electrical circuit.

40. Answer: d

Explanation:

The correct answer is option 4, i.e., lead.

- Lead is not a compound.
- **Lead is an element** and the symbol for lead is **Pb**.
- The **atomic number** of lead is **82** and belongs to **group 14** of the periodic table and thus is a **post transitional metal**.

- Lead is a **heavy metal** that is **soft** and **malleable**, has **low melting point**, and is **amphoteric** in nature i.e., can react with both acids and bases.
- Compound is formed by the combination of two or more elements.
- **Hydrogen sulfide (H₂S)** is a gas that smells like rotten eggs.
- **Chalk** is a form of calcium carbonate i.e. **CaCO₃**.
- **Sulphur dioxide (SO₂)** is a toxic gas.

41. Answer: c

Explanation:

Here except E, the mirror image of M, W, and T will be same as they appear originally.

Hence, option C is the odd one out.

42. Answer: d

Explanation:

The correct answer is option 4, i.e., 1.5 ms⁻².

Concept:

- Velocity: The rate of change of displacement of a body is called as the velocity of that body.
- It is a vector quantity which has both magnitude as well as direction.

$$\text{Velocity (V)} = \frac{\text{Change in displacement}}{\text{Time taken}} = \frac{S_2 - S_1}{t_2 - t_1} \text{ or } \frac{dS}{dt}$$

Where S₂ is final displacement at time t₂ and S₁ is initial displacement at time t₁. गतीच्या

- Acceleration: The rate of change of velocity is called as acceleration of the body.

$$a = \frac{v_2 - v_1}{t_2 - t_1} \text{ or } \frac{dv}{dt}$$

Where v_2 = Final velocity and v_1 = Initial velocity of an object at time t_2 , t_1 respectively

Explanation:

In the above question, we are given the initial and final velocities and change in the time period.

Since the answer must be in m/s^2 so, we need to convert

- Conversion of km/hr to m/s and vice versa-

<u>Conversion</u>	<u>Multiplier</u>
km/hr to m/s	$5/18$
m/s to km/hr	$18/5$

18 km/hr converted to $18 \times (5/18) = 5 \text{ m/s}$

72 km/hr converted to $72 \times (5/18) = 20 \text{ m/s}$

Change in velocity = $20 \text{ m/s} - 5 \text{ m/s} = 15 \text{ m/s}$

Time to change in velocity = 10 s

So, acceleration = $(15 \text{ m/s}) / 10 = 1.5 \text{ m/s}^2$

The correct answer is 1.5 m/s^2

43. Answer: c

Explanation:

Given

Side of room = 10 m

The carpet and the oil cloth cost Rs. 15 Rs. 6.50 respectively per square meter and the total cost of the carpet and the oil cloth is 1,338.50.

Formula

Area of square = a^2 , where a = side of the square

Calculation

Let the side of turkey carpet be a .

Hence, area of turkey carpet = a^2

Total area of room = $10^2 = 100 \text{ m}^2$

Hence, area of oil cloth = $100 - a^2$

Cost of turkey carpet = $15 \times a^2$

Cost of oil cloth = $(100 - a^2) \times 6.5$

Total cost = $15 \times a^2 + (100 - a^2) \times 6.5$

$$\Rightarrow 15a^2 + 650 - 6.5a^2 = 1,338.50$$

$$\Rightarrow 8.5a^2 = 688.5$$

$$\Rightarrow a^2 = 81$$

$$\Rightarrow a = 9$$

Hence, width of oil cloth = $(10 - 9)/2 = 1/2 \text{ m}$

(Note : Here, we have to divide $(10 - 9)$ by 2 as extra width of oil cloth is on the both sides of turkey carpet)

44. Answer: d

Explanation:

The pattern followed is,

In the third figure there is a single diagram and in the fourth figure the same diagram is represented twice and they are joined.

Similarly,

In the second figure, there are two triangles joined.

And,

In the first figure, there should be a single triangle.



Hence, option 4 is the correct answer.

Your Personal Exams Guide

45. Answer: c

Explanation:

Blankets, Sheets and Pillows are generally used for covering the Cot.

Whereas,

Cot is a small bed.

Hence, "cot" does not belong to the group.

46. Answer: b

Explanation:

Given:

18 men can complete a task in 12 days

After 4 days 2 workers left the work

Concept:

Total work = no. of men working $\times$ total number of days taken

Calculation:

Total work = $18 \times 12 = 216$ units

For 4 days 18 men do the work

Work completed in 4 days

$18 \times 4 = 72$ units

Remaining work = $216 - 72 = 144$

$\Rightarrow 144$ units completed by 16 workers in $144/16 = 9$ days

47. Answer: a

Explanation:

The correct answer is option 1, i.e., Melting of ice.

- The melting of ice is a **physical change**.
- The change that **does not lead to changes** in the chemical composition of a **substance** is termed as physical change.

- Physical changes lead to **changes in the physical properties** and are generally **reversible in nature**.
- Examples of physical changes are: melting of ice, transition into gas, textural changes, changes in size, shape, color, etc.

★ Additional Information

- In the case of the melting of ice, only a **phase transition** takes place, the chemical composition of ice does not change.
- **Chemical changes** lead to the transformation in the chemical composition of the substance. Either a new substance is synthesized or a substance is decomposed.
- The **setting of milk into curd, the ripening of fruits, and fermentation of grapes** all are examples of **chemical changes** since the chemical properties of each are changed.

48. Answer: c

Explanation:

The correct is option 3, i.e., wrinkled seed.

- The **wrinkled seed** character is **recessive** in garden pea plants.
- **Gregor John Mendel**, known as 'father of genetics', chose **garden pea (Pisum sativum)** for his experiments.
- Mendel coined terms 'dominant' and 'recessive' in terms of the characters studied by him.
- A **dominant trait** is one that expresses itself in the presence of other contrasting trait and dominates it. eg: tallness.
- A **recessive trait** is one that is not expressed when present along with the contrasting trait in the hybrid. eg: dwarfness.

Character	Dominant	Recessive
Color of seed	Yellow	Green
Color of unripened pods	Green	Yellow
Difference in form of ripe seeds	Round	Wrinkled

49. Answer: c

Explanation:

The mirror image for the given figure is,



Hence, option 3 is the correct answer.

50. Answer: b

Explanation:

The correct answer is Hydrogen.

★ Key Points

- **Hydrogen** is the **only non-metal** placed with **alkali metals** .
- Hydrogen and alkali metals are placed in **group 1** of the periodic table.
- This is so because Hydrogen and alkali metals both have only **one electron** in **their valence shell** .
- **Alkali metals** include **Lithium** (${}^3\text{Li}$), **Sodium** (${}^{11}\text{Na}$), **Potassium** (${}^{19}\text{K}$), **Rubidium** (${}^{37}\text{Rb}$), **Caesium** (${}^{55}\text{Cs}$), and **Francium** (${}^{87}\text{Fr}$) .

- **Alkali metals** along with **Alkaline Earth metals** form the **s-block elements** since the last electron enters the s-orbital.
- **Alkali metals** are **highly reactive, shiny, and soft metals** . They readily lose their valence electron to become cations with a +1 charge.
- **These react with acids to form salt and hydrogen gas** . For eg:
 - $2\text{Na} + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{H}_2$

51. Answer: a

Explanation:

Formula:

Number of diagonal in polygon = $\{n(n-3)/2\}$

$n = 19$

$\Rightarrow \{19(19-3)/2\}$

$\Rightarrow \{19 \times 8\}$

$\Rightarrow 152$

$\therefore$ Number of diagonals in 19 – gon are 152

52. Answer: d

Explanation:

The correct answer is option 4, i.e., Sania Mirza.

★ Key Points

- The author of the book " **Ace against Odds** " is **Sania Mirza**.
- The book is an autobiography, i.e., **Sania Mirza has written about her own life** .
- The book was **released by Indian actor Shahrukh Khan** in July 2016.

- **Sania Mirza** is a renowned **Indian Tennis player** . She is a former world number 1 and has won 6 Grand Slams. She took retirement from singles in the year 2013.
- **Rohan Bopanna** is also a professional tennis player from India and has won the 2017 French Open mixed double title with Gabriela Dabrowski.
- **Leander Paes** is a world-renowned Indian tennis player, with the greatest number of doubles win in the Davis Cup.
- **Yuki Bhambri** is an Indian tennis player and represents India in Davis Cup and is a former junior number 1.

53. Answer: a

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern followed here is,



Hence, "MU" is the correct answer.

54. Answer: c

Explanation:

Given:

$\frac{1}{8}$ pearls falling onto floor

$\frac{1}{4}$ pearls falling under chair

$\frac{2}{5}$ pearls falling under sofa

Calculation:

LCM of 8, 4, 5 = 40

$\therefore$ 5 pearls falling onto floor

$\Rightarrow$ 10 pearls falling under chair

$\Rightarrow$ 16 pearls falling under sofa

$\Rightarrow (5 + 10 + 16) = 31$

$\Rightarrow 40 - 31 = 9$

According to question

9 units = 18 pieces

$\Rightarrow$ 1 unit = 2 pieces

5 units falls on floor = $5 \times 2 = 10$ pieces

55. Answer: b

Explanation:

Given:

Two cubes each of volume 343 cu. cm are joined end to end

Formula Used:

Volume of cube = side ³

Total surface area of cuboid = 2(length × breath + breath × height + height × length)

Calculation:

Volume of each cube = 343

Volume of cube = side ³

⇒ Side of cube = $\sqrt[3]{343}$

⇒ Side of cube = 7cm

Total surface area of cuboid = 2(length × breath + breath × height + height × length)

When two cubes are putt side by side, then length = 7 + 7 = 14 cm

Height = 7 cm

Breadth = 7 cm

∴ Total surface area = 2(14 × 7 + 7 × 7 + 14 × 7)

⇒ 2 (98 + 49 + 98)

⇒ 490

∴ Surface area of cuboid is 490 cm ²

56. Answer: b

Explanation:

The correct answer is option 2, i.e., Ministry of Agriculture & Farmers, Welfare.

- Ministry of Agriculture & Farmers, Welfare has launched 'Mission Fingerling' in **March 2017** to achieve the **Blue Revolution**.
- Mission Fingerling is a programme that aims to enable **holistic development and management of the fisheries sector**.
- The expected **expenditure** for the programme is **Rs. 52000 lakhs**.
- The **target** set for the programme is to raise the **fisheries production** from **10.79 mmt (2014-2015) to 15 mmt by 2020-21**.
- **20 states** have been identified by the government based on their potential to boost the Fish Fingerling production and Fish Seed Infrastructure in the country.
- Fingerling rearing ponds and hatcheries would be developed and the programme will converge in the production of **20 lakh tonnes fish annually**, which will benefit approx. 4 million families.
- **Blue Revolution** aims to boost the fisheries sector in the country.

57. Answer: b

Explanation:

A group of players is called a team.

Similarly,

A group of ministers represent a Council.

"Council" relates to the third term in the same way that the second term relates to the first term.

Hence, "council" is the correct answer.

58. Answer: a

Explanation:

According to the given information,

Argument 1: This is strong, since alcohol is bad for health, government should not promote it.

Argument 2: This is not strong, because there are other forms also for revenue generation.

Hence, "only argument 1" is strong.

59. Answer: c

Explanation:

The correct answer is option 3, i.e., Chief Justice Indira Banerjee.

- Chief Justice Indira Banerjee became the **Chief Justice of the Madras High court in March 2017**.
- She assumed the office as the Chief Justice of the Madras High court on 5th April 2017 and remained at the post till 6th Aug 2018.
- **Presently she is serving as a Judge of Supreme Court.**
- She is the 8th female judge and the 3rd female judge of the Supreme Court in the Indian history.
- **Justice Ashok Kumar Ganguly** is a former Indian jurist. He retired as a Supreme court judge in 2012. He held the positions of Chief Justice of Madras High Court and Orissa High Court.
- **Justice Sanjay Kaul** is a Supreme Court judge and has earlier served as Chief Justice of Madras High Court and Punjab and Haryana High Court.
- **Justice Rajesh Kumar Agrawal** is currently serving as the President of the National Consumer Disputes Redressal Commission (NCDRC) and has earlier served as judge of the Supreme Court.

60. Answer: c

Explanation:

The correct answer is option 3, i.e., Gauri Lankesh.

- Gauri Lankesh was awarded the prestigious **Reach All Women in WAR (RAW in WAR) Anna Politkovskaya Award** on 7th October 2017.
- Anna Politkovskaya Award is given to honour **women who are human rights defender from a conflict zone, who stand up for the victims of conflict**.
- **Anna Politkovskaya, a Russian journalist**, lived her life bravely and stood for truth in the face of grave danger. She was murdered on 7th October 2006.
- To **mark her death anniversary** this award is presented annually.
- The **RAW in WAR was founded by Mariana Katzarova**, a friend and a human rights colleague of Politkovskaya, in the year 2006.
- **Natalia Estemirova** was the first recipient of the award.
- **Gauri Lankesh** was an **Indian journalist-turned-activist from Bangalore** who was murdered on 5 September 2017. She was given the **Anna Politkovskaya Award for campaigning for women's rights and opposing caste-based discrimination**.
- **Kusum Nair** was also a journalist who used to give her views on the agricultural policies.
- **Sucheta Dalal** is a business journalist who was awarded the Padma Shri in the year 2006.
- **Malini Parthasarathy** is the co-chairperson of The Hindu Group's Publishing Company, THG Publishing Private Limited.

61. Answer: b

Explanation:

The correct answer is option 2, i.e., the United States.

- The **Yellowstone National Park** is situated in the **United States**.
- The National Park is situated in the **western part of the US** and was established on **March 1, 1872**.

- It is the first National Park of the US and is known for its rich flora and fauna.
- The Yellowstone National Park is a **UNESCO World Heritage Site** .

Country	Famous National Park
United Kingdom	Peak District National Park, Lake District National Park, etc.
United States	Yellowstone National Park , Grand Canyon National Park, Rocky Mountain National Park, etc.
France	Vanoise National Park, Port-Cros National Park, etc.
South Africa	Addo Elephant National Park, Agulhas National Park, etc.

62. Answer: d

Explanation:

The correct answer is option 4, i.e., 22000 Hz.

- A frequency of 22000n Hz is **not audible to human beings** .
- The frequency range of sound that a normal human adult can detect is from **20 Hz to 20000 Hz.**
- The **human infants** can hear frequencies slightly higher than 20 kHz.
- Most small mammals have the capability of hearing higher frequencies but are however insensitive to lower frequencies.
- For eg. : In some species of bats, the frequency range of sound is 20 kHz to 200kHz.
- The frequencies above the audible range for humans, i.e., above 20 kHz, are termed as **ultrasonic** .
- The frequencies below the audible range for humans, i.e., below 20 Hz, are termed as **infrasonic** .
- Ultrasonic and infrasonic frequencies of sound are inaudible to humans.
- **22000 Hz comes under ultrasonic range** , hence it is **inaudible to human beings**.

63. Answer: d

Explanation:

The correct answer is option 4, i.e., Mass of the falling object 'm'.

- The value of acceleration due to gravity does not depend upon: Mass of the falling object 'm' .
- The acceleration that is gained by an object due to the force of gravitation , is known as **acceleration due to gravity (g)** .
- The formula of calculating acceleration due to gravity is: $g = \frac{GM}{r^2}$ [where 'G' is gravitational constant, 'M' is the mass of the earth, and 'r' is the radius of the earth.
- The above formula suggests that acceleration due to gravity depends on Mass of the earth 'M', Constant of gravitation 'G', and Radius of the earth 'R'. Since all these are constant, therefore the value of 'g' is on the surface of the earth at the sea level is constant, i.e., **9.8 m/s²**.
- The formula does not contain the mass of the object, it means that **acceleration due to gravity works equally on every object irrespective of its mass.**

Your Personal Exams Guide

64. Answer: d

Explanation:

Given:

$$21 + [5 \text{ of } \{15 + (18 - 17)\}]$$

Follow BODMAS rule to solve this question, as per the order given below:

Step-1: Parts of an equation enclosed in 'Brackets' must be solved first, and in the bracket,

Step-2: Any mathematical 'Of' or 'Exponent' must be solved next,

Step-3: Next, the parts of the equation that contain 'Division' and 'Multiplication' are calculated,

Step-4: Last but not least, the parts of the equation that contain 'Addition' and 'Subtraction' should be calculated.

Now

$$21 + [5 \text{ of } \{15 + (18 - 17)\}]$$

$$\Rightarrow 21 + [5 \text{ of } \{15 + 1\}]$$

$$\Rightarrow 21 + [5 \text{ of } 16]$$

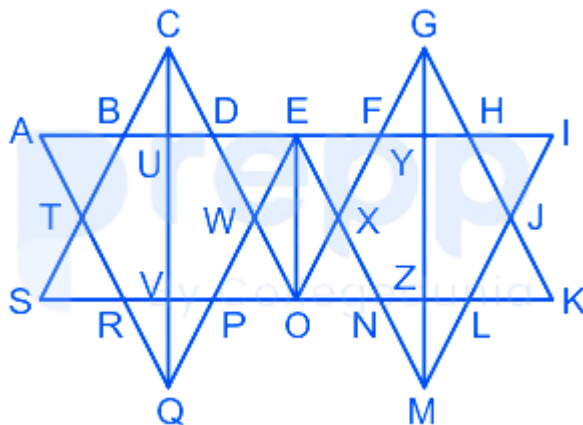
$$\Rightarrow 21 + 80$$

$$\Rightarrow 101$$

65. Answer: c

Explanation:

The number of triangles in the given figure are,



Hence, "40" is the correct answer.

66. Answer: d

Explanation:

Given:

Earning of 2012 = 2,50,000

Earning of 2013 = 3,00,000

Earning of 2014 = 3,00,000

Earning of 2015 = 2,50,000

Earning of 2016 = 4,00,000

Calculation:

Varied cost of 2012 = 10% of 2,50,000 = 25000

Varied cost of 2013 = 10% of 3,00,000 = 30000

Varied cost of 2014 = 10% of 3,00,000 = 30000

Varied cost of 2015 = 10% of 2,50,000 = 25000

Varied cost of 2016 = 10% of 4,00,000 = 40000

Total varied cost of all five years = (25000 + 30000 + 30000 + 25000 + 40000) = 1,50,000

$\therefore$ Average varied cost of five years = $150000/5 = 30000$

67. Answer: b

Explanation:

The correct answer is option 2, i.e., Chennai.

- Chennai was recently included in the United Nations Educational, Scientific, and Cultural Organization's (UNESCO's) **Creative Cities Network for contribution to Music**.
- Chennai is the **capital** city of the Indian state of **Tamil Nadu**.
- Chennai is one amongst the **64 cities chosen from the 44 nations of the world**.
- The number tally has now gone up to **180 cities of the 72 nations**.
- **Chennai is the third Indian city** to get the designation of UNESCO's Creative Cities. The other cities are:
 - **Varanasi** (City of Music)
 - **Jaipur** (City of Crafts and Folk Arts)
 - **Mumbai** has been designated a Creative city of film.
 - **Hyderabad** a Creative city of gastronomy
- UNESCO's Creative Cities Network launched in the year 2004 includes cities in the below mentioned **seven creative fields** :
 - Crafts and Folk Art
 - Design
 - Film
 - Gastronomy
 - Literature
 - Media Arts
 - Music

68. Answer: d

Explanation:

Given

$$31 \times 23 = 713$$

Calculation

$$3100 \times 0.00023$$

$$= 3100 \times 23/100000$$

$$= (31 \times 23)/1000$$

$$= 713/1000$$

$$= 0.713.$$

69. Answer: d

Explanation:

The pattern followed is,

In all the given figures, except in figure D the bigger and smaller version of same figure is shown.

Whereas,

In figure D, both figures are different.

Hence, option 4 is the odd one.

70. Answer: c

Explanation:

The correct answer is Vishnu Sharma.

★ Key Points

- Vishnu Sharma is the author of ' Panchatantra '.
- Panchatantra refers to the **ancient Indian collection of interrelated animal fables** and was **originally written in the Sanskrit language** .
- It was written around **200 BCE** and is one of the oldest surviving texts.
- Panchatantra was translated into other languages like **Persian, Syrian, and Arabic** languages.
- **Vishnu Sharma** was an Indian scholar.

★ Additional Information

- **Kalidas** was a Sanskrit writer whose famous works include **Abhijnanasakuntalam, Meghaduta, Raghuvamsa** , etc.
- **Valmiki** was one of the most celebrated writers and his most famous works include **Ramayana** .
- **Sri Harsha** was a Sanskrit poet and philosopher of the 12th century and his famous works include **Naishadha Charita** , etc.

71. Answer: d

Explanation:

The correct answer is four, eight .

★ Important Points

- The foundation of **Buddhism** is the four noble truths and the eight-fold path.
- The four Noble Truths are:
 - The Truth of Suffering (**Dukkha**)
 - The Truth of the Cause of Suffering (**Samudhya**)
 - The Truth of the Cessation of Suffering (**Nirodha**)
 - The Truth of the Path Cessation of Suffering (**Magga**)
- The eight-fold path is **Ashtangika Marga** –
 - **Right View or Right Understanding**
 - **Right Thoughts**
 - **Right Speech**
 - **Right Conduct**
 - **Right Livelihood**
 - **Right Effort**
 - **Right Mindfulness**
 - **Right Meditation or Right Contemplation**

★ Additional Information

- Mahayana Buddhism:

- After the death of Buddha, a group evolved who believed that compassion for all humanity was an important part of the path, and that teaching is fully available to all.
- Those who followed the newly expanded ideals called themselves Mahayana meaning the big raft.
- In Mahayana Buddhism, all practicing Buddhists are apprentice Bodhisattvas.
- In Mahayana countries, images of the Buddha are set up in the temples and homes as an object of worship.
- Hinayana Buddhism:
 - From about 100 years after the death of the Buddha, there had been a movement towards embracing the style of Buddhism.
 - The early monks concentrated on personal enlightenment, seeking spiritual answers for themselves, and teaching others the way of enlightenment.
 - But the information was severely limited to the lay community as it was assumed only monks could achieve Buddhahood.
 - This section came to be known as Hinayana or also known as Theravada.
 - Theravada means the way of elders.
- Milindapanha:
 - The Milindapanha, or "Milinda's Questions," is an important early Buddhist text that usually is not included in the Pali Canon.
 - Even so, the Milindapanha is cherished because it addresses many of Buddhism's most difficult doctrines with wit and clarity.
 - The Milindapanha presents a dialogue between King Menander I (Milinda in Pali) and an enlightened Buddhist monk named Nagasena.
 - Menander- I was an Indo-Greek king thought to have ruled from about 160 to 130 BCE.
 - He was a king of Bactria, an ancient kingdom that took in what is now Turkmenistan, Afghanistan, Uzbekistan, and Tajikistan, plus a small part of Pakistan.

72. Answer: d

Explanation:

Given:

Tap A can fill the tank in 2 hours

Tap B can fill the tank in 8 hours

Tap C can empty the tank in 4 hours

LCM of 2, 8, 4 = 8

Total capacity of tank = 8 units

Efficiency of Tap A = $(8/2) = 4$ units

Efficiency of Tap B = $(8/8) = 1$ units

Efficiency of Tap C = $(8/4) = 2$ units

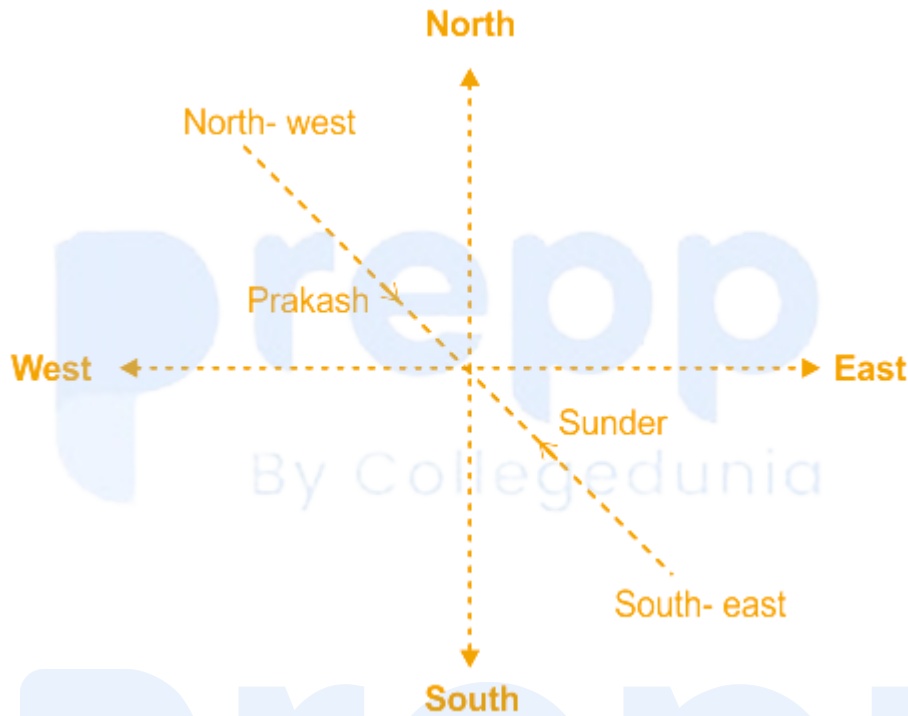
Effective efficiency of all three taps when they open simultaneously = $(4 + 1 - 2) = 3$ units

$\therefore$ Total time taken by all three taps when opened together = $(8/3)$ hours

73. Answer: d

Explanation:

Drawing the diagram according to the given information,



When playing carrom, one faces opposite the other.

If Prakash is facing South – east, then Sunder will face North – west.

Hence, “north – west” is the correct answer.

74. Answer: c

Explanation:

The correct answer is option 3, i.e., A raised hammer.

- A raised hammer does NOT possess kinetic energy.
- The word "**kinesis**" means "**motion**", hence the **kinetic energy is possessed by an object in motion.**
- A rolling stone, a falling coconut, and a speeding car all are in some kind of motion and hence all these possess Kinetic energy.
- Kinetic energy is calculated using the formula: $K.E. = \frac{1}{2} mv^2$ [where 'm' is the mass of the object and 'v' is the velocity of the object]

- A **raised hammer** is in the **stationary position** and hence possess the **Potential Energy**.
- A raised hammer possesses **Gravitational Potential Energy by virtue of its height**.
- The formula of Gravitational Potential Energy is: $U_g = mgh$ [where 'm' is the mass of the object, 'g' is the acceleration due to gravity and 'h' is the height above the ground]

75. Answer: b

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern followed here is,

$$\begin{array}{rcl}
 & & 169 \\
 L & - & (13)^2 \\
 -2 & | & \\
 & & 196 \\
 J & - & (14)^2 \\
 -2 & | & \\
 & & 225 \\
 H & - & (15)^2 \\
 -2 & | & \\
 & & 256 \\
 F & - & (16)^2
 \end{array}$$

Hence, "H - 225" is the correct answer.

76. Answer: c

Explanation:

The correct answer is option 3, i.e., 89-103.

- Atomic numbers of **Actinoides** are from 89-103.
- Actinides start from **Actinium** and go till the **Lawrencium** , i.e., there are **15 elements** .
- **Actinium (atomic no. 89)** is often included in **group 3** , and the **f-block actinides start from Thorium (atomic no. 90)** thus reducing the elements to 14.
- The term **Actinide means "actinium-like"** and the elements included are: **Ac, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, and Lr** .
- Actinides have variable valency, very large atomic and ionic radii, and exhibit an unusually large range of physical properties.
- All actinides are radioactive in nature, Uranium, and Thorium being the naturally occurring radioactive elements.
- **58-71 atomic numbers belong to the first series of the f-block i.e., the lanthanides** .
- Lanthanides start from Lanthanum and the last lanthanide is Lutetium.
- But, similar to Actinium, Lanthanum (atomic no. 57) is not included in the f-block and belongs to the group 3.
- Hence, the f-block lanthanides are from atomic number 58-71.
- The Lanthanide series include: **Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu** .

77. Answer: a

Explanation:

Total bulb = 300

⇒ Red + blue + green + yellow = 300

$$\Rightarrow 32 \text{ Red} + 26 \text{ Green} + 9 \text{ Yellow}$$

According to question,

$$4x = 300$$

$$\Rightarrow x = 75$$

So we have to purchase

$$\text{Red bulb} = 75 - 32 = 43$$

$$\text{Green bulb} = 75 - 26 = 49$$

$$\text{Yellow bulb} = 75 - 9 = 66$$

$$\text{Blue bulb} = 75$$

$$\Rightarrow \text{Total cost} = (43 \times 15) + (49 \times 15) + \{66 \times 15 \times (80/100)\} + \{75 \times 70/100 \times 15\}$$

$$\Rightarrow 645 + 735 + (198 \times 4) + 787.5$$

$$\Rightarrow 2959.5$$

$$\therefore \text{Total cost will be Rs. } 2959.5$$

Your Personal Exams Guide

78. Answer: a

Explanation:

Given:

$$\text{Satin\%} = 5\%$$

$$\text{Total production of fabric (of all type)} = 1,50,000$$

Calculation:

$$\Rightarrow 5\% \text{ of } 1,50,000$$

$$\Rightarrow (5/100) \times 150000$$

$$\Rightarrow 5 \times 1500$$

$$\Rightarrow 7500$$

$\therefore$ Fabric produced in the year 2015 = 7500 tons

79. Answer: c

Explanation:

Embroidery is the activity of beautifully decorating a piece of cloth with stitches sewn into it.

Similarly,

Moonlight is the pale, cool light of the moon at night.

Beautiful is the word used for Embroidery and Cool is the word used for Moonlight.

'Cool' is related to the third word on the same basis as the second word is related to the first word.

Hence, "cool" is the correct answer.

80. Answer: c

Explanation:

The correct answer is option 3, i.e., Pune.

- **Pune** was ranked **first** in the **2018 Ease of Living Index** prepared by the **Ministry of Housing and Urban Affairs**.
- The 2018 Ease of Living Index was released by the then Minister for Housing and Urban Affairs, **Hardeep Singh Puri**.

- Pune got the top spot out of the **total 111 cities** taken into consideration for the index.
- **Navi Mumbai** was successful in achieving the **second spot**.
- The national capital **Delhi** got the **65th** position.
- **Chennai** was ranked **14th** in the index.
- The **last position** was given to **Rampur**, a city in Uttar Pradesh.
- The Ease of Living Index aims to capture the **state of the livability of the cities** against the national and international benchmarks and it also **encourages cities to move towards an 'outcome-based' approach to urban planning and management**.
- The **four parameters** taken into consideration are:
 - institutional factors (governance)
 - social factors (education, health, etc.)
 - economic factors (economy, employment)
 - physical factors (pollution, water supply, etc.)

81. Answer: a

Explanation:

The pattern followed here is,

The circles in the figure inside keeps on increasing by one.

And,

The circles outside the figure keeps on decreasing by one.

The first figure should have one circle inside it.

The complete pattern is,



Hence, option 1 is the correct answer.

82. Answer: d

Explanation:

The correct answer is option 4, i.e., Rs. 50,000 crore.

- The Government of India has launched the **Pradhan Mantri Krishi Sinchai Yojana (PMKSY)** with an investment of **Rs. 50,000 crore** aiming at the **development of irrigation sources for providing a permanent solution form drought.**
- The scheme has been formulated keeping in view the visions "**Har Khet Ko Pani**" and "**More Crop Per Drop**".
- The scheme was launched on **1 July 2015**, and it is an **amalgamation of schemes like Accelerated Irrigation Benefit Irrigation (AIBP), Integrated Watershed Management Programme (IWMP), and On-Farm Water Management (OFWM).**
- **Rs 50,000 crores** have been approved for the **Pradhan Mantri Krishi Sinchai Yojana** for a duration of **5 years.**
- The **major objectives** of the scheme include:
 - Confluence of investment in irrigation at the field level.
 - Improvement in the efficiency of water usage so as to reduce the wastage of water
 - Expansion in the cultivable land under irrigation (Har Khet Ko Pani)
 - Intensifying the initiatives of being precise in irrigation and other water-saving technologies (more crop per drop)

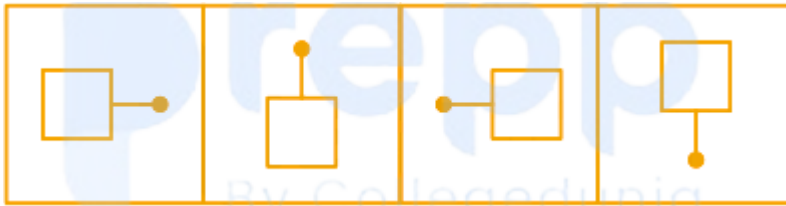
83. Answer: b

Explanation:

The pattern followed here is,

The figure is rotated anti clock – wise direction by one place.

The figure which will come next in the pattern is,



Hence, option 2 is the correct answer.

84. Answer: a

Explanation:

The correct answer is option 1, i.e., Good Governance Day.

- The **Union Ministry of Personnel, Public Grievances and Pensions** launched the **electronic – Human Resource Management System (e – HRMS)** on the occasion of Good Governance Day on **25th December**.
- The **e-HRMS is an online platform** and has been launched to take forward the goal of '**minimum government, maximum governance**'.
- 25 applications of the 5 modules of the system were simultaneously launched.
- The e-HRMS will help central government employees in **applying for leaves and in accessing their service-related information**.
- The system will enable people to **obtain all management-related inputs and reports through its dashboard**.
- The launch of e-HRMS is in the line of **fully automating the human resource management system** with the target to bring all government employees on the employee portal.
- The **Good Governance Day in India** was established in the year **2014** on the birth anniversary of former PM **Late Atal Bihari Vajpayee** to honour him for his contributions.
- As per the government orders, the Good Governance day observed annually on 25th December will be a **working day** for the employees.

85. Answer: b

Explanation:

The pattern followed is,

All the figures except, figure D are formed with the help of lines.

Whereas,

Figure D is a circle.

Hence, option 2 is the odd one.

86. Answer: b

Explanation:

The pattern followed here is,

All the figures, except figure A are joined with the other figure.

Whereas,

In figure D, the figures given are represented separately, and are not joined.

Hence, option 2 is the odd one.

87. Answer: c

Explanation:

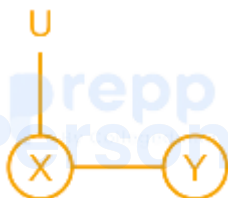
The correct answer is Option 3, i.e Thallophyta.

- **Plants** are divided into **five groups** :**Thallophytes** , Bryophytes, Pteridophytes, Gymnosperms and Angiosperms.
- **Thallophyta** do not have a well-differentiated body design and are the simplest of plants.
- **Bryophyta** are often called **amphibians of the plant kingdom**.
- **Gymnosperms** are flowerless plants that produce cones and seeds. The term gymnosperm literally means "naked seed," as gymnosperm seeds are not encased within an ovary.
- **Pteridophytes** include horsetails and ferns. Pteridophytes are used for medicinal purposes and as soil-binders
- Plantae and Animalia are further divided into subdivisions on the basis of increasing complexity of body organisation.

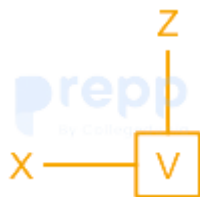
88. Answer: d

Explanation:

From statement 1:



From statement 2:



Combining both the statements,



We get the relationship by combining both statements.

Hence, "both 1 and 2 together" are sufficient.

89. Answer: a

Explanation:

The least possible Venn diagram is as follows,



Conclusion 1: Some brown are tables → False (This is definitely false)

Conclusion 2: Some woods are tables → True (This is definitely true)



Hence, "conclusion 2 alone" follow.

90. Answer: d

Explanation:

Given:

Difference between profit of 10% and 14% = Rs. 27

Calculation:

Let the cost price of article be 100 units

SP when sold at 10% profit

$$SP = 100 + (10/100) \times 100 = 110 \text{ units}$$

SP when sold at 14% profit

$$SP = 100 + (14/100) \times 100 = 114 \text{ units}$$

$$114 - 110 = 4 \text{ units}$$

According to question,

$$\Rightarrow 4 \text{ units} = \text{Rs. } 27$$

$$\Rightarrow 1 \text{ unit} = 27/4$$

$$\Rightarrow 100 \text{ units} = (27/4) \times 100$$

$$\Rightarrow \text{Rs. } 675$$

$\therefore$ cost price of article is Rs. 675

91. Answer: a

Explanation:

Given:

12 pencils are purchased at Rs. 25

5 pencils are sold at Rs. 12

Calculation:

Cost price of 12 pencils = Rs. 25

Selling price of 5 pencils = Rs. 12

Selling price of 1 pencil = Rs. $12/5$ = Rs. 2.4

Selling price of 12 pencil = Rs. 28.8

⇒ Profit = Selling price – cost price

⇒ Profit = 28.8 – 25

⇒ Profit = 3.8

⇒ Profit% = (profit / cost price) × 100

⇒ Profit% = $(3.8/25) \times 100$

⇒ 15.2%

∴ Profit percentage earned is Rs. 15.2%

92. Answer: a

Explanation:

Highest common factor

HCF means highest factor which can divide both the numbers.

Among x and y only 1 is the only factor which is present in both the numbers

∴ HCF of x and y is 1

93. Answer: a

Explanation:

According to the given information,

Conclusion I: This follows because it is mentioned in the statement that candidates with a maximum age of 30 years can apply. So, anyone who is more than 30 years

old will be ineligible for applying.

Conclusion II: Maximum age of 30 years means that eligible candidates should belong to the age group of "below 30 years". Thus, the second conclusion is valid.

Hence, "both conclusions" follow.

94. Answer: b

Explanation:

The correct answer is option 2, i.e., 187.5 J.

- The **Kinetic Energy** possessed by the object is 187.5 J.
- The **energy possessed by the moving object** is termed as its Kinetic Energy.
- The Kinetic Energy (K.E.) can be calculated by the following formula:
 - $K.E. = \frac{1}{2} mv^2$ [where m is the mass of the object and v is the velocity of the object]
 - $K.E. = \frac{1}{2} \times 15 \times 5 \times 5$
 - $K.E. = 187.5 \text{ J}$

95. Answer: c

Explanation:

Considering the given options

Option 1

$$\Rightarrow \sqrt[6]{1000000} = 10$$

Option 2

$$\Rightarrow \sqrt{1000000} = 1000$$

Option 3

$$\Rightarrow \sqrt[4]{1000000} = 31.622$$

Option 4

$$\Rightarrow \sqrt[3]{1000000} = 100$$

$\therefore$ Option 3 is only irrational number

96. Answer: d

Explanation:

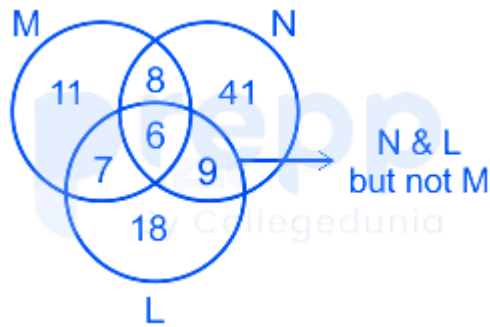
The correct answer is option 4, i.e., 2 m.

- The wavelength of the soundwave is 2 m.
- The **wavelength** of a wave is the **distance between two corresponding crests or two corresponding troughs** and is denoted by symbol λ .
- The **frequency** of a wave is defined as the number of waves passing through a fixed point in the unit time period. It is denoted by symbol v and f .
- It can be calculated by using the formula mentioned below:
 - $\lambda = v / f$ [where λ is the wavelength, v is velocity of the soundwave, and f is the frequency]
 - $\lambda = 400 / 200$
 - $\lambda = 2 \text{ m}$

97. Answer: c

Explanation:

According to the given Venn diagram,



The shaded part represents number of students who play both N & L but not game M i.e., 9.

Hence, "9" is the correct answer.

98. Answer: d

Explanation:

Given:

Arjun takes 5 hrs to swim upstream 40 kms

Arjun takes 2hrs to swim downstream 20 kms

Let the speed of Arjun (in still water) be x km/hr

Let the speed of the stream be y km/hr

Speed when going upstream = $(x - y)$

Speed when going downstream = $(x + y)$

According to question,

$$\{40/(x - y)\} = 5$$

$$\Rightarrow x - y = 8 \quad \text{---- (i)}$$

$$\{20/(x + y)\} = 2$$

$$\Rightarrow x + y = 10 \quad \text{---- (ii)}$$

By solving both equation

$$x = 9 \text{ km/hr}, y = 1 \text{ km/hr}$$

$\therefore$ Speed of Arjun in still water is 9 km/hr

99. Answer: a

Explanation:

The pattern followed here is,

$$3 \times 2 = 6;$$

$$6 \times 2 = 12;$$

$$12 \times 2 = 24;$$

$$24 \times 2 = 48;$$

$$48 \times 2 = 96$$

Hence, "96" is the correct answer.

100. Answer: b

Explanation:

According to question:

$2x^2 + ax + b$ is divided by $x - 3$

Remainder = 35

$$\Rightarrow 2 \times (3)^2 + a \times 3 + b = 35$$

$$\Rightarrow 18 + 3a + b = 35$$

$$\Rightarrow 3a + b = 17 \quad \text{----- (i)}$$

According to question:

$2x^2 + bx + a$ divided by $x - 3$

Remainder = 29

$$\Rightarrow 2 \times (3)^2 + 3b + a = 29$$

$$\Rightarrow 18 + 3b + a = 29$$

$$\Rightarrow 3b + a = 11 \quad \text{----- (ii)}$$

Solve both equation (i) and equation (ii)

$$a = 5, b = 2$$

$$\therefore a + b = 5 + 2 = 7$$

Your Personal Exams Guide