



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 (15-Oct-2018) (Shift 1)

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. Who was the lead actress in the movie 'Padmavat' released in 2018. (+1, -0.33)
- a. Deepika Padukone
 - b. Kareena kapoor
 - c. Priyanka Chopra
 - d. Radhika Apte
-
2. Which of the following statements is/are true/false? (+1, -0.33)
- 1. By increasing the temperature and pressure, we can convert atmospheric gases into liquid state.
 - 2. A hot dry day means that the atmospheric temperature is high and the air humidity is low. Both these factors lead to an increase in the rate of evaporation and thus a large amount of cold formation.
- a. Both 1 and 2 are true.
 - b. Only 1 is true.
 - c. 1 and 2 are both false
 - d. Only 2 is true.
-
3. In a group of 300 students, each student reads 7 subjects and each subject is read by 50 students. What is the total number of subjects? (+1, -0.33)
- a. more than 20
 - b. total 42

c. at least 100

d. possibly 50

4. Which ministry has launched 'Mission 4IK' program? (+1, -0.33)

a. Ministry of Railways

b. Ministry of MSME

c. Ministry of Environment

d. Ministry of Culture

5. Who is the first woman in the world to climb Mount Everest twice in one season? (+1, -0.33)

a. Lakpa Sherpa

b. Junko Tabei

c. Anshu Jamshenpa

d. Anga Rita

6. A statement below followed by two assumptions I and II is given. (+1, -0.33)

Considering the statement and assumptions, you have to decide which of the assumption/s is implicit in the given statement.

Statement: X said to Y, "I want to research the spurious behavior of adolescents about their use of Facebook and Instagram."

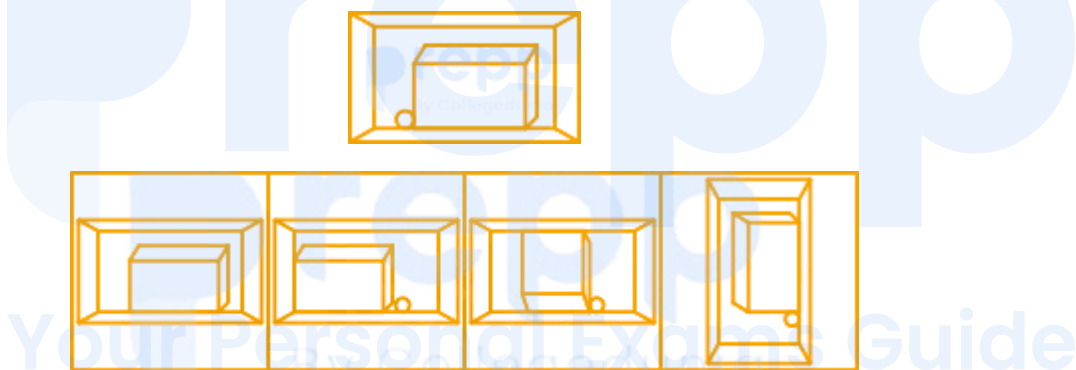
Assumptions:

I. Changes in attitudes of adolescents due to the use of Facebook and Instagram can be targeted.

II. X has the skill and proficiency to do this type of research.

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

7. Which of the following option figure shows the closest resemblance to the question figure? (+1, -0.33)



A B C D

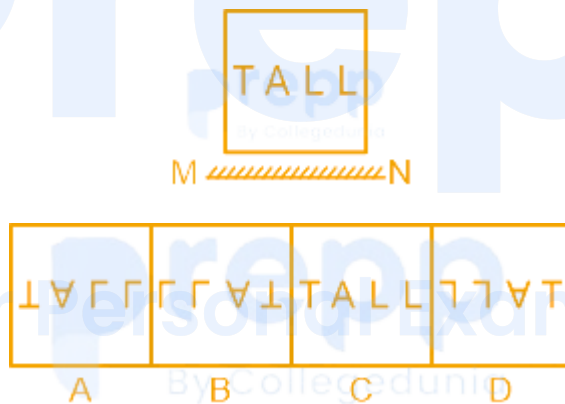
- a. D
- b. B
- c. A
- d. C

8. If a body is projected vertically upward, what will be the velocity of the body at the highest point of motion? (+1, -0.33)

(g = acceleration due to gravity, h = height, t = time)

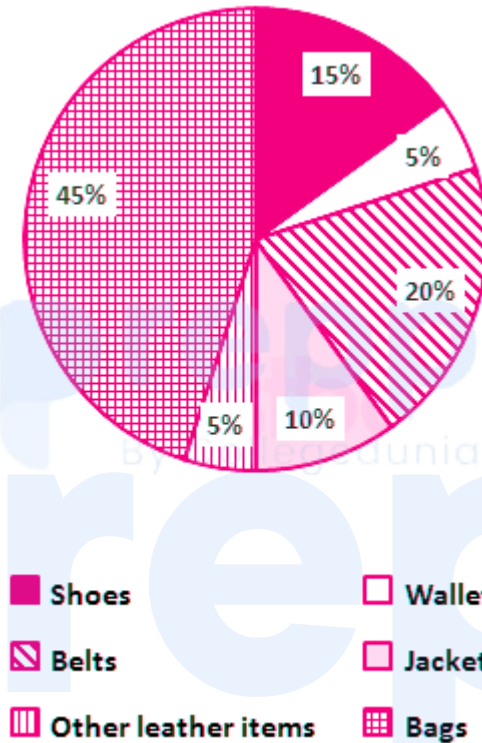
- a. zero
- b. -g
- c. -gh
- d. gt

9. If the mirror is on the line MN, then what will be the mirror image of the following figure? (+1, -0.33)



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

10. The following pie diagram shows the revenue of ABC, a company manufacturing leather products. The total revenue of the company for the year 2015 was Rs. 3,628,000. (+1, -0.33)



How much revenue (in Rs) did the company earn from the sale of "Bags" in the year 2015?

- a. Rs. 9,07,000
 - b. Rs. 16,32,600
 - c. Rs. 3,62,800
 - d. Rs. 18,140,000
11. Areolar tissue acts as a filler tissue between _____. (+1, -0.33)
- a. skin and muscles

- b. skin and bone
 - c. blood and skin
 - d. bones and muscles
-

12. The atomic numbers of the four basic elements of a period are 11, 13, 16 and 17. The atomic number of the highest metallic parent element in the modern periodic table will be _____.

(+1, -0.33)

- a. 9
 - b. 13
 - c. 32
 - d. 11
-

13. In the modern periodic table, bromine occurs in the _____ period.

(+1, -0.33)

- a. 3
 - b. 5
 - c. 2
 - d. 4
-

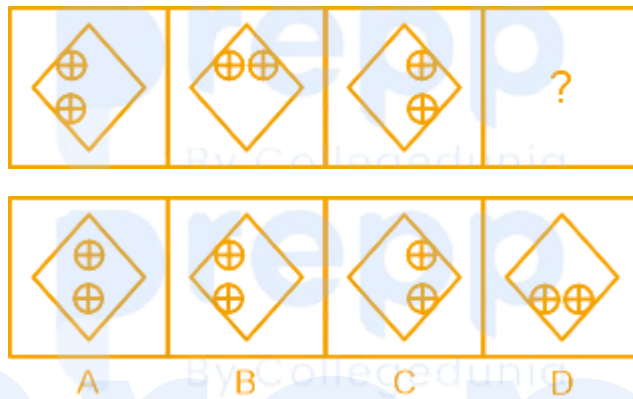
14. Which celebrity has been appointed by the well-known cab company 'Uber' as its first brand ambassador?

(+1, -0.33)

- a. Priyanka Chopra
- b. Sachin Tendulkar

- c. Amir Khan
- d. Virat Kohli

15. Select the option figure that will complete the series of the question figure. (+1, -0.33)



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

16. Which is the 2016 Indian-Assamese biographical 2D computer animation film directed by Manju Bora? (+1, -0.33)

- a. Sarvagunakar Shrimant Shankardev
- b. Mahayoddha Ram
- c. Chaar Saahibzade
- d. Modu Patlu: King of Kings

17. Which country will host the 2023 Cricket World Cup? (+1, -0.33)

- a. England
- b. South Africa
- c. Australia
- d. India

18. Which of the following does not belong to the given group? (+1, -0.33)

- a. C V Raman
- b. Shakuntala Devi
- c. Satyendra Nath Bose
- d. Sudha Chandran

19. The average of three numbers is 7. The average of the first two is 5, while that of the last 2 is 8. Which are the three numbers (respectively)? (+1, -0.33)

- a. 3, 7 and 9
- b. 2, 8 and 8
- c. 5, 5 and 11
- d. 4, 6 and 10

20. Find the number of squares in the given figure. (+1, -0.33)



- a. 4
- b. 5
- c. 6
- d. 7

21. How many triangles are there in the following figure?

(+1, -0.33)



- a. 16
- b. 11
- c. 19
- d. 17

22. When a natural number is divided by 5, 6, 7 and 9, each leaves a remainder 1. Which is the least number among such numbers?

(+1, -0.33)

- a. 421

- b. 1261
- c. 211
- d. 631

23. What is the growth rate projected by IMF for the Indian economy in the year 2019? (+1, -0.33)

- a. 8.5%
- b. 9%
- c. 7.4%
- d. 10%

24. A rich man divided his property (in the form of land) among his five sons. But later he took back his youngest son's share and divided it among other sons. If the eldest son would now own 93.75 m^2 , how much land did the rich man actually own? (+1, -0.33)

- a. 375 m^2
- b. 395 m^2
- c. 315 m^2
- d. 275 m^2

25. There is _____ in the class aves. (+1, -0.33)

- a. dry and glandular skin without hair

- b. dry and glandular skin with feathers
- c. dry and glandular skin without feathers
- d. dry and glandular skin with hair

26. A purse contains equal number of 25 paise and 50 paise coins. If their value is Rs. 22.50, then what is the number of coins of each type? (+1, -0.33)

- a. 35
- b. 45
- c. 30
- d. 40

27. In the following series what number will come in place of ? (+1, -0.33)

15, 21, 30, ?, 57

- a. 45
- b. 38
- c. 40
- d. 42

28. $A \times B$ means A is mother of B (+1, -0.33)

A / B means A is brother of B

$A @ B$ means A is sister of B.

$A \% B$ means A is father of B

Based on the above information, which of the following means P is the maternal uncle of Q?

- a. $P \times S @ N / B$
- b. $Q / N \times M @ P$
- c. $Q / S \% P$
- d. $P / M \times N @ Q$

29. In a town with a population of 5000, 3200 people drink tea, 2500 people drink coffee and 1500 people drink both tea and coffee. How many of them neither drink tea nor coffee? (+1, -0.33)

- a. 800
- b. 770
- c. 900
- d. 1800

30. Five years ago the age of the son was one third of that of his mother at that time. If the sum of their present ages is 70 years, then find the present age of the mother. (+1, -0.33)

- a. 45
- b. 55
- c. 50
- d. 60

31. Chetna went from her home to the city at the speed of 8 km/hr but came back home by the same route at the speed of 5 km/hr. It took her $19\frac{1}{2}$ hours to travel two-way. What is the distance of the city from Chetna's house? (+1, -0.33)

- a. 45 km
- b. 60 km
- c. 52.5 km
- d. 37.5 km

32. The square of a number is 3 more than twice the number. What is that possible number? (+1, -0.33)

- a. 1 or 3
- b. 1 or -3
- c. -1 or -3
- d. -1 or 3

33. If one side of an equilateral triangle is $6\sqrt{3}$ cm, what is its height? (+1, -0.33)

- a. 9 cm
- b. 6 cm
- c. 3 cm
- d. $3\sqrt{3}$ cm

34. Given below a statement followed by assumptions numbered I and II. (+1, -0.33)

You have to consider the statement followed by the given assumptions and decide which of the assumptions are implicit in the statement.

Statement: Where there is a will, there is a way.

Assumptions:

- I. People make excuses to postpone something.
 - II. More important is the intention to do something.
- a. Both I and II are implicit
 - b. Neither I nor II is implicit.
 - c. Only assumption I is implicit.
 - d. Only assumption II is implicit.

35. If in a particular code language, KITE is coded as LITE and SUTE is coded as TUTE, then what will PLUE be coded as in that code language? (+1, -0.33)

- a. UTLE
- b. QLTU
- c. LUTE
- d. QLUE

36. It has been decided to provide electricity connections to all 1200 households living without electricity in the village. If the rate of (+1, -0.33)

electrification is 75% per annum, then what is the number of households living without electricity connection after 2 years?

- a. 45
 - b. 75
 - c. 55
 - d. 65
-

37. When a body is immersed wholly or partially in a liquid, a force is exerted on it in an upward direction, which is equal to the weight of the liquid displaced by that body. What rule makes this clear? (+1, -0.33)

- a. Archimedes' principle
 - b. Lenz's law
 - c. Pauli's Exclusion principle
 - d. Faraday's law
-

38. _____ is the capital of Uttarakhand. (+1, -0.33)

- a. Mussoorie
 - b. Roorkee
 - c. Dehradun
 - d. Nainital
-

39. Read the given statements and conclusions carefully and choose which of the conclusions is logical in the context of the given statements. (+1, -0.33)

Statements:

1. All files are paper.
2. All paper is pulp.

Conclusion:

1. All files are pulp.
 2. Some pulp is paper.
- a. Only conclusion 2 is logical .
 - b. Only conclusion 1 is logical.
 - c. Neither 1 nor 2 is logical.
 - d. Both 1 and 2 are logical .

40. The sum of the kinetic energy and potential energy of an object is called ----- (+1, -0.33)

- a. Mechanical energy
- b. Latent energy
- c. Chemical energy
- d. Muscular energy

41. Find the least number which when divided by 6, 15 and 18 leaves a remainder 5 each time. (+1, -0.33)

- a. 95
 - b. 92
 - c. 96
 - d. 90
-

42. What is the energy contained in an object of 15 kg when it is at a height of 5 m above the ground? Given $g = 9.8 \text{ ms}^{-2}$. (+1, -0.33)

- a. 520 J
 - b. 528 J
 - c. 738 J
 - d. 735 J
-

43. What is the relationship between the electric current flowing through a conductor and the potential difference? (+1, -0.33)

- a. I/V is a constant.
 - b. $V \times I$ is a constant.
 - c. V/I is a constant.
 - d. $V + I$ is a constant.
-

44. A man spends $\frac{2}{5}$ part of his income and has Rs. 90 left. How much money did he have in the beginning? (+1, -0.33)

- a. Rs. 130

b. Rs. 150

c. Rs. 140

d. Rs. 120

45. 'Inert gases' are in _____ group. (+1, -0.33)

a. I A

b. III A

c. VIII A

d. IV A

46. If you place _____ metal on your palm, that metal melts. (+1, -0.33)

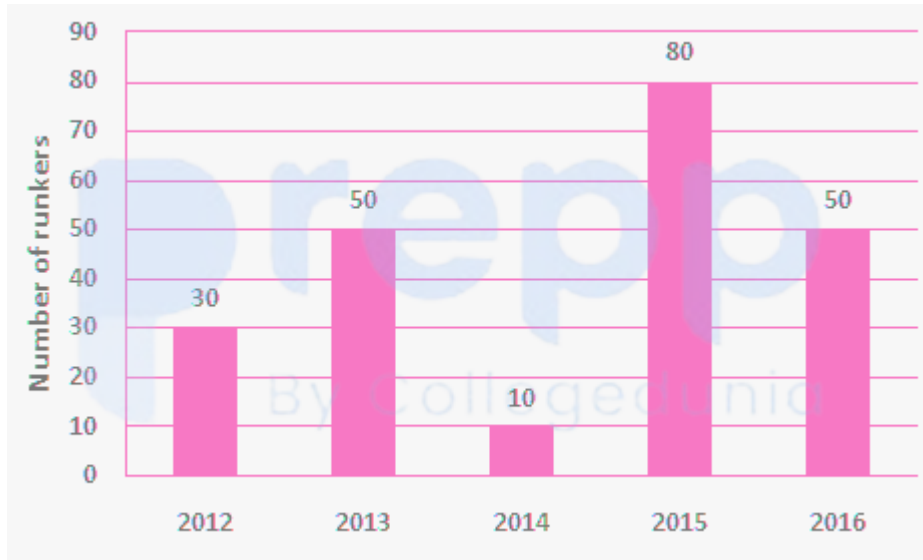
a. K

b. Ga

c. Na

d. Ba

47. The following bar graph gives the details of students passed out of the institute 'ABC' in the national level entrance examination in the last 5 years. (+1, -0.33)



In the year 2016, how many students passed from the institute 'ABC'?

- a. 40
- b. 50
- c. 30
- d. 60

48. Which of the following statement(s) is/are true regarding the speed of sound at 25°C in different mediums? (+1, -0.33)

1. The speed of sound in aluminum is 6220 m/s.
2. The speed of sound in nickel is 6240 m/s.

- a. Both 1 and 2 are true.
- b. only 1 is true
- c. Neither 1 nor 2 is true.
- d. Only 2 is true.

49. The selling price of an article with 16.5% profit was Rs.466. Had it been sold for Rs.330, what would have been the percentage loss? **(+1, -0.33)**

- a. 17.25
- b. 17.75
- c. 17
- d. 17.5

50. 5th February 2018 was Monday. In which of the following years will 5th February be Monday again? **(+1, -0.33)**

- a. 2025
- b. 2021
- c. 2023
- d. 2024

51. An eminent personality of the film industry has recently been made the official brand ambassador of Sikkim. Who is he? **(+1, -0.33)**

- a. Aamir Khan
- b. Naseeruddin Shah
- c. Akshay Kumar
- d. A. R. Rahman

52. The _____ reaction requires energy to split the reactants. **(+1, -0.33)**

- a. Combination
 - b. Decomposition
 - c. Double displacement
 - d. Displacement
-

53. How many testicles does a man have? (+1, -0.33)

- a. Two
 - b. One
 - c. Three
 - d. Eight
-

54. Where is Periyar Tiger Reserve? (+1, -0.33)

- a. Kerala
 - b. Assam
 - c. Kolkata
 - d. पश्चिम बंगाल
-

55. _____ was the capital of the Maurya Empire. (+1, -0.33)

- a. Magadh
- b. Pataliputra

- c. Nalanda
- d. Takshshila

56. In 2017, who won the Denmark Open title in the men's singles category of badminton? (+1, -0.33)

- a. Lee Hyun-il
- b. Srikanth Kidambi
- c. Liu Cheng
- d. Kevin Sanjaya Sukamuljo

57. In the medieval period, travelers to India wrote their biographies and court poets wrote poems to praise their kings. These literary sources are called _____. (+1, -0.33)

- a. Inscription
- b. Chronicle
- c. Theology
- d. Chronology

58. Find out the odd one from the following : (+1, -0.33)

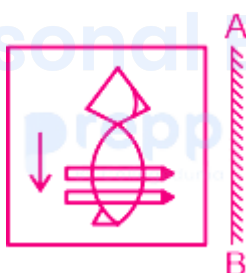


- a. A
- b. B
- c. C
- d. D

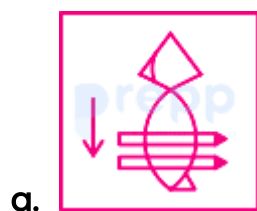
59. An electric bulb of 200 W is used for 5 hours per day. Calculate the energy consumed by the bulb in a week. (+1, -0.33)

- a. 0.1 Unit
- b. 0.7 Unit
- c. 7 Unit
- d. 1 Unit

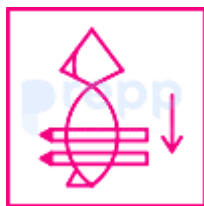
60. Question Figure : (+1, -0.33)



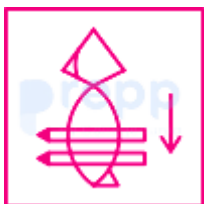
Which will be the mirror image of the above figure with respect to line AB?



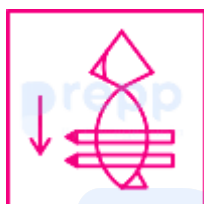
b.



c.



d.



61. In CaO , the ratio of Ca and O by mass is

(+1, -0.33)

a. 5 : 2

b. 3 : 8

c. 2 : 5

d. 8 : 3

62. Srikanth, Pradeep, Kirtana and Priyanka are playing carrom in the morning. While playing kirtana is watching the sunrise and her face is also towards the sunrise. Priyanka is sitting opposite to Kirtana and Pradeep is sitting to the right of Kirtana. In which direction is Srikanth facing?

(+1, -0.33)

a. East

- b. West
 - c. South
 - d. North
-

63. If $\sqrt{3} = 1.732$, then what will be the approximate value of $\frac{1}{\sqrt{3}}$? (+1, -0.33)

- a. 0.577
 - b. 2.577
 - c. 1.577
 - d. 0.770
-

64. A private swimming pool provides different time slots for its users, and the following table shows the number of pool visitors per week. (+1, -0.33)

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Day	Swimming pool users number
Monday	8
Tuesday	4
Wednesday	15
Thursday	15
Friday	20
Saturday	25
Sunday	25

On average, how many visitors were there on one day of that week?

- a. 12
- b. 16
- c. 14
- d. 15

65. Two numbers are in the ratio 3 : 5, if 10 is added to each, the ratio will change to 5 : 7. What are those numbers? (+1, -0.33)

- a. 15, 25
- b. 10, 30
- c. 35, 49
- d. 20, 22

66. The ratio of the sides of a cuboid is 5 : 3 : 1. If his total surface area = 414 m², then the measure of his sides in meters will be respectively. (+1, -0.33)

- a. 15, 9, 3
- b. 3, 9, 15
- c. 20, 12, 4
- d. 10, 6, 2

67. Which one of the following places has not been selected for setting up a water aerodrome in the country? (+1, -0.33)

- a. Sabarmati river bank
- b. Nile River
- c. Sardar Sarovar Dam
- d. Chilika Lake

68. _____ reacts with acids and bases. (+1, -0.33)

- a. CuO
- b. Al_2O_3
- c. Na_2O
- d. K_2O

69. What will come next in the series below? (+1, -0.33)

W5, U8, S11, Q14, ?

- a. B8
- b. O17
- c. P15
- d. T25

70. Who has been appointed as the general manager of cricket activities of B.C.C.I.? (2017) (+1, -0.33)

- a. Saba Kareem
- b. Anil Kumble
- c. Venkatesh Prasad
- d. Kiran More

71. A bus travels uniformly from 36 kmh^{-1} to 72 kmh^{-1} in 5s. Calculate the acceleration of the bus. (+1, -0.33)

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

72. Find out the odd one from the following. (+1, -0.33)



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

73. 800 men can do a piece of work in 30 days. After working for 12 days 80 men left the work. In how many days can the remaining work be completed by the remaining people? (+1, -0.33)

- a. 22
- b. 20
- c. 28

d. 24

74. What is the square root of 3364?

(+1, -0.33)

a. 64

b. 62

c. 58

d. 52

75. Which of the following Indian national political party is headed by Mamata Banerjee?

(+1, -0.33)

a. Indian National Congress

b. Bahujan Samaj Party

c. All India Trinamool Congress

d. Nationalist Congress Party

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76. P 3 R I M J 3 Q % W @ / N \$ E 5 X Y 1 # 8

(+1, -0.33)

How many such consonants are there in the above sequence, each of which is immediately preceded by a consonant and immediately followed by a symbol?

a. 0

b. 1

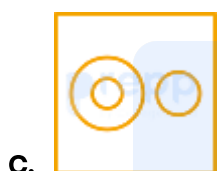
c. 3

d. 2

77. Select the most suitable Venn diagram for the following groups.

(+1, -0.33)

Mat, Bat, Van



78. Nichrome is an alloy of which of the following?

(+1, -0.33)

a. Ni, Cr, Mn and Fe

b. Ni, Cr, Mg and Fe

c. Ni, Cu, Mn and Fe

d. Ni, Cr, Mn and Al

79. Breaking a century-old tradition, which of the following has been extended for a month till February 1, 2017? (+1, -0.33)

- a. Budget Presentation
 - b. Annual Agriculture Report
 - c. Annual Financial Plan
 - d. Annual Economic Forecast
-

80. During the making of the Indian Constitution, who among the following presented the ' Objective Resolution ? (+1, -0.33)

- a. Motilal Nehru
 - b. Dr. B.R. Ambedkar
 - c. Jawaharlal Nehru
 - d. Dr. Rajendra Prasad
-

81. Which of the following will be the correct value of 0.0006697 up to three decimal places? (+1, -0.33)

- a. 0.000670
 - b. 0.00669
 - c. 0.001
 - d. 0
-

82. Find the least number in which when 19 is added, it is completely divisible by 36, 64, and 90. (+1, -0.33)

- a. 2861
- b. 2731
- c. 2951
- d. 3051

83. A person buys a product at the rate of 20 pieces for ₹ 80 and sells them at the rate of 9 pieces for ₹ 50. Then find the percentage of profit or loss made by the person. (+1, -0.33)

- a. 36.8% Loss
- b. 37.8% Profit
- c. 38.8% Profit
- d. 39.8% Loss

84. Abhimanyu introduced a girl to his friend as "the only daughter of the only son of his father". The girl's relationship with Abhimanyu is of _____. (+1, -0.33)

- a. Cousin
- b. Daughter
- c. Sister
- d. Aunt

85. A pipe can fill a cistern in 12 hours and another pipe can fill it in 15 hours. If both the pipes are opened simultaneously, then how much time will be taken to fill the tank halfway? (+1, -0.33)

- a. $4\frac{2}{3}$ hours
- b. $3\frac{1}{3}$ hours
- c. $6\frac{2}{3}$ hours
- d. $2\frac{1}{3}$ hours

86. Which university has won the Visitor's Award for 'Best University 2017'? (+1, -0.33)

- a. Visva Bharati University
- b. Delhi University
- c. Aligarh Muslim University
- d. Jawahar Lal Nehru University (JNU)

87. An object is thrown vertically from the top of a tower and it reaches the ground after 5 seconds. The initial velocity of the object is 12 m/s. What is the height of the tower? (+1, -0.33)

- a. 55 m
- b. 75 m
- c. 65 m
- d. 45 m

88.

(+1, -0.33)



Which of the following figures correctly fits in the above blank space?



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

89. Which state was ranked first in the medal tally of the 'Khelo India School Games' held for the first time in 2018? (+1, -0.33)

- a. Maharashtra
- b. Kerala
- c. Delhi
- d. Haryana

90. Read the given statements and conclusions carefully and choose which of the given conclusions is/are logical from the given statements. (+1, -0.33)

Statement:

Talking to the players, the coach said, "The club has high-class talent in abundance."

Conclusion:

I. The coach is able to judge the potential of the players

II. The coach is acknowledging his team's talent

- a. Only conclusion II is logical
- b. Only conclusion I is logical
- c. None of the conclusions are logical
- d. Both conclusions are logical

91. Which of the following statement is true? (+1, -0.33)

- a. The radius of curvature is equal to the focal length
- b. The radius of curvature is half of the focal length
- c. The radius of curvature is equal to three times the focal length
- d. The radius of curvature is twice the focal length

92. The distance between the two stations is 440 km. At the same time both the trains run on parallel tracks from those stations and cross each other. The speed of one train is 5 km/hr more than that of the other train. If the distance between the trains after two hours is 210 km, then their speed in km/hr will be respectively. (+1, -0.33)

- a. 75 km/hr and 70 km/hr respectively

- b. 60 km/hr and 55 km/hr respectively
 - c. 55 km/hr and 50 km/hr respectively
 - d. 65 km/hr and 60 km/hr respectively
-

93. _____ combines with O_2 present in the cells of our body to provide energy. (+1, -0.33)

- a. Glycogen
 - b. Glucose
 - c. Pyruvate
 - d. Amino Acids
-

94. In the following question, a statement is given followed by arguments numbered I and II. You have to decide which of the following arguments is a strong argument. (+1, -0.33)

Statement: Should hunting be banned in India?

Argument:

- I. Yes, some species become extinct due to hunting.
- II. No, hunting is one of the entertainment interests of the people.

- a. Only argument I is strong
- b. Neither I nor II is strong
- c. Only argument II is strong
- d. Both I and II are strong

95. _____ are the three parts of the seed. (+1, -0.33)

- a. cotyledon, zygote and ovule
- b. cotyledon ,radicle and ovule
- c. cotyledon, embryo and ovule
- d. cotyledon, zygote and radicle

96. Read the following question and decide which of the statement(s) is/are (+1, -0.33)
sufficient to answer the question?

Question :

J, K, N and O are standing in a row. If we rank them in order from tallest to smallest, who will stand first?

Statement:

- 1. J is taller than K.
 - 2. N is the smallest among them.
 - 3. K is taller than O.
- a. Statements 1 and 2 are sufficient.
 - b. Statements 1 and 3 are sufficient.
 - c. Statements 1, 2, and 3 all together are sufficient.
 - d. The given statements are not sufficient.

97. What is a cyton called (+1, -0.33)

- a. perikaryon, Cell

- b. Neurofibril
- c. Stimulus
- d. Olfactory Receptors

98. Manu's father's sister's son is Raju. How is Manu related to Raju? (+1, -0.33)

- a. Mother
- b. Cousin
- c. Sister
- d. Aunt

99. Identify the odd one from the given set of figures. (+1, -0.33)



a.



b.



c.



d.

100. The least number of 5 digits when divided by 4, 5, and 7, leaves the remainder 3 in each case. What is that number?

(+1, -0.33)

a. 10083

b. 10003

c. 10013

d. 10077

Answers

1. Answer: a

Explanation:

The correct answer is Deepika Padukone.

★ Key Points

- Deepika Padukone was the lead actress in the movie 'Padmavat' released in 2018.
 - Padmaavat is a 2018 Indian period drama romance film directed by Sanjay Leela Bhansali.
 - Based on the epic poem of the same name by Malik Muhammad Jayasi, it stars Deepika Padukone as Rani Padmavati, a Rajput queen known for her beauty, wife of Maharawal Ratan Singh, played by Shahid Kapoor.
 - Sultan Alauddin Khilji, played by Ranveer Singh, hears of her beauty and attacks her kingdom to enslave her.
 - **Aditi Rao Hydari, Jim Sarbh, Raza Murad, and Anupriya Goenka** featured in supporting roles.

★ Additional Information

- Deepika Padukone is an Indian actress who works in Hindi films.
 - One of the highest-paid actresses in India, her accolades include **three** Filmfare Awards.
 - She features in listings of the nation's most popular personalities, and Time named her one of the **100** most influential people in the world in 2018.
- In 2021, **Kangana Ranaut** won another National Film Award for Best Actress at the 67th National Film Awards for her performance in the 2019 Hindi period drama film Manikarnika: The Queen of Jhansi.
 - In 2020, She won Padma Shri for the Hindi sports drama film Panga.
 - This was Ranaut's 3rd win in the best actress category and overall her 4th National Award.

2. Answer: d

Explanation:

The correct answer is Only 2 is true.

★ Key Points

- The gases can be converted into liquids by bringing their particles closer, so atmospheric gases can be liquified either by **decreasing** temperature or by **increasing pressure**.
 - Hence statement 1 is incorrect.
- On a hot dry day, the temperature is high and humidity is less, which helps in better evaporation.
- Due to the higher rate of evaporation, it gives a better cooling effect.
 - Hence statement 2 is correct.

★ Additional Information

- Hygrometer :
 - A hygrometer is an instrument used to measure the amount of water vapour in the air, in soil, or in confined spaces.
 - Humidity is the measure of the amount of moisture in the air.
 - Hygrometer works on the phenomenon called evaporative cooling.
 - When water evaporates from any surface, it becomes cool because water molecules take heat energy from the surface during evaporation.
 - Due to this cooling effect wet-bulb always shows low temperature than a dry bulb.
- Manometer :
 - Manometers are devices used for measuring the pressure at a point in a fluid, by balancing the column of fluid by the same or another column of fluid.
 - The most common form of the manometer is the conventional mercury barometer used to measure atmospheric pressure.

3. Answer: b

Explanation:

Given:

Total number of students = 300

Each students reads = 7 subjects

Each subject is read by = 50 students

Formula used:

Average = Sum of observations/Number of observations

Calculation:

According to the question

Total number of students reads 7 subject = (300×7)

$\Rightarrow 2100$

Each subject is read by 50 students = $(2100/50)$

$\Rightarrow 42$

$\therefore$ The total number of subjects is 42

4. Answer: a

Explanation:

The correct answer is Ministry of Railways.

★ Key Points

- **Ministry of Railways has launched the 'Mission 4IK' program.**
 - The former Union Minister of Railway, Suresh Prabhu launched "Mission 4IK" to save Rs. 41,000 crores on the Indian Railways' expenditure on energy consumption over the next 10 years.
 - This target will be achieved by taking a slew of measures which include moving 90% of traffic to electric traction over diesel.
- **Ashwini Vaishnaw is the current rail Minister of India (as of August 2022).**

★ **Additional Information**

- Deen Dayal Upadhyaya Antyodaya Yojana
 - Deen Dayal Antyodaya Yojana or DAY is one of the Government of India's schemes for helping the poor by providing skill training.
 - It replaces Aajeevika.
- In Jammu and Kashmir, Saffron Mission was initiated in 2010 .
 - The National Saffron Mission (NSM) was launched in 2010-11 but it was only applicable for the cultivation of saffron in Jammu and Kashmir.
 - However, in 2020 , the Government decided to revive this mission and expand the cultivation of saffron to the northeastern part of the country .

5. Answer: c

Explanation:

The correct answer is **Anshu Jamshenpa**.

★ **Key Points**

- **Anshu Jamshenpa is the first woman in the world to climb Mount Everest twice in one season.**
 - Anshu Jamsenpa is an Indian mountaineer and the first woman in the world to scale the summit of Mount Everest twice in a season, and the fastest double summitter to do so within 5 days.
 - It is also the fastest double ascents of the tallest crest by a woman. She is from Bomdila, headquarters of West Kameng district, Arunachal Pradesh –

the state that holds most north-eastern position of India.

- She was awarded India's fourth-highest civilian award the Padma Shri in 2021.

★ Additional Information

- **Mount Everest** is Earth's **highest** mountain above sea level, located in the Mahalangur Himal sub-range of the Himalayas.
 - The China–Nepal border runs across its summit point. Its elevation of 8,848.86 m was most recently established in 2020 by the Chinese and Nepali authorities.
- **Lhakpa Sherpa** is a Nepalese Sherpa mountain climber.
 - She has climbed Mount Everest nine times, the most of any woman in the world.
 - In 2000, she became the first Nepalese woman to climb and descend Everest successfully.
- **Junko Tabei** was a Japanese mountaineer, author, and teacher.
 - She was the first woman to reach the summit of Mount Everest and the first woman to ascend the Seven Summits, climbing the highest peak on every continent.
- **Ang Rita Sherpa** was a Nepali mountaineer who climbed Mount Everest ten times without the use of supplemental oxygen between 1983 and 1996.
 - His sixth climb set the world record for the most successful ascents of Mount Everest, which he re-set on his tenth climb.
 - He was also the first, and to date only, person to climb Mount Everest without supplementary oxygen in winter.

6. Answer: a

Explanation:

- Since X has identified the topic – 'changes in attitudes of adolescents' i.e. the spurious behaviour (fake or unnatural behaviour), due to the use of Facebook or Instagram – as a subject of research, it is safe to assume that it can be targeted (i.e. analysed and studied for research.) Thus, assumption I is implicit.

- As X states that s/he wants to research on the given type of case, it is safe to assume that s/he has the ability or skill to do it. Thus, assumption II is also implicit.

Hence the correct answer is **option 1**.

7. Answer: a

Explanation:

The option figure that bears the closest resemblance to the question figure is shown below:-



The answer figure D is like to rotate 90° anticlockwise direction. Also, it is the only figure among the answer figure that has one cube and small circle present, similar to that of the question figure.

Hence, "option 1" is the correct answer.

8. Answer: a

Explanation:

The correct answer is Zero.

Concept:

- If a body is projected vertically upward, the velocity of the body at the highest point of motion will be zero.

- As the body is thrown upward, it is clear that due to gravity it will come back down.
- Thus we can say the body has reached its maximum height.
- From here, we can conclude that the final velocity of the body will be zero (at its maximum height or its highest point).

★ Additional Information

Gravitation :

- Each and every massive body attracts each other by virtue of their masses.
- This phenomenon is called gravitation.

Newton's law of Gravitation

- The gravitational force of attraction between two bodies is **directly proportional** to the product of their masses and **inversely proportional** to the square of the distance between them.

$$\text{Gravitational force}(F) = \frac{G*m_1*m_2}{r^2}$$

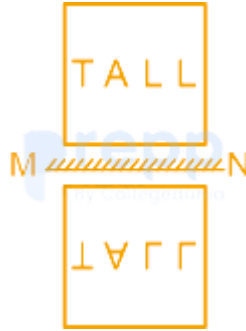
- Where G is the gravitational constant its value is $6.67 \times 10^{-11} \text{ Nm}^2\text{kg}^{-2}$.
- m_1, m_2 is the mass of two bodies and r is the distance between them.
- Gravitational force is central as well as a conservative force.

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9. Answer: a

Explanation:

The correct mirror image of the given figure when the mirror is held at the side is:-



Hence, "option 1" is the correct answer.

10. Answer: b

Explanation:

Calculation:

The revenue of company from the sale of bags = 45%

The total revenue of the company in 2015 = Rs. 3,628,000

Required earn from the sale of bags in 2015 = $(3,628,000 \times 45/100)$

$\Rightarrow (163,260,000/100)$

$\Rightarrow$ Rs. 1,632,600

$\therefore$ The required sale of bags in the year 2015 is Rs. 1,632,600

11. Answer: a

Explanation:

The correct answer is skin and muscles.

★ Key Points

- **Areolar tissue acts as a filler tissue between skin and muscles.**
 - The areolar tissue is a loose connective tissue that can be seen between the skin and muscles; in the bone marrow as well as around the blood vessels and nerves.
 - The areolar tissue fills the spaces between the different organs and connects the skin to the underlying muscles.

★ **Additional Information**

- **Loose connective tissue** is a category of connective tissue which includes areolar tissue, reticular tissue, and adipose tissue.
 - Loose connective tissue is the most common type of connective tissue in vertebrates.
 - It holds organs in place and attaches epithelial tissue to other underlying tissues.
 - For example, it forms tela, such as the tela submucosa and tela subserosa, which connect mucous and serous membranes to the muscular layer.
 - It also surrounds the blood vessels and nerves.
- **Epithelial type of tissue** makes gland.
 - Glands are an organized collection of secretory epithelial cells.
 - Most glands are formed during development by the proliferation of epithelial cells so that they project into the underlying connective tissue.
 - Some glands retain their continuity with the surface via a duct and are known as **Exocrine Glands**.
 - Other glands lose this direct continuity with the surface when their ducts degenerate during development.
 - These glands are known as Endocrine glands.

12. Answer: d

Explanation:

The correct answer is 11.

- The atomic numbers of the four basic elements of a period are 11, 13, 16, and 17.
 - The atomic number of the highest metallic parent element in the modern periodic table will be 11.

★ Key Points

- **The metallic character in a period decreases from left to right.**
 - Hence, the element having the least atomic number in a period will be the highest metallic parent element.
 - The element with the atomic number 11 will be the metallic parent of the period.

★ Additional Information

- **Periodic Table:** It is a tabular presentation of the chemical elements, organized on the basis of their properties:
 - **Mendeleev's Periodic Table (1869):**
 - It is based upon Mendeleev's periodic law, which states, "Properties of the elements are the periodic function of their atomic masses."
 - **Mendeleev** is known as the **father of the periodic table**.
 - **Modern Periodic Law** was given by **Moseley**.
 - According to him: "The physical and chemical properties of the elements are the periodic function of their atomic numbers."
 - **Modern Periodic Table:**
 - It is a graphical representation of the **Aufbau principle**.
 - It is based on the electronic configuration of elements and contains **118 elements**.
 - There are **7 periods and 18 groups**.

13. Answer: d

Explanation:

The correct answer is 4.

★ Key Points

- In the modern periodic table, bromine occurs in the 4th period.
 - A period 4 element is an element in the fourth period (row) of the periodic table.
 - It begins at potassium and ends at krypton.
 - Many of the transition metals in period 4 are very strong, and therefore commonly used in industry, especially iron.
 - Three adjacent elements are known to be toxic, with arsenic one of the most well-known poisons, selenium being toxic to humans in large quantities, and bromine, a toxic liquid.

★ Additional Information

- The modern or long form of the periodic table is based on the modern periodic law.
 - The table is the arrangement of elements in increasing order of their atomic numbers.
 - The modern periodic table is the present form of the periodic table.
 - And it consists of **18 vertical columns and 7 horizontal rows**.
- **Bromine**
 - Bromine (symbol Br and atomic number 35) is a reddish-brown liquid.

14. Answer: d

Explanation:

The correct answer is Virat Kohli.

★ Key Points

- Virat Kohli has been appointed by the well-known cab company 'Uber' as its first brand ambassador.
 - Uber officially signed Virat Kohli as its Brand Ambassador in March 2018.
 - Besides being the face of the brand, Kohli has actively been involved in a series of marketing and customer experience initiatives that were rolled out by Uber India.

★ Additional Information

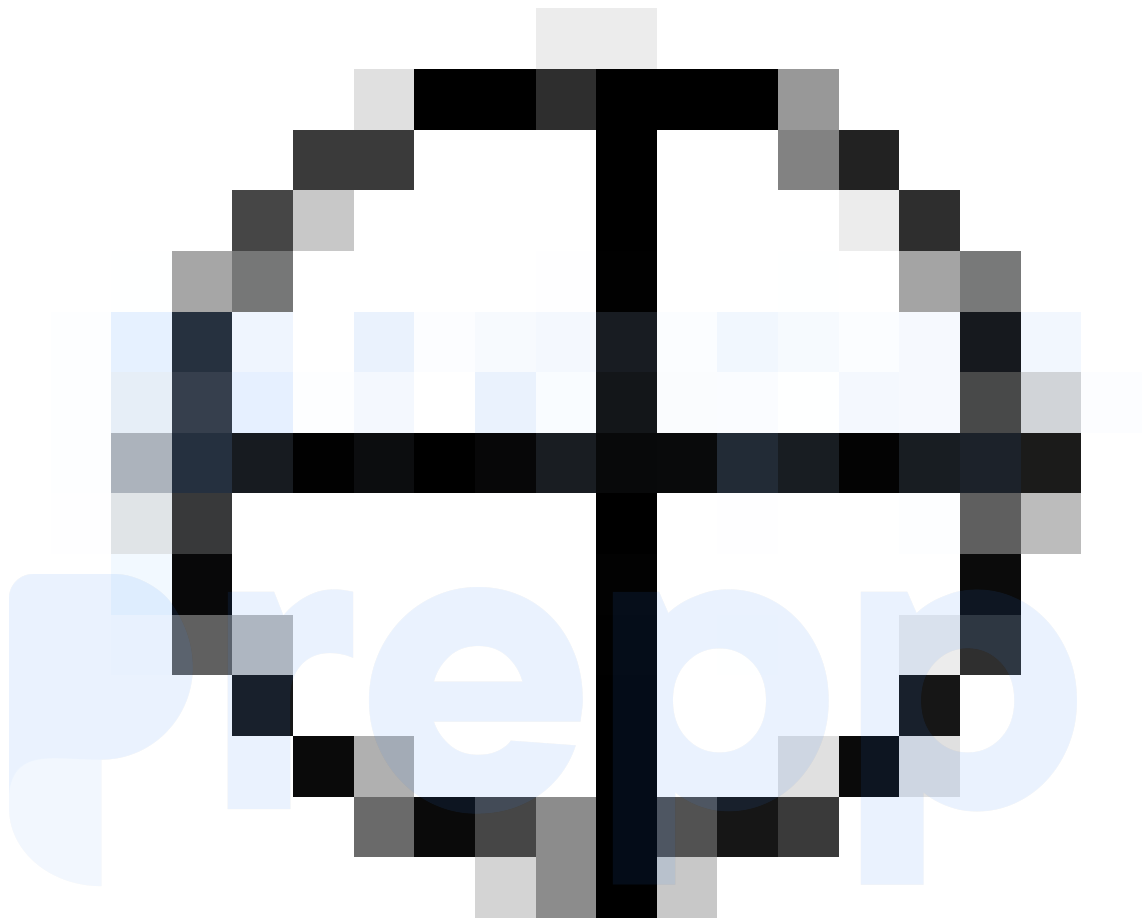
Personalities	Awards
Virat Kohli	• Sir Garfield Sobers Trophy (ICC Men's Cricketer of the Decade): 2011–2020. • He was awarded the Arjuna Award in 2013, the Padma Shri under the sports category in 2017, and the Rajiv Gandhi Khel Ratna award, the highest sporting honour in India, in 2018.
Aamir Khan	• 2003 – Padma Shri • 2010 – Padma Bhushan
Sachin Tendulkar	• 1994: Arjuna Award recipient for achievements in cricket • 1999: Padma Shri – India's fourth-highest civilian award • 2008: Padma Vibhushan – India's second-highest civilian award • 2014: Bharat Ratna – India's highest civilian award
Priyanka Chopra	• 2016 – Padma Shri

15. Answer: b

Explanation:

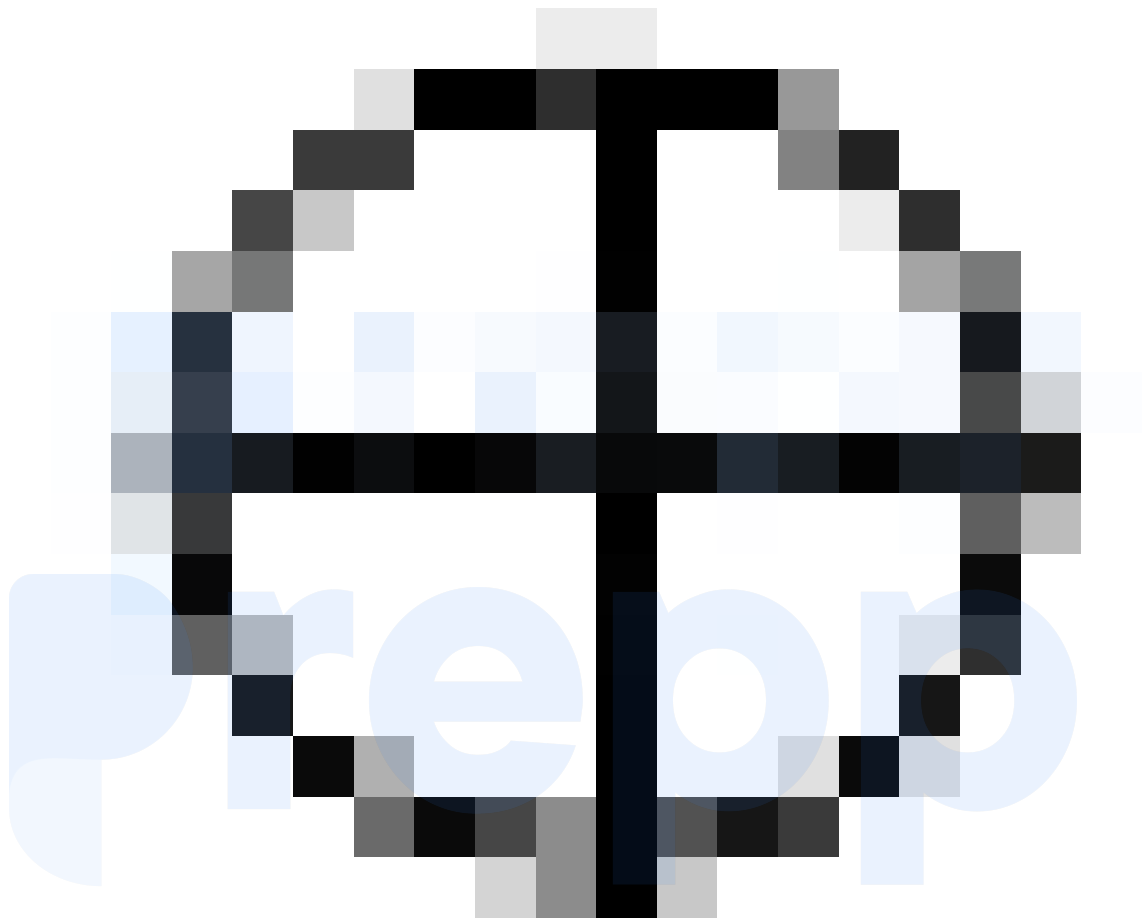
The logic followed here is:

- The first figure of both plus with circle (



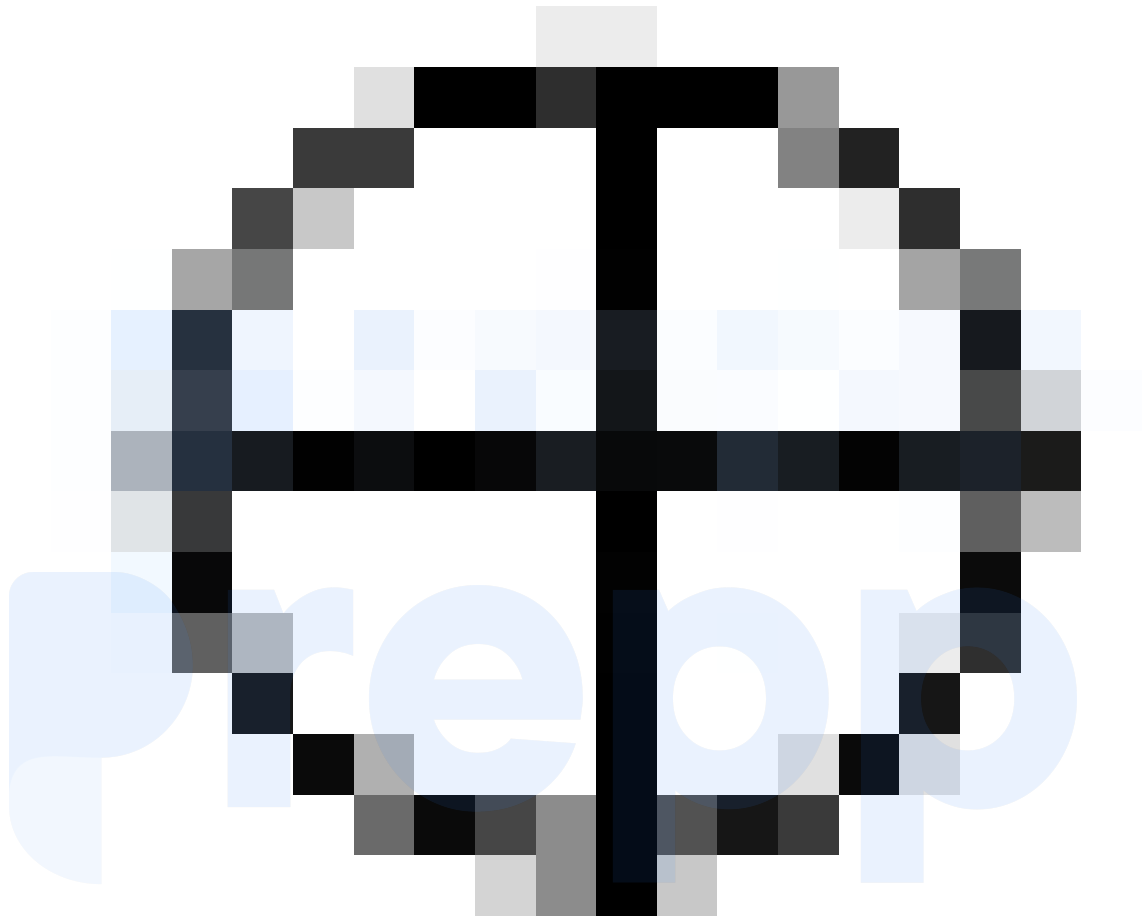
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) move 90^0 clockwise direction then we get the second figure, then the second figure of both plus with circle (



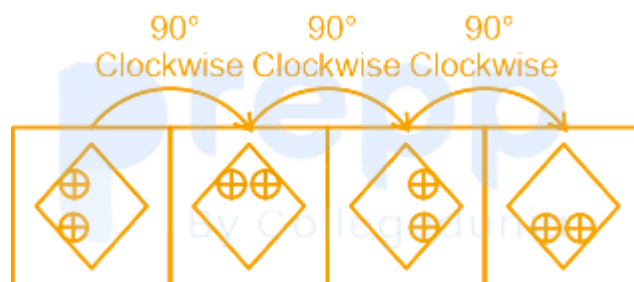
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-) move 90^0 clockwise direction then we get the third figure.
- Similarly, the third figure of both plus with circle (



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) move 90° clockwise direction then we get the fourth figure.



Hence, "option 2" is the correct answer.

16. Answer: a

Explanation:

The correct answer is Sarvagunakar Shrimant Shankardev.

★ Key Points

- Sarvagunakar Shrimant Shankardev is the 2016 Indian-Assamese biographical 2D computer animated film directed by Manju Bora.
 - Sarvagunakar Srimanta Sankardeva is an Indian Assamese language 2D Computer animation biographical film directed by Manju Borah, Director of Animation, and all animation work was single-handedly done by Dr. Gautam k. Das at "**24 illusion factory**", animation studio, Guwahati, and produced by Sanjive Narain under the banner of AM Television.
 - This is a story about the life of Assam's Great saint Srimanta Sankardeva.

★ Additional Information

- Srimanta Sankardev, the legend of Assamese literature and culture, comes across several challenges in his life.
 - Director: Manju Borah
 - Music director: Tarali Sarma
 - Production company: AM Television
 - Screenplay: Manju Borah
 - Producer: Sanjive Narain

17. Answer: d

Explanation:

The correct answer is India.

★ Key Points

- **India will host the 2023 Cricket World Cup.**

- The 2023 ICC Men's Cricket World Cup will be the 13th edition of the men's Cricket World Cup, scheduled to be hosted by India during October and November 2023.
- This will be the first time the competition is held entirely in India.

★ **Additional Information**

- **ODI Cricket World Cup Records**

- **Most Cricket World Cup wins:** Australia (5 World Cups)
- Most runs scored at the Cricket World Cup: Sachin Tendulkar (2,278 runs)
- Fastest double century: Chris Gayle v Zimbabwe (2015) – 138 balls
- Most sixes scored at the Cricket World Cup: Chris Gayle (49 Sixes)
- Most Centuries at the Cricket World Cup: Sachin Tendulkar and Rohit Sharma (6 centuries Each)
- Most wickets were taken at the Cricket World Cup: Glenn McGrath (71 Wickets)
- Most wickets in consecutive balls: Lasith Malinga v South Africa (2007) – 4

- **T20 Cricket World Cup Records**

- Most T20 World Cup wins: West Indies (2 World Cups)
- Highest successful chase: England v South Africa (230-8)
- Fastest century: Chris Gayle (47 balls)
- Most Runs: Mahela Jayawardene (1,016 Runs)
- Highest individual score: Brendon McCullum (123 runs)
- Most wickets: Shahid Afridi – 39 wickets

18. Answer: d

Explanation:

The correct answer is Sudha Chandran.

★ **Key Points**

- Sudha Chandran does not belong to the given group.

- Sudha Chandran is an actress but in the given options other three persons are from Maths and Science background.
- So Sudha Chandran does not belong to the given group.

★ Additional Information

- **Sir Chandrasekhara Venkata Raman** was an Indian physicist known for his work in the field of light scattering.
 - Using a spectrograph that he developed, he and his student K. S. Krishnan discovered that when light traverses a transparent material, the deflected light changes its wavelength and frequency.
- **Satyendra Nath Bose** was an Indian mathematician and physicist specializing in theoretical physics.
 - He is best known for his work on quantum mechanics in the early 1920s, collaborating with Albert Einstein in developing the foundation for Bose-Einstein statistics and the theory of the Bose-Einstein condensate.
- **Shakuntala Devi** was an Indian mathematician, writer and mental calculator, popularly known as the "**Human-Computer**".
 - Her talent earned her a place in the 1982 edition of The Guinness Book of World Records.
- **Sudha Chandran** is an Indian actress who appears in Indian films and Television shows.
 - She is an accomplished Bharatanatyam dancer. In 1981, she hurt her leg in a road accident near Tiruchirapalli, Tamil Nadu while coming back from Madras with her parents.

19. Answer: c

Explanation:

Given:

The average of three numbers = 7

The average of first two numbers = 5

The average of last two numbers = 8

Formula used:

Average = Sum of observations/Number of observations

Calculation:

The average of three numbers = $(3 \times 7) = 21$

The average of first two numbers = $(2 \times 5) = 10$

The average of last two numbers = $(2 \times 8) = 16$

Now,

The three numbers are

$$\Rightarrow (21 - 16) = 5$$

$$\Rightarrow (10 - 5) = 5$$

$$\Rightarrow (21 - 10) = 11$$

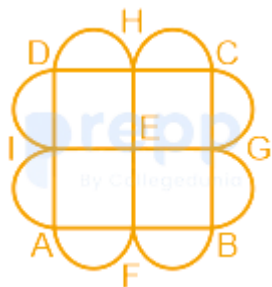
$\therefore$ The required three numbers is 5, 5 and 11

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20. **Answer: b**

Explanation:

Given figure:-



The squares are AFEI, FEGB, GEHC, HDIE, and ABCD.

So, the number of squares is 5.

Hence, "**option 2**" is the correct answer.

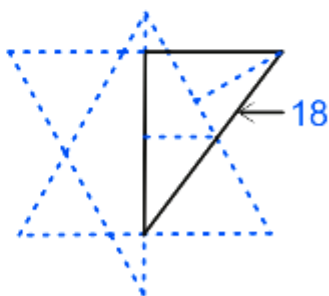
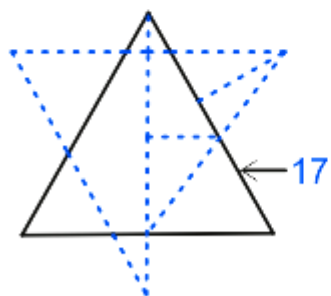
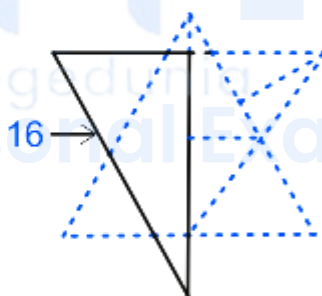
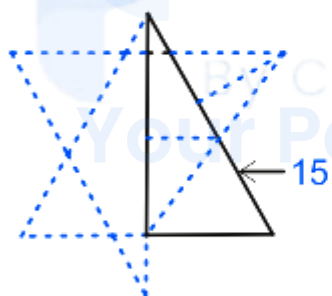
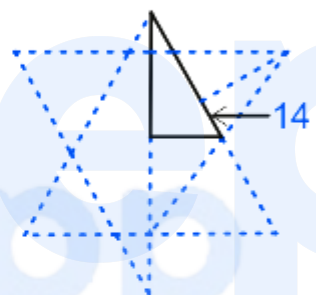
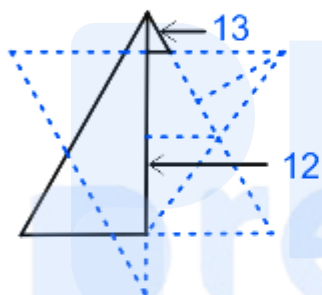
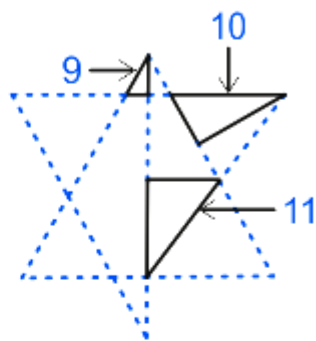
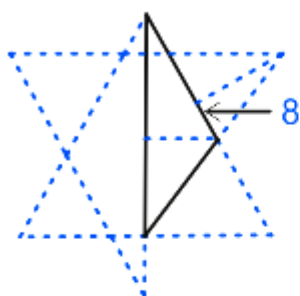
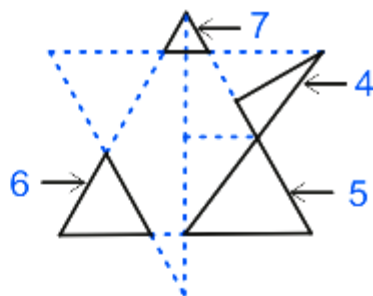
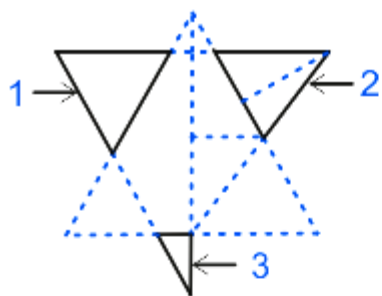
21. Answer: c

Explanation:

Given figure:-



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So, a total of 19 triangle is there in the above figure.

Hence, "option 3" is the correct answer.

22. Answer: d

Explanation:

Given:

The given natural number = 5, 6, 7 or 9

Concept used:

Natural number – All counting numbers are called natural numbers.

Calculation:

LCM of 5, 6, 7 or 9

$$\Rightarrow 2 \times 3 \times 3 \times 5 \times 7$$

$$\Rightarrow 630$$

$$\text{Number} = 630 \times K + 1$$

Let the least number $K = 1$

Now,

$$\Rightarrow (630 \times 1 + 1)$$

$$\Rightarrow (630 + 1)$$

$$\Rightarrow 631$$

∴ The required value is 631

23. Answer: c

Explanation:

The correct answer is 7.4%.

★ Key Points

- The growth rate projected by IMF for the Indian economy in the year 2019 is 7.4%.
 - The IMF on Tuesday slashed India's GDP growth projection for the year 2019 to 6.1%, which is 1.2% down from its April projections.
 - The International Monetary Fund (IMF) in April said India will grow at **7.3%** in 2019.
 - However, three months later it projected a slower growth rate for India in 2019, a downward revision of 0.3%.
 - As against India's real growth rate of 6.8% in 2018, the IMF in its latest World Economic Outlook projected India's growth rate at 6.1% in 2019 and noted that the Indian economy is expected to pick up the next year at **7.0%** in 2020.

★ Additional Information

- **The International Monetary Fund (IMF)** is an international financial institution, headquartered in Washington, D.C., consisting of 190 countries.
 - It claims to be "working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.
 - Formed in 1944, started on 27 December 1945 primarily with the ideas of Harry Dexter White and John Maynard Keynes.

24. Answer: a

Explanation:

Given:

Eldest son would now own = 93.75 m^2

Calculation:

According to the question

A rich man divided his property among five sons = $(5 \times 93.75) \text{ m}^2$

$\Rightarrow 468.75 \text{ m}^2$

Now,

He took back his property from youngest son's share and divided it among other sons = $(468.75 - 93.75) \text{ m}^2$

$\Rightarrow 375 \text{ m}^2$

$\therefore$ The rich man actually own 375 m^2

25. Answer: b

Explanation:

The correct answer is dry and glandular skin with feathers.

★ Key Points

- The class avians have dry and glandular skin with feathers.
 - The skin of birds is not moist, it is completely dry as there are no glands on the skin of birds.
 - There is only one gland present at the base of their tail to lubricate the feathers.

- The effect of friction due to air blowing is reduced by the presence of hollow bones in them, not by moist skin.

★ Additional Information

- The **characteristic features of Aves** (birds) are the presence of feathers and most of them can fly except flightless birds (e.g., Ostrich).
 - Skin is dry without glands except for the oil gland at the base of the tail.
 - Birds live on land and have scaly legs and lay eggs with shells (like reptiles), but they have feathers covering their bodies.
 - Their forelimbs are modified into wings and they have a bill or beak without teeth.
 - The study of birds is called Ornithology and a person who studies birds is called an Ornithologist.
 - Respiration is by lungs in Class Aves (birds).
 - The lungs are spongy and inelastic.
 - **Air sacs are connected to the lungs to supplement respiration.**

26. Answer: c

Explanation:

Given:

Number of 25 paise coins and 50 paise coins is equal

Calculation:

Let x be the number of each type

The purse has an equal number of coins

$$\Rightarrow 25 \text{ paise} = \frac{1}{4} \text{ rupee}$$

$$\Rightarrow 50 \text{ paise} = \frac{1}{2} \text{ rupee}$$

According to the question

$$\Rightarrow (x/4 + x/2) = 22.50$$

$$\Rightarrow (x + 2x)/4 = 22.50$$

$$\Rightarrow 3x/4 = 22.50$$

$$\Rightarrow 3x = 90$$

$$\Rightarrow x = (90/3)$$

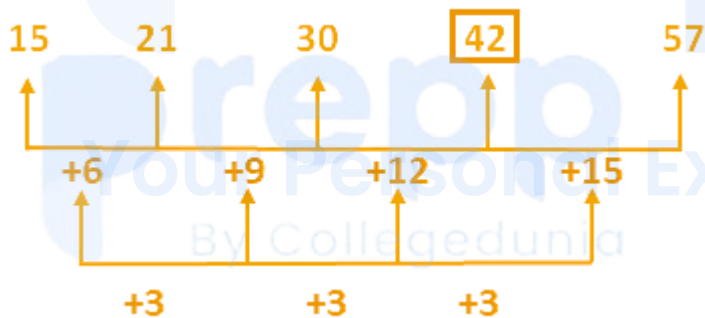
$$\Rightarrow x = 30$$

$\therefore$ The number of coins of each type is 30

27. Answer: d

Explanation:

The logic followed here is:



Hence, "option 4" is the correct answer.

28. Answer: d

Explanation:

Let us first decode the given symbols and then draw a family tree:-

A is				
Symbol	×	/	@	%
Meaning	Mother	Brother	Sister	Father
of B				

Symbol in Diagram	Meaning
○	Female
□	Male
==	Married Couple
—	Siblings
	Difference of A Generation

From option 1:-

$P \times S @ N / B$

The family tree is given below:-

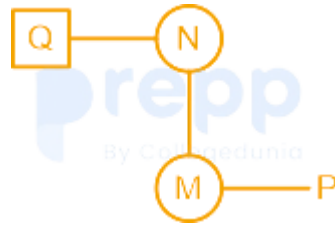


It is not followed.

From option 2:-

$Q / N \times M @ P$

The family tree is given below:-

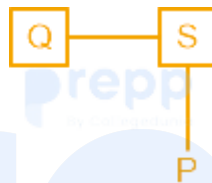


It is not followed.

From option 3:-

$Q / S \% P$

The family tree is given below:-

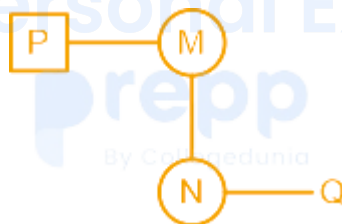


It is not followed.

From option 4:-

$P / M \times N @ Q$

The family tree is given below:-



It is followed, P is the maternal uncle of Q.

Hence, "option 4" is the correct answer.

29. Answer: a

Explanation:

Given:

Population of the town = 5000

Tea drinking people, $n(T) = 3200$

Coffee drinking people, $n(C) = 2500$

People drinking both tea and coffee, $n(T \cap C) = 1500$

Formula used:

$$n(T \cup C) = n(T) + n(C) - n(T \cap C)$$

Calculation:

Let people drinking either tea or coffee be $= n(T \cup C)$

$$n(T \cup C) = 3200 + 2500 - 1500$$

$$\Rightarrow 4200$$

People drinking neither tea nor coffee = Total Population - People drinking either tea or coffee.

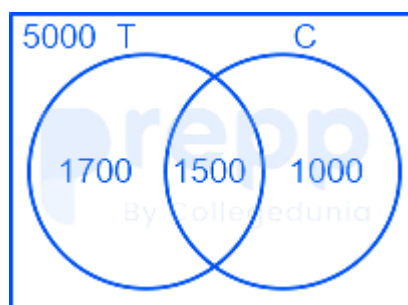
$$\Rightarrow 5000 - 4200$$

$$\Rightarrow 800$$

$\therefore$ The required number of people who neither drink tea nor coffee is 800.

By Venn Diagram

★ Alternate Method



People drinking both tea and coffee = 1500

People drinking tea only = $3200 - 1500 = 1700$

People drinking coffee only = $2500 - 1500 = 1000$

People drinking either of the two drinks = $1500 + 1700 + 1000 = 4200$

$\therefore$ People drinking neither tea nor coffee = $5000 - 4200 = 800$

30. Answer: c

Explanation:

Given:

Sum of the present ages of son and mother = 70

5 years ago, ratio of the age of son and mother = 1 : 3

Concept used:

Ratio and Proportion

Calculation:

Let the age of son and mother 5 years ago was b and $3b$ respectively.

Now, the present age of son will be = $b + 5$

$\Rightarrow$ Present age of mother will be = $3b + 5$

As per the question;

$$(b + 5) + (3b + 5) = 70$$

$$\Rightarrow 4b + 10 = 70$$

$$\Rightarrow 4b = 70 - 10 = 60$$

$$\Rightarrow b = 60/4 = 15$$

$\therefore$ Present age of the mother will be $= 3b + 5$

$$\Rightarrow 3 \times 15 + 5$$

$\Rightarrow$ **50 years**

★ Alternate Method

5 years ago, son's age $= 1/3$ of mother's age

$$\Rightarrow \text{Son} : \text{Mother} = 1 : 3$$

Sum of the present ages of son and mother $= 70$ years

$$\Rightarrow \text{Sum of the ages of son and mother 5 years ago} = 70 - 5 - 5 = 60 \text{ years}$$

$$\Rightarrow (\text{Son's} + \text{Mother's}) \text{ age} = 60 \text{ years}$$

By equating the ratio, we get

$$\Rightarrow 1 + 3 = 4 = 60$$

$$\Rightarrow 1 = 15$$

$$\Rightarrow 3 = 45$$

Mother's age 5 years ago $= 45$ years

$\therefore$ Mother's present age $= 45 + 5 = 50$ years

31. **Answer: b**

Explanation:

Given:

Chetna's speed while going to city $= 8 \text{ km/h}$

Chetna's speed while coming home = 5 km/h

Total time taken during the entire journey = $19\frac{1}{2}$ hours

Formula used:

Time = Distance/Speed

Calculation:

Let the distance from Chetna's home to city = d km

$$d/8 \text{ km/h} + d/5 \text{ km/h} = 19\frac{1}{2} \text{ hours}$$

$$\Rightarrow (5d + 8d)/40 = 39/2$$

$$\Rightarrow 13d/40 = 39/2$$

$$\Rightarrow d = 39/2 \times 40/13$$

$$\Rightarrow d = 60 \text{ km}$$

$\therefore$ The required result is 60 km.

32. Answer: d

Explanation:

Given:

Square of a number = $3 + 2 \times \text{Number}$

Calculation:

Let the number be = a

$$\Rightarrow a^2 = 3 + 2a$$

$$\Rightarrow a^2 - 2a - 3 = 0$$

$$\Rightarrow a^2 - 3a + a - 3 = 0$$

$$\Rightarrow a(a - 3) + 1(a - 3) = 0$$

$$\Rightarrow (a + 1)(a - 3) = 0$$

$$\Rightarrow a = -1, 3$$

$\therefore$ The required number can be -1 or 3.

33. Answer: a

Explanation:

Given:

Side of an equilateral triangle = $6\sqrt{3}$ cm

Formula used:

Height of equilateral triangle with side 'a' = $\frac{\sqrt{3}a}{2}$

Calculation:

Height of the equilateral triangle with side $6\sqrt{3}$ cm = $\frac{\sqrt{3}}{2} \times 6\sqrt{3}$

$$\Rightarrow \sqrt{3} \times 3 \times \sqrt{3} = 9 \text{ cm}$$

$\therefore$ The required result is 9 cm.

34. Answer: d

Explanation:

The statement implies that if a person has the will to do something, that person will find a way to do it.

- From the given statement, it cannot be determined if people make excuses to delay things. The statement does not talk about it. So, assumption I is not implicit.
- As explained above, the will i.e. the intention to do something is important and that helps in finding a way to do the task. Thus, assumption II is implicit.

Hence the correct answer is **option 4**.

35. Answer: d

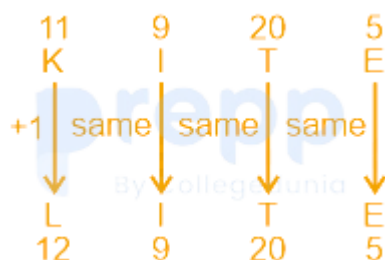
Explanation:

The alphabet table is given below:-

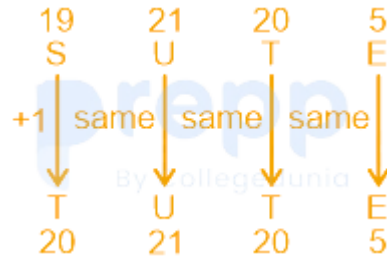
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The logic followed here is:

KITE → LITE

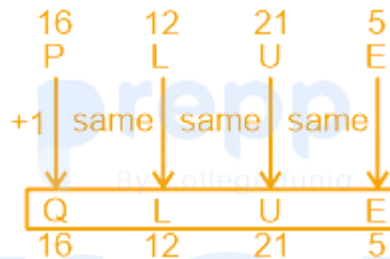


And SUTE → TUTE



Similarly,

PLUE → QLUE



Hence, "option 4" is the correct answer.

36. Answer: b

Explanation:

Given: Your Personal Exams Guide

No of households in the village = 1200

Rate of electrification = 75% per annum

Calculation:

Number of households without electricity after 2 years:

$$\Rightarrow 1200 \times (100 - 75)\% \times (100 - 75)\%$$

$$\Rightarrow 1200 \times 25/100 \times 25/100$$

$$\Rightarrow 1200 \times 1/4 \times 1/4$$

⇒ 75

∴ The number of households living without electricity connection after 2 years will be 75.

37. Answer: a

Explanation:

The correct answer is Archimedes' principle.

★ Key Points

- When a body is immersed wholly or partially in a liquid, a force is exerted on it in an upward direction, which is equal to the weight of the liquid displaced by that body.
 - Archimedes' principle makes this clear.
- Archimedes' principle states that the upward buoyant force that is exerted on a body immersed in a fluid, whether fully or partially submerged, is equal to the weight of the fluid that the body displaces and acts in the upward direction at the center of mass of the displaced fluid.

★ Additional Information

- **Archimedes' principle**, physical law of buoyancy, was discovered by the ancient Greek mathematician and inventor Archimedes, stating that anybody completely or partially submerged in a fluid (gas or liquid) at rest is acted upon by an upward, or buoyant, force, the magnitude of which is equal to the weight of the fluid displaced by the body.
 - The volume of displaced fluid is equivalent to the volume of an object fully immersed in a fluid or to that fraction of the volume below the surface for an object partially submerged in a liquid.
 - The weight of the displaced portion of the fluid is equivalent to the magnitude of the buoyant force.
 - The buoyant force on a body floating in a liquid or gas is also equivalent in magnitude to the weight of the floating object and is opposite in

direction; the object neither rises nor sinks.

38. Answer: c

Explanation:

The correct answer is Dehradun.

★ Key Points

- Dehradun is the capital of Uttarakhand.
 - Dehradun is the capital of the Indian state of Uttarakhand, near the Himalayan foothills.
 - At its core is the 6-sided **Ghanta Ghar clock tower**.
 - In Clement Town to the city's southwest, **Mindrolling Monastery** is a Tibetan Buddhist center with shrine rooms in its Great Stupa.

★ Additional Information

- **Uttarakhand**, a state in northern India crossed by the Himalayas, is known for its Hindu pilgrimage sites.
 - The city hosts the evening **Ganga Aarti**, a spiritual gathering on the sacred Ganges River.
 - The state's forested **Jim Corbett National Park** shelters Bengal tigers and other native wildlife.
- **Mussoorie** is a hill station and a municipal board in the Dehradun district of the Indian state of Uttarakhand.
 - It is about 35 kilometers from the state capital of Dehradun and 290 km north of the national capital of New Delhi.
 - The hill station is in the foothills of the Garhwal Himalayan range.
- **Roorkee** is a city in North India and a municipal corporation in the Haridwar district of the state of Uttarakhand, India.
 - It is spread over a flat terrain under the Sivalik Hills of the Himalayas.
 - The city is developed on the banks of the Ganges Canal, its dominant feature, which flows from the north-south through the middle of the city.

- **Nainital** is a Himalayan resort town in the Kumaon region of India's Uttarakhand state.
 - Formerly a British hill station, it's set around Nainital Lake, a popular boating site with **Naina Devi Hindu Temple** on its north shore.

39. Answer: d

Explanation:

Statement	Conclusion		
	Definite (100% true)	Can't Say	Incorrect (100% false)
All A are B 	Some A are B Some B are A	Some B are not A All B are A	Some A are not B No A is B No B is A
Some A are B 	Some B are A	Some A are not B All B are A Some B are not A All A are B	No A is B No B is A
No A is B 	No B is A Some A are not B Some B are not A		Some A are B Some B are A All A are B All B are A
Some A are not B 		Some B are not A Some A are B Some B are A All B are A No A is B No B is A	All A are B

The Venn diagram is given below:-



Conclusion:

1. All files are pulp. → True (All files are paper, all paper is pulp then combining the statement then we get all files are pulp.)

2. Some pulp is paper. → True (All paper is pulp then we can say that some pulp is paper.)

Hence, "option 4" is the correct answer.

40. Answer: a

Explanation:

The correct answer is Mechanical energy.

★ Key Points

- The sum of the kinetic energy and potential energy of an object is called mechanical energy.
 - The total amount of mechanical energy is merely the sum of the potential energy and the kinetic energy.
 - This sum is simply referred to as the total mechanical energy (abbreviated TME).
 - $TME = PE \text{ (Potential Energy)} + KE \text{ (Kinetic Energy)}$.

★ Additional Information

- **Mechanical energy**, sum of the kinetic energy, or energy of motion, and the potential energy, or energy stored in a system by reason of the position of its parts.
 - Neglecting friction at the pivot and air resistance, the sum of the kinetic and potential energy.
- **Kinetic energy** is a form of energy that an object or a particle has by reason of its motion.
 - Kinetic energy is a property of a moving object or particle and depends not only on its motion but also on its mass.
- In physics, **potential energy** is the energy held by an object because of its position relative to other objects, stresses within itself, its electric charge, or other factors.

41. Answer: a

Explanation:

Given:

A number divided by 6, 15, and 18 leaves a remainder 5 each time.

Concept used:

Lowest Common Multiple

Calculation:

The required number will be = LCM (6, 15, 18) + 5

By Prime Factorization

$$6 = 2 \times 3$$

$$15 = 3 \times 5$$

$$18 = 2 \times 3^2$$

$$\Rightarrow \text{LCM} (6, 15, 18) = 2 \times 9 \times 5 = 90$$

$$\therefore \text{The required number} = 90 + 5$$

$$\Rightarrow 95$$

42. Answer: d

Explanation:

The correct answer is 735 J.

★ Key Points

- Given
 - Mass of the object = 15 kg
 - Height = 5 m
- Potential energy (P.E) is given by the expression,
- $P.E = m \times g \times h$
 - Where,
 - m = Mass of the object
 - h = Vertical displacement
 - g = Acceleration due to gravity (9.8 ms^{-2})
- $P.E = 15 \times 9.8 \times 5$
- P.E = 735 J

43. Answer: c

Explanation:

The correct answer is V/I is a constant.

★ Key Points

- **Ohm's law** states that the current through a conductor between two points is directly proportional to the voltage or **potential difference** across the two points.
- $V = IR$
- $R = \frac{V}{I}$
 - V = Voltage
 - I = Current
 - R = Resistance or a constant

★ Additional Information

- **Ohm's Law** can be used to validate the static values of circuit components, current levels, voltage supplies, and voltage drops.
- The resistance of a conductor is directly proportional to length.

- The resistance of a wire is directly proportional to its length and inversely proportional to its cross-sectional area .
- Resistance also depends on the material of the conductor.
- The ohm is the common unit of electrical resistance, equivalent to one volt per ampere and represented by the capital Greek letter omega, Ω .

44. Answer: b

Explanation:

Given:

A man spends $\frac{2}{5}$ part of his income and left with Rs.90.

Calculation:

Let the total income be = 1

Part of the income spent = $\frac{2}{5}$

⇒ Remaining part = $1 - \frac{2}{5}$

⇒ $(5 - 2)/5 = \frac{3}{5}$

⇒ $\frac{3}{5} = \text{Rs.}90$

⇒ $1 = \text{Rs.}90 \times \frac{5}{3}$

⇒ $1 = \text{Rs.} 150$

∴ The amount of income the man had in the beginning = Rs.150

45. Answer: c

Explanation:

The correct answer is VIII A.

★ Key Points

- 'Inert gases' are in VIII A group.
 - Noble gas, any of the seven chemical elements that make up Group 18 (VIII a) of the periodic table.
 - The elements are helium (He), neon (Ne), argon (Ar), krypton (Kr), xenon (Xe), radon (Rn), and oganesson (Og).
 - The noble gases are colorless, odourless, tasteless, nonflammable gases.

★ Additional Information

The discoverers of noble gases are :

Helium	Pierre Janssen and Joseph Norman Lockyer
Neon	William Ramsay
Argon	Lord Rayleigh and William Ramsay
Krypton	William Ramsay
Xenon	William Ramsay
Radon	Friedrich Ernst Dorn

46. Answer: b

Explanation:

The correct answer is Ga.

★ Key Points

- If you place Ga metal on your palm, that metal melts.
 - The element gallium is an unexpected metal.

- it's a soft, silvery-white metal that is solid at room temperature (similar to aluminum) but it can literally melt in the palm of your hand.
- It's bizarre and a little unsettling to see, but it makes sense.

★ Additional Information

- **Important facts about metals**

- The metal used to kill rats is zinc phosphide.
- The disease caused by an excess of copper in humans is – Wilson.
- Galvanized iron is coated with – Zinc.
- Rusting increases the weight of iron.
- A zinc chloride coat protects wooden furniture from termites.
- Calcium hydride is called a hydrolith.
- Calcium hydride is used to produce fireproof and waterproof fabrics.
- The metal used in airplanes is palladium.
- Pearl ash is potassium carbonate.
- Chromium trioxide is known as chromic acid.
- Selenium metal is used in the photoelectric cell.
- Zeolite is used to remove the hardness of the water.
- Gallium metal is liquid at room temperature.
- Radium is extracted from pitchblende.
- The smell of onion and garlic is due to Sulphur compounds.

47. Answer: b

Explanation:

Calculation:

From the above bar graph,

The number of students passed from the institute 'ABC' in 2016 = 50

∴ The required result = 50

48. Answer: c

Explanation:

The correct answer is Neither 1 nor 2 is true.

★ Key Points

- In Nickel **speed of sound** is 6040 m/s.
- In Aluminium, the **speed of sound** is 6420 m/s.
 - Hence option 1 and 2 both are not true.

★ Additional Information

- **The speed of sound in a medium depends:**
 - The temperature of the medium.
 - The speed of sound decreases when we go from solid to a gaseous state.
 - In any medium, as we increase the temperature the speed of sound increases.
 - The velocity of sound through a gas is inversely proportional to the square root of the density of the gas.
- **Sound** is mechanical energy that produces a sensation of hearing.
 - Sound is produced due to the vibration of different objects.
 - The sound wave propagates as compressions & rarefactions in the medium.
 - **Sound waves are longitudinal waves.**
 - **Sounds of frequencies below 20 Hz are called infrasonic sound or infrasound.**
 - Rhinoceroses communicate using infrasound of frequency as low as 5 Hz.
 - Whales and elephants produce sound in the infrasound range.
 - **Frequencies higher than 20 kHz are called ultrasonic sound or ultrasound.**
 - Ultrasound is produced by dolphins, bats, and porpoises.

49. Answer: d

Explanation:

Given:

Selling price at 16.5% profit = Rs.466

Formulas used:

Selling Price = Cost Price $\times$ (100 + Profit)%

Selling Price = Cost Price $\times$ (100 - Profit)%

Loss Percentage = Loss/Cost Price $\times$ 100

Calculation:

Rs.466 = Cost Price $\times$ (100 + 16.5)%

$\Rightarrow$ Cost Price = $466/116.5\%$

$\Rightarrow$ Cost Price = 4×100

$\Rightarrow$ Cost Price = Rs.400

New Selling Price = Rs.330

$\Rightarrow$ Loss = Cost Price - Selling Price

$\Rightarrow$ Rs.400 - Rs.330 = Rs.70

$\therefore$ Loss Percentage = $70/400 \times 100$

$\Rightarrow$ 17.5%

★ Shortcut Trick

profit = 16.5% = $33/200$

SP = 233, CP = 200

233 $\rightarrow$ 466, 1 $\rightarrow$ 2

CP = 400, SP in second case = 330

loss = 400 - 330 = 70

loss % = $(70/400) \times 100 = 17.5\%$

50. Answer: d

Explanation:

5th February 2018 to 5th February 2019 = 1 odd day

- 5th February 2019 = Tuesday

5th February 2019 to 5th February 2020 = 1 odd day

- 5th February 2020 = Wednesday

5th February 2020 to 5th February 2021 = 2 odd days (because 2020 is a leap year, February will have 29 days)

- 5th February 2021 = Friday

5th February 2021 to 5th February 2022 = 1 odd day

- 5th February 2022 = Saturday

5th February 2022 to 5th February 2023 = 1 odd day

- 5th February 2023 = Sunday

5th February 2023 to 5th February 2024 = 1 odd day

- 5th February 2024 = Monday.

Hence, **2024** is the correct answer.

51. Answer: d

Explanation:

The correct answer is A. R. Rahman.

★ Key Points

- A.R. Rahman eminent personality of the film industry has recently been made the official brand ambassador of Sikkim.
- Extending a warm welcome to Rahman at the opening ceremony of the Sikkim Red Panda Winter Carnival, Chief Minister Pawan Kumar Chamling said he was grateful to the musician for accepting his proposal.
 - Allah Rakha Rahman is an Indian film composer, record producer, singer, and songwriter who works predominantly in Tamil and Hindi films.
 - In 2010, the Indian government awarded him the Padma Bhushan, the nation's third-highest civilian award.

52. Answer: b

Explanation:

The correct answer is Decomposition.

★ Key Points

- The decomposition reaction requires energy to split the reactants.
 - Decomposition Reactions require energy in the form of heat or light or electricity for breaking down the reactants.
 - This energy can be termed as Initiation Energy. Complete step by step solution:
 - A decomposition reaction can be defined as a chemical reaction in which one reactant breaks down into two or more products.

★ Additional Information

- A **combination reaction** is a reaction where two or more elements or compounds combine to form a single compound.

- Such reactions are represented by equations of the following form: $X + Y \rightarrow XY$.
- The combination of two or more elements to form one compound is called a combination reaction.
- **A double-replacement (or double-displacement) reaction** is a reaction in which the positive and negative ions of two ionic compounds exchange places to form two new compounds.
 - Double-replacement reactions can form precipitates, gases, or molecular compounds.
 - A displacement reaction is one wherein the atom or a set of atoms is displaced by another atom in a molecule.
 - For instance, when the iron is added to a copper sulphate solution, it displaces the copper metal. $A + B-C \rightarrow A-C + B$.
 - The above equation exists when A is more reactive than B.

53. Answer: a

Explanation:

The correct answer is Two.

★ Key Points

- **A man has two testicles.**
 - The testicles reside in the scrotum, attached at each end to the spermatic cord.

★ Additional Information

- The testicles produce the primary male sex hormone testosterone, as well as sperm.
 - The average size of a man testicle is about 4 x 3 x 2 centimeters (cm) in size and is oval-shaped.
 - Most men have two testicles, also known as testes.
 - It's common for one of a man's testicles to be a different size than the other testicle.

- Testicles reside in the scrotum, attached at each end to the spermatic cord.
 - Biologically male people always inherit their X chromosome from their mother.
 - The X chromosome is about three times larger than the Y chromosome.
 - Female mammals have two X chromosomes in every cell.
 - The X chromosome is one of the two sex chromosomes in humans (the other is the Y chromosome).
 - The sex chromosomes form one of the 23 pairs of human chromosomes in each cell.
-

54. Answer: a

Explanation:

The correct answer is Kerela.

★ Key Points

- Periyar Tiger Reserve is in Kerela.
 - Periyar National Park, also known as Periyar Tiger Reserve, is in the mountainous Western Ghats of Kerala, southern India.
 - This wildlife sanctuary is home to tigers and a significant elephant population, as well as rare lion-tailed macaques, sambar deer, leopards and Indian bison. In the park's north, Periyar Lake is popular for boat rides.

★ Additional Information

- Dudhwa National Park
 - The Dudhwa Tiger Reserve is a protected area in Uttar Pradesh located on the India-Nepal border.
 - The Dudhwa National Park has a number of species of birds, reptiles, wild elephants, aquatic animals, one-horned rhinos, wild elephants besides its enriched flora and fauna. Its undisturbed natural forest cover, vast spans of grasslands, and wetlands.
 - It is the only place in U.P. where both Tigers and Rhinos can be spotted together.

- Jim Corbett National Park is a forested wildlife sanctuary in northern India's Uttarakhand State.
 - Rich in flora and fauna, it's known for its Bengal tigers. Animals, including tigers, leopards and wild elephants, roam the Dhikala zone.
 - On the banks of the Ramganga Reservoir, the Sonanadi zone is home to elephants and leopards, along with hundreds of species of birds.
- Manas National Park is a national park, UNESCO Natural World Heritage site, a Project Tiger reserve, an elephant reserve and a biosphere reserve in Assam, India.
 - Located in the Himalayan foothills, it is contiguous with the Royal Manas National Park in Bhutan.

55. Answer: b

Explanation:

The correct answer is Pataliputra.

★ Key Points

- Pataliputra was the capital of the Mauryan Empire.
 - Age historical power in South Asia based in Magadha, founded by Chandragupta Maurya in 322 BCE, and existed in loose-knit fashion until 185 BCE.
 - The Maurya Empire was centralized by the conquest of the Indo-Gangetic Plain, and its capital city was located at Pataliputra (modern Patna).
 - Outside this imperial center, the empire's geographical extent was dependent on the loyalty of military commanders who controlled the armed cities sprinkling it.
 - Pataliputra was the capital of the Mauryan empire.

★ Additional Information

- The last of the Nanda rulers, **Dhana Nanda** was highly unpopular due to his oppressive tax regime.

- Also, post-Alexander's invasion of North-Western India, that region faced a lot of unrest from foreign powers.
- Some of these regions came under the rule of the Seleucid Dynasty, **founded by Seleucus Nicator I.**
 - He was one of the generals of Alexander the Great.
- Chandragupta, with the help of an intelligent and politically astute Brahmin, Kautilya usurped the throne by defeating **Dhana Nanda in 321 BC** and establishing the Mauryan empire.
- The Maurya Empire was a geographically extensive.
 - During Ashoka's rule (ca. 268–232 BCE) the empire briefly controlled the major urban hubs and arteries of the Indian subcontinent excepting the deep south.
 - It declined for about 50 years after Ashoka's rule and dissolved in 185 BCE with the assassination of **Brihadratha by Pushyamitra Shunga and the foundation of the Shunga dynasty in Magadha.**

56. Answer: b

Explanation:

The correct answer is Srikanth Kidambi.

★ Key Points

- In 2017, Srikanth Kidambi won the Denmark Open title in the men's singles category of badminton.
 - Srikanth Kidambi is an Indian badminton player who trains at the Gopichand Badminton Academy, Hyderabad.
 - He ranked as world **number 1** at the BWF ranking in April 2018.
 - Kidambi was awarded the **Padma Shri**, India's fourth-highest civilian award in 2018 and the **Arjuna award** in 2015.

★ Additional Information

- Liu Cheng is a Chinese badminton player.

- He was the men's doubles World Champion in 2017 partnered with Zhang Nan, also the mixed doubles World and Asian Junior Champion in 2010 with Bao Yixin.
- HS Prannoy :
 - Prannoy Haseena Sunil Kumar, also known as Prannoy H. S.
 - He is an Indian badminton player and currently trains at the Gopichand Badminton Academy in Hyderabad.
 - Kumar originally hails from Thiruvananthapuram and is the Indian number 2 in badminton.
- Parupalli Kashyap
 - Parupalli Kashyap is a badminton player from India.
 - He trains at Gopichand Badminton Academy. He was awarded the Arjuna Award by the Government of India in 2012.

57. Answer: b

Explanation:

The correct answer is Chronicle.

★ Key Points

- In the medieval period, travelers to India wrote their biographies and court poets wrote poems to praise their kings. These literary sources are called chronicles.
 - The literary works of Persian and Arab people are the most important sources of the history of the medieval period (the Sultanate period).
 - These Persian and Arabic works can be divided into three broad categories such as – **chronicles, travel stories, and modern works.**

★ Additional Information

- **Examples of some chronicles**
 - Tarikh-i-hind (Literary Works of Al-Beruni)
 - Al-Beruni, came to India and took up service under Mahmud of Ghazni.
- Chach-Nama

- Chach-Nama is a historical work about the Atab conquest of Sindh.
- The book was originally written in Arabic and later translated into Persian.

58. Answer: c

Explanation:

The logic followed here is:

In figure A, B, and D there are only two lines with open both the ends are intersect the circle but in figure C only two lines with closed ends by two lines are intersect the circle.

figure C is different from others.

Hence, "option 3" is the correct answer.

59. Answer: c

Explanation:

The correct answer is 7 Unit.

Concept:

Electric bulb: It is an electric device which converts electric energy into heat and light energy.

- Resistance of the bulb $R = \frac{(\text{Rated voltage})^2}{(\text{Rated power})}$
- If we consider the bulb as a resistor then, we can easily find the current and voltage drops.
- $\text{Power consumed} = i^2 R$
- Power consumed $\propto$ Brightness

The rate of work done by the electric current is called as electric power .

The difference of potential between two points is called a potential difference .

Electric energy (E) = electric power (P) × time (t)

Unit of electric energy = unit of electric power × unit of time = kilowatt × hour = kilowatt-hour

★ Key Points

- Given that
 - Power of the bulb = 200 W
 - Time = 5 hours

We know that,

Energy = Power × Time

⇒ Energy consume = 200 w × 5 hrs = 0.2 kw × 5 = 1 Unit

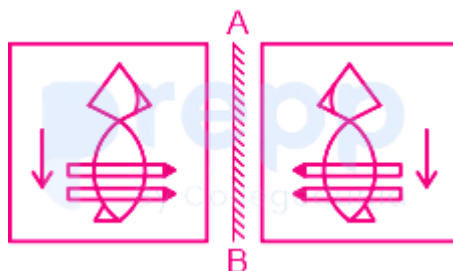
This means bulb uses 1 Unit in one day.

So in a week = 1 unit/day × 7 day = 7 unit per week

60. Answer: c

Explanation:

The correct mirror image of the given figure when the mirror is held at the side is:-



Hence, "option 3" is the correct answer.

61. Answer: a

Explanation:

The correct answer is 5 : 2

★ Key Points

- In CaO, the ratio of Ca and O by mass is 5 : 2.
 - The atomic mass of calcium = 40 u
 - The atomic mass of Oxygen = 16 u
- Ratio by mass of Ca and O in CaO = 40 : 16 = 5 : 2

★ Additional Information

- **Calcium oxide, commonly known as quicklime or burnt lime,** is a widely used chemical compound.
 - It is a white, caustic, alkaline, crystalline solid at room temperature.
 - Calcium oxide is usually made by the thermal decomposition of materials, such as limestone or seashells, that contain calcium carbonate in a lime kiln.
 - This is accomplished by heating the material to above 825 °C (1,517 °F), a process called **calcination or lime-burning, to liberate a molecule of carbon dioxide (CO₂), leaving quicklime.**

62. Answer: c

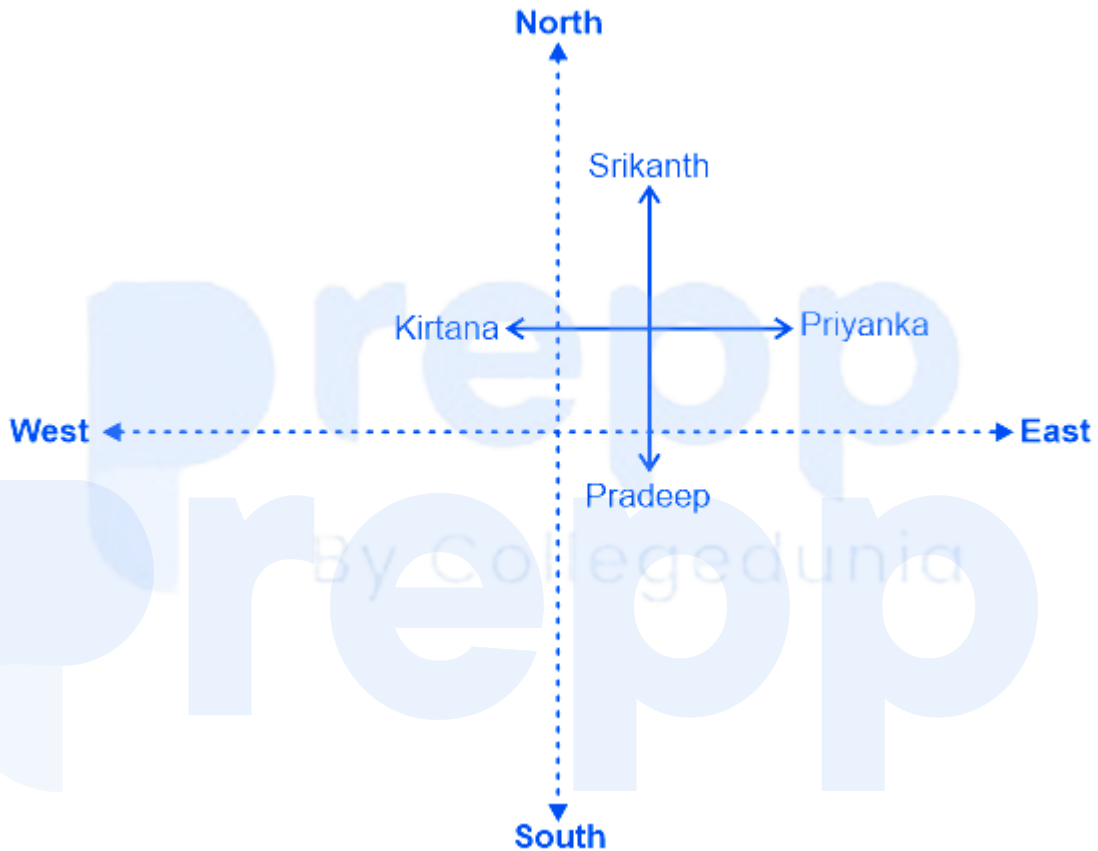
Explanation:

Four person :- Srikanth, Pradeep, Kirtana and Priyanka.

- They are playing carrom in the morning.
- While playing kirtana is watching the sunrise and her face is also towards the sunrise.

- Priyanka is sitting opposite to Kirtana and Pradeep is sitting to the right of Kirtana.

The diagram is given below:-



Srikanth is facing south direction.

Hence, "option 3" is the correct answer.

63. Answer: a

Explanation:

Given:

$$\sqrt{3} = 1.732$$

Calculation:

$$1/\sqrt{3}$$

By rationalization

$$\Rightarrow 1/\sqrt{3} \times \sqrt{3}/\sqrt{3}$$

$$\Rightarrow \sqrt{3}/3$$

$$\Rightarrow 1.732/3$$

$$\Rightarrow 0.577$$

$$\therefore \frac{1}{\sqrt{3}} = 0.577$$

64. Answer: b

Explanation:

Formula used:

Average number of users per day in a week = Total users/7

Calculation:

Total Users in all 7 days = $8 + 4 + 15 + 15 + 20 + 25 + 25 = 112$

Average number of users per day = $112/7 = 16$

$\therefore$ The required result = 16

65. Answer: a

Explanation:

Given:

Ratio of two numbers = 3 : 5

New ratio of two numbers, after adding 10 to each = 5 : 7

Concept used:

Ratio and Proportion

Calculation:

Let the numbers be $3a$ and $5a$ respectively.

$$(3a + 10)/(5a + 10) = 5/7$$

$$\Rightarrow 3a \times 7 + 10 \times 7 = 5a \times 5 + 10 \times 5$$

$$\Rightarrow 21a + 70 = 25a + 50$$

$$\Rightarrow 25a - 21a = 70 - 50$$

$$\Rightarrow 4a = 20$$

$$\Rightarrow a = 5$$

$\therefore$ The numbers $3a$ and $5a$ are 15 and 25 respectively.

★ **Shortcut Trick**

By Ratio Method



$$2 = 10$$

$$\Rightarrow 1 = 5$$

$$\Rightarrow 3 = 3 \times 5 = 15$$

$$\Rightarrow 5 = 5 \times 5 = 25$$

$\therefore$ The required numbers are 15, 25.

66. Answer: a

Explanation:

Given:

Ratio of sides of a cuboid = 5 : 3 : 1

Total surface area of cuboid = 414 sq. m

Formula used:

Total surface area of cuboid = $2(lb + bh + hl)$

Calculation:

Let the length, breadth and height of the cuboid be $5a$, $3a$ and a respectively.

Total surface area of cuboid = 414 sq. m

$$\Rightarrow 414 = 2(5a \times 3a + 3a \times a + a \times 5a)$$

$$\Rightarrow 414 = 2(15a^2 + 3a^2 + 5a^2)$$

$$\Rightarrow 207 = 23a^2$$

$$\Rightarrow a^2 = 207/23 = 9$$

$$\Rightarrow a = 3$$

$\therefore$ Length ($5a$) = 15 m; Breadth ($3a$) = 9m; Height (a) = 3 m

67. Answer: b

Explanation:

The correct answer is Nile River.

★ Key Points

- Nile River has not been selected for setting up a water aerodrome in the country.
- India is getting water aerodromes and the very first ones in the country are slated to come up in **Chilika Lake in Odisha, Sardar Sarovar Dam, and Sabarmati River Front in Gujarat**.

★ Additional Information

- An area of open water that can be used by seaplanes or amphibious planes for landing and takeoff is called a **water aerodrome**.
 - They might have a connected terminal building on land where the plane can choose to dock like a ship.
- "In the first phase, **Chilika Lake in Odisha, Sardar Sarovar Dam and Sabarmati River Front in Gujarat** have been identified for development of water aerodromes,".
- **Sites in Odisha, Gujarat, Assam, Maharashtra and Andhra Pradesh have been identified by the Airports Authority of India.**
- Water aerodromes would be set up near tourist spots and locations of religious importance as per the proposal.

68. Answer: b

Explanation:

The correct answer is Al₂O₃.

★ Key Points

- Al₂O₃ reacts with acids and bases.
 - Aluminum oxide (Al₂O₃) is an amphoteric substance.
 - The amphoteric substance is a substance that **can react with both acids and bases usually to produce salt and water.**
 - Aluminium oxide therefore can react with both acids as well as bases. We will take the example of its reaction with hydrochloric acid (strong acid)

and sodium hydroxide (strong base).

- When mixed with these two compounds aluminium oxide either acts like acid with a base and a base with an acid.

★ Additional Information

- $\text{Al}_2\text{O}_3 + 6 \text{HCl} \rightarrow 2 \text{AlCl}_3 + 3 \text{H}_2\text{O}$ (acts like a base)
- $\text{Al}_2\text{O}_3 + 2 \text{NaOH} + 3 \text{H}_2\text{O} \rightarrow 2 \text{NaAl(OH)}_4$ (sodium aluminate) (acts like an acid)
- On reacting Al_2O_3 with HCl, we get Aluminium Chloride as the salt and water as a by-product.
 - Likewise, the reaction between NaOH (Strong Base) and Al_2O_3 results in the formation of Sodium Aluminate as salt and water.

69. Answer: b

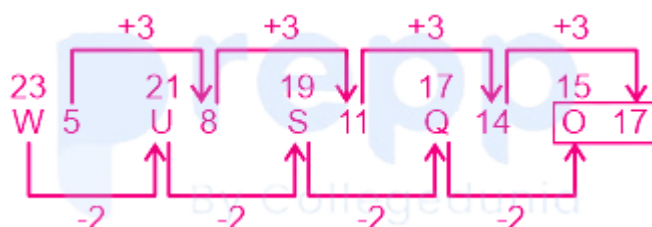
Explanation:

The alphabet table is given below:-

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 logic followed here is:

- Each letter is decreased by +2.
- Each number is increased by +3.



Hence, "option 2" is the correct answer.

70. Answer: a

Explanation:

The correct answer is Saba Kareem.

- Saba Kareem has been appointed as the general manager of cricket activities of B.C.C.I (2017).

★ Key Points

- Delhi Capitals CEO Dhiraj Malhotra will be the BCCI's new General Manager for Game Development, replacing Saba Karim.
 - Malhotra, in his more than a two-decade-long stint in the cricket industry, has also held senior positions at the ICC and has been responsible for overseeing cricket operations of various ICC events.

★ Additional Information

- **The full form of BCCI is the Board of Control for Cricket in India.**
 - The Board of Control for Cricket in India (BCCI) is the governing body for cricket in India and is under the jurisdiction of the Ministry of Youth Affairs and Sports, the Government of India.
 - It is an autonomous organization and does not come under the National sports federation of India.
 - The board was formed in December 1928 as a society, registered under the Tamil Nadu Societies Registration Act.
 - BCCI is an autonomous body and does not review any grants or fundings from the Sports Ministry of India.

71. Answer: d

Explanation:

The correct answer is **2 ms⁻²**

★ Key Points

- Given that
 - $u = 36 \text{ km/h} = 10 \text{ m/s}$
 - $v = 72 \text{ km/h} = 20 \text{ m/s}$
 - $t = 5 \text{ s}$
 - Where,
 - u = initial velocity
 - v = final velocity
 - t = time
- $Acceleration = \frac{(v-u)}{t}$
- $Acceleration = \frac{(20-10)}{5}$
- **Acceleration = 2 ms⁻²**

72. Answer: d

Explanation:

The logic followed here is:

In figures A, B, and D there is half part of the circle is dark but in figure C one-fourth of the circle is dark.

figure C is different from others.

Hence, "option 4" is the correct answer.

73. Answer: b

Explanation:

Given:

800 men can do work in = 30 days

Formula used:

Total Work = Men $\times$ Days

Calculation:

Total Work = $800 \times 30 = 24000$

Work done in 12 days = $800 \times 12 = 9600$

$\Rightarrow$ Remaining work = $24000 - 9600 = 14400$

$\therefore$ Time taken by 720 men to do remaining work = $14400/720$

$\Rightarrow$ 20 days

74. Answer: c

Explanation:

Given: Your Personal Exams Guide

Number = 3364

Concept used:

Prime Factorization

Calculation:

By Prime Factorization, 3364 can be written as:

$3364 = 2 \times 2 \times 29 \times 29$

$\Rightarrow \sqrt{3364} = \sqrt{2 \times 2 \times 29 \times 29}$

$$\Rightarrow 2 \times 29$$

$$\Rightarrow 58$$

$\therefore$ The square root of 3364 is 58.

75. Answer: c

Explanation:

The correct answer is All India Trinamool Congress.

★ Key Points

- All India Trinamool Congress is headed by Mamata Banerjee.
 - The All India Trinamool Congress, colloquially the Trinamool Congress is an Indian political party which is predominantly active in West Bengal.
 - The party is led by Mamata Banerjee.

★ Additional Information

- **Smt. Sonia Gandhi** is the President of the Indian National Congress Party.
 - The Indian National Congress is a political party in India with widespread roots.
 - Founded in **1885**, it was the first modern nationalist movement to emerge in the British Empire in Asia and Africa.
- The **Bahujan Samaj Party** is a national-level political party in India that was formed to represent Bahujans, referring to Scheduled Castes, Scheduled Tribes, and Other Backward Classes, along with religious minorities.
 - The President of the party is **Mayawati**.
- The **Nationalist Congress Party** is one of the eight national parties in India.
 - The President of the party is **Sharad Pawar**.

76. Answer: a

Explanation:

Given that:-

P 3 R I M J 3 Q % W @ / N \$ E 5 X Y 1 # 8

Condition to be checked:

i) **Consonants** are immediately **preceded by a consonant** and immediately **followed by a symbol**.

Consonant → Consonant → Symbol

No such consonants are there in the above sequence, each of which is immediately preceded by a consonant and immediately followed by a symbol.

Hence, "option 1" is the correct answer.

★ Mistake Points

Immediately preceded by means immediately before or to come just before.

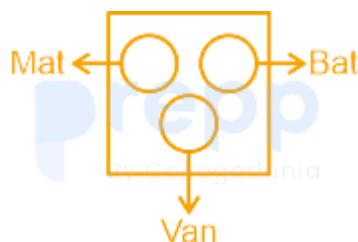
Immediately followed by means immediately after or to come just after.

77. Answer: d

Explanation:

There is no relation among Mat, Bat, and Van.

The Venn diagram is given below:-



Hence, "option 4" is the correct answer.

78. Answer: a

Explanation:

The correct answer is Ni, Cr, Mn and Fe.

★ Key Points

- Nichrome is an alloy of Ni, Cr, Mn, and Fe.
 - Nichrome (also known as NiCr, nickel-chromium or chromium-nickel) is a family of alloys of nickel, chromium, and often iron (and possibly other elements) commonly used as resistance wire, heating elements in things like toasters and space heaters, in some dental restorations (fillings) and in a few other applications.

★ Additional Information

- Some Commonly Used Alloys and their composition:
 - **Brass**
 - Composition- zinc 30%, copper 70%
 - uses- In the making of utensils, pipes and radiator statues, etc.
 - **Yellow Brass**
 - Composition – Cu 67%, Zn 33%
 - uses – Hardware items
 - **Bronze**
 - Composition – Copper 90%, Tin 10%
 - uses – In the making of coins, ornaments, utensils and statues.
 - **Stainless steel**

- Composition – Fe 82%, (Ni + Cr) 18
- uses – In the making of surgical instruments, watches and utensils etc.
- **Magnalium**
 - Composition– Al 95% ,Mg 5%
 - uses – In making light articles and physical balance etc.

79. Answer: a

Explanation:

The correct answer is Budget Presentation.

★ Key Points

- Breaking a century-old tradition, the budget presentation has been extended for a month till February 1, 2017.
 - The Union Budget of India also referred to as the Annual Financial Statement in Article 112 of the Constitution of India, is the annual budget of the Republic of India.
 - The Government presents it on the first day of February so that it could be materialized before the beginning of the new financial year in April.
 - Until 2016 it was presented on the last working day of February by the Finance Minister in Parliament.
 - The budget, which is presented by means of the Finance Bill and the Appropriation bill has to be passed by Lok Sabha before it can come into effect on 1 April, the start of India's financial year.

★ Additional Information

- A government budget refers to an annual financial statement that denotes its anticipated expenditure and expected revenue generation in a fiscal year.
 - It is presented by the government in Lok Sabha at the beginning of every fiscal year, to give an estimate of its expenditure and receipts for the upcoming year.

- The term “Annual Financial Statement” of a nation is often used to define government budget.

80. Answer: c

Explanation:

The correct answer is Jawaharlal Nehru.

★ Key Points

- During the making of the Indian Constitution, the objective resolution was presented by Jawaharlal Nehru.
 - “The Objectives Resolution, 1946” was introduced by Jawaharlal Nehru in the very first session of the Constitution Assembly.
 - Basically, these resolutions were the aspirations of people who were making the Constitution.
 - It can be considered as the preamble of the vast dream, which the constitution-makers sought to achieve after the independence in the form of a new India.
 - And these resolutions were framed as the **Preamble** of the Indian Constitution.

★ Additional Information

- The drafting committee was set up on 29 August 1947 under the chairmanship of Dr. B R Ambedkar.
- While deliberating upon the draft Constitution, the Assembly moved, discussed, and disposed of as many as 2,473 amendments out of a total of 7,635 tabled.
- The constitution had got ready on 26th November 1949 and some provisions relating to Citizenship, Elections, provisional parliament, temporary & transitional provisions were given immediate effect .
- The Drafting Committee had seven members:
 - Alladi Krishnaswami Ayyar
 - N. Gopalaswami

- B.R. Ambedkar
 - K.M Munshi
 - Mohammad Saadulla
 - B.L. Mitter
 - D.P. Khaitan
-

81. Answer: c

Explanation:

Given:

Number = 0.0006697

Concept used:

Rounding off to 10

Calculation:

After 3 decimal places, 6697 is there in the number. We will see 6 as it is more than 5 and will be rounded off to 10.

∴ The required number will be 0.001

82. Answer: a

Explanation:

Given:

To find the least number in which when 19 is added, it will be completely divisible by 36, 64 and 90.

Concept used:

Lowest Common Multiple

Calculation:

By Prime Factorization of 36, 64 and 90 we get,

$$36 = 2^2 \times 3^2$$

$$64 = 2^6$$

$$90 = 2 \times 3^2 \times 5$$

$$\Rightarrow \text{LCM} (36, 64, 90) = 2^6 \times 3^2 \times 5 = 2880$$

$\therefore$ The required least number will be $(2880 - 19) = 2861$

83. Answer: c

Explanation:

Given:

Cost price of a product per 20 pieces = Rs.80

Selling price of the product per 9 pieces = Rs.50

Formulas used:

Profit = Selling price - Cost price

Profit percentage = Profit/Cost price $\times$ 100

Calculation:

Cost price per piece = Rs.80/20 = Rs.4

Selling price per piece = Rs.50/9

Profit per piece = Rs.50/9 - Rs.4 = Rs.14/9

$$\therefore \text{Profit percentage} = [\text{Rs.14/9} \div \text{Rs.4}] \times 100$$

$$\Rightarrow 38.89\%$$

84. Answer: b

Explanation:

Symbol in Diagram	Meaning
○	Female
□	Male
==	Married Couple
—	Siblings
	Difference of A Generation

Given that:-

Abhimanyu introduced a girl to his friend as "the only daughter of the only son of his father".

The family tree is given below:-



The girl is the daughter of Abhimanyu.

Hence, "option 2" is the correct answer.

85. Answer: b

Explanation:

Given:

Time taken by first pipe to fill a cistern = 12 hours

Time taken by second pipe to fill a cistern = 15 hours

Concept used:

Total work = Time $\times$ Efficiency

Calculation:

Let the capacity of tank be 1 as a whole.

Let the first and second pipe be A and B respectively.

One hour efficiency of pipe A = $\frac{1}{12}$ unit

One hour efficiency of pipe B = $\frac{1}{15}$ unit

Part of tank filled in 1 hour by pipe A and B working together:

$(\frac{1}{12} + \frac{1}{15})$ units

$\Rightarrow \frac{(5 + 4)}{60}$ units

$\Rightarrow \frac{9}{60}$ units

Full tank will be filled in = $\frac{1}{(\frac{9}{60})} = \frac{60}{9} = \frac{20}{3}$ hours

$\therefore$ Half of the tank will be filled in = $\frac{20}{3} \times \frac{1}{2} = \frac{10}{3}$ hours

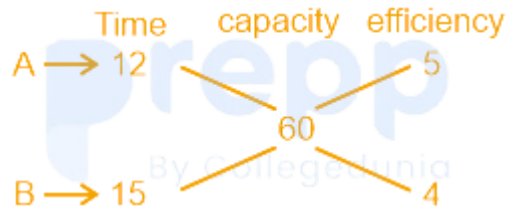
$\Rightarrow 3\frac{1}{3}$ hours

★ Alternate Method

By LCM Method

Let the total work done by both pipes be the LCM of time taken by them to fill the tank.

$$\Rightarrow \text{LCM} (12, 15) = 60$$



Half of the capacity of the tank = $60/2 = 30$ units

One hour efficiency of pipe A and B = $(5 + 4)$ units

$\therefore$ The required time taken by both pipes to fill half the tank = $30/9$

$$\Rightarrow 3\frac{1}{3} \text{ hours}$$

86. Answer: d

Explanation:

The correct answer is Jawahar Lal Nehru University (JNU).

★ Key Points

- Jawaharlal Nehru University (JNU) has won the annual Visitor's Award for the 'Best University, 2017'.
 - The 'Best University' will receive a Citation and Trophy while winners of Visitor's Award for 'Innovation' and 'Research' will receive a Citation and cash award of **Rs 1 lakh**.

★ Additional Information

- **Asad Ullah Khan** from Aligarh Muslim University and **Dr. Partima** from Jawaharlal Nehru University were jointly awarded the Visitor's Award for best

University in 2019 – for Research in Biological Sciences.

- Dr. Shaon Ray Chaudhuri from Tripura University was presented with The Visitor's Award– for Technology Development.
- **Jawaharlal Nehru University** is a public central major research university located in New Delhi, India.
 - It was established in 1969 and named after Jawaharlal Nehru, India's first Prime Minister.
 - The university is known for leading faculties and research emphasis on liberal arts and applied sciences.
- **Visva-Bharati** is a public central university and an Institution of National Importance located in Shantiniketan, West Bengal, India.
 - It was founded by **Rabindranath Tagore** who called it Visva-Bharati, which means the communion of the world with India.
 - Until independence, it was a college.
 - The University of Delhi, informally known as Delhi University, is a collegiate public central university located in New Delhi, India.
 - It was founded in 1922 by an Act of the Central Legislative Assembly and is recognized as an Institute of Eminence by the University Grants Commission.
- **Aligarh Muslim University** is a public central university in Aligarh, Uttar Pradesh, India, which was originally established by Sir Syed Ahmad Khan as the Muhammadan Anglo-Oriental College in 1875.
 - Muhammadan Anglo-Oriental College became **Aligarh Muslim University** in 1920, following the Aligarh Muslim University Act.

87. Answer: c

Explanation:

The correct answer is 65 m.

★ Key Points

- Given,
 - time (t) = 5 sec

- initial velocity (u) = 12 m/s
- $g = 10 \text{ ms}^{-2}$ (As the motion is against the gravity so we have to take it as negative)
- By equation of motion:
 - $s = ut - \frac{1}{2}gt^2$
 - $s = 12 \times 5 - \frac{1}{2}(10 \times 5^2)$
 - **$s = -65 \text{ m}$**
 - But height is always **positive**.
 - Hence, the height of the tower is 65 m.

88. Answer: c

Explanation:

The logic followed here is:

- The second figure is formed by combining the two figures of the first figure.



Similarly,

- The fourth figure is formed by combining the two figures of the third figure.



Final figure:



Hence, "option 3" is the correct answer.

89. Answer: d

Explanation:

The correct answer is Haryana.

★ Key Points

- The state of Haryana was ranked first in the medal tally of 'Khelo India School Games' held for the first time in 2018.
 - Haryana stayed on top despite not adding any more to their overnight tally of 20 gold medals, though Delhi narrowed the gap to just two at the first Khelo India School Games.
 - Maharashtra picked up three gold medals to move into second place, even as Haryana, who had won two on Tuesday stayed in the top spot of the medals tally in the first Khelo India School Games.
 - Maharashtra's two gold medals came from weightlifting through Trupti Mane in girls 58 kg and boys 62 kg through Jeremy Lalrinnunga, a Mizoram youngster, who is in the Army Institute in Pune.
 - Their third gold came courtesy judoka, Snehal Khaware in 48 kg for Girls.

★ Additional Information

- **Khelo India School Games** is a part of the revamped National Programme for the development of sports, Khelo India.
 - It aims at strengthening the ecosystem by promoting the twin objectives of mass participation and promotion of excellence in sports.
 - The Khelo India School Games will act as an avenue for the identification of budding sports talent in specific disciplines.

- Khelo India School Games will be annual competition held in collaboration with the School Games Federation of India (SGFI) and the National Sports Federations (NSFs).
- The SGFI and NSFs will draw up and conduct an annual calendar of competitions at the lower level in the run-up to the Khelo India School Games at the National level.

90. Answer: d

Explanation:

- The coach is stating that the team has a lot of good, talented players. Thus, it can be easily concluded that the coach can judge the potential of the players. So, conclusion I is logical.
- Since the coach is saying that the talent is 'high-class', it can be safely concluded the coach is acknowledging the talent of his team. So, Conclusion II follows.

★ Alternate Method

- "Saying that the players are high-talent" is a type of judgement of the abilities of the players – so conclusion 1 is logical.
- The word "high-talent" is a type of praise or acknowledgement of the players' talent. – so conclusion 2 is logical.

Hence the correct answer is **option 4**.

91. Answer: d

Explanation:

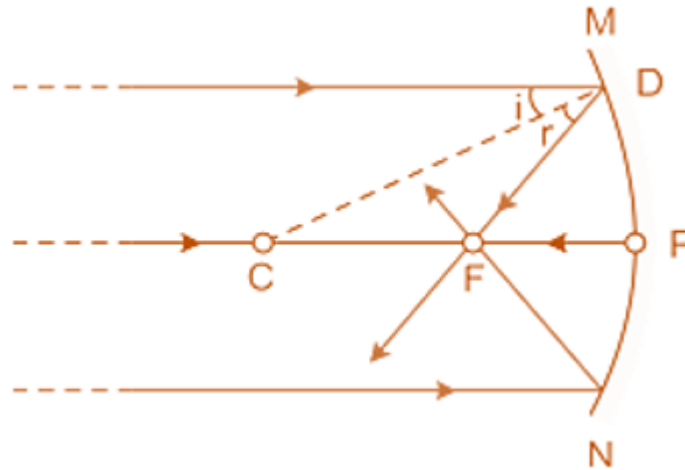
The correct answer is The radius of curvature is twice the focal length.



Key Points

- The radius of curvature is twice the focal length.
 - The reflecting surface of a spherical mirror may be curved inwards or outwards.
 - The focal length of a lens is represented as f .

- The radius of curvature is represented as r and is defined as the radius of the lens that forms a complete sphere.



- The radius of curvature is observed to be equal to twice the focal length for spherical mirrors with small apertures.
- Hence $R = 2f$.

Your Personal Exams Guide



Additional Information

- **Laws of Reflection of light**
 - The angle of incidence is equal to the angle of reflection, and
 - The incident ray, the reflected ray and the normal to the mirror at the point of incidence all lie in the same plane.
- **Reflection from Plane Mirror**

- If an object moves towards a plane mirror with speed v , relative to the object it moves towards it with a speed $2v$.
- To see his full image in a plane mirror, a person requires a mirror of at least half of his height.
- **Refraction of Light**
 - The phenomenon of deviation of light rays from its path when it travels from one transparent medium to another medium is called refraction of light.
 - The cause of refraction is due to the different speed of light in a different medium.
 - When a ray of light enters from one medium to another medium, its frequency and phase do not change, but wavelength and velocity change.
 - Due to refraction from Earth's atmosphere, **the stars appear to twinkle.**

92. Answer: b

Explanation:

Given:

Distance between two stations = 440 km

Formulas used:

Distance = Speed $\times$ Time

Calculation:

Let the speed of the first train = a

$\Rightarrow$ Speed of the other train = $a + 5$ km/h

The distance traveled by first train in 2 hours = $2 \times a = 2a$

$\Rightarrow$ Distance traveled by other train in 2 hours = $(a + 5) \times 2 = 2a + 10$

As per the question:

$$2a + 2a + 10 = 440 - 210$$

$$\Rightarrow 4a + 10 = 230$$

$$\Rightarrow 4a = 230 - 10$$

$$\Rightarrow 4a = 220$$

$$\Rightarrow a = 220/4$$

$$\Rightarrow a = 55 \text{ km/h}$$

$$\Rightarrow a + 5 \text{ km/h} = 60 \text{ km/h}$$

$\therefore$ The speeds of the two trains are 60 km/h and 55 km/h respectively.

93. Answer: b

Explanation:

The correct answer is Glucose.

★ Key Points

- Glucose combines with O₂ present in the cells of our body to provide energy.
 - In the process of respiration, glucose reacts with oxygen in the cells of our body to produce carbon dioxide and water.
 - Large amounts of energy are released during this process.
 - **Respiration is an exothermic process.**

★ Additional Information

- **Breathing** involves the exchange of gases in the lungs, a process that occurs by diffusion.
- **The oxygen** is then transported throughout the body.
- **Carbon dioxide** is the waste gas produced by respiration.

- In **physiology**, respiration is the movement of oxygen from the outside environment to the cells within tissues, and the removal of carbon dioxide in the opposite direction.

94. Answer: a

Explanation:

- Argument I agrees that hunting should be banned and justifies it with the reason that hunting has caused some species to become extinct. So it is strong.
- Argument II disagrees with the statement, saying that hunting is done for entertainment, but it does not justify as to why it should not be banned. Only being a source of entertainment doesn't justify not banning the act of hunting. Thus, Argument II is not strong.

Hence the correct answer is **option 1**.

95. Answer: b

Explanation:

The correct answer is **cotyledon, radicle and ovule**.

★ **Key Points**

- **Cotyledon, radicle and ovule are the three parts of the seed.**
 - The radicle is the embryonic root of the plant, and grows downward in the soil (the shoot emerges from the plumule).
 - Above the radicle is the embryonic stem or hypocotyl, supporting the cotyledon(s).
 - It is the embryonic root inside the seed.

★ **Additional Information**

- **A seed has three parts:**
 - Seed Coat
 - Endosperm
 - Embryo
- A seed coat protects the internal parts of a seed.
- **The seed coat has two layers.**
 - The outer layer is thick and known as the testa.
 - The inner layer is thin and known as tegme.
- **The endosperm contains the nutrients stored in it.**
 - It provides nutrients to the seed in the form of starch, carbohydrates and proteins to support the embryo during germination.
 - It is located below the seed coat.
- **An embryo comprises the following parts:**
 - Epicotyl
 - Hypocotyl
 - Radicle
 - Cotyledons

96. Answer: c

Explanation:

J, K, N and O are standing in a row. If we rank them in order from tallest to smallest.

1. J is taller than K.

$J > K$

- Here, there is no information given about N and O. Therefore, statement 1 alone is not sufficient.

2. N is the smallest among them.



- No information is given about J, K, and O. Therefore, statement 2 alone is not sufficient.

3. K is taller than O.

$K > O$

- Here, there is no information given about J and N. Therefore, statement 3 alone is not sufficient.

From statements 1, 2, and 3 together then:-



So, J stands first in the above row.

Hence, "option 3" is the correct answer.

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97. Answer: a

Explanation:

The correct answer is perikaryon, Cell.

★ Key Points

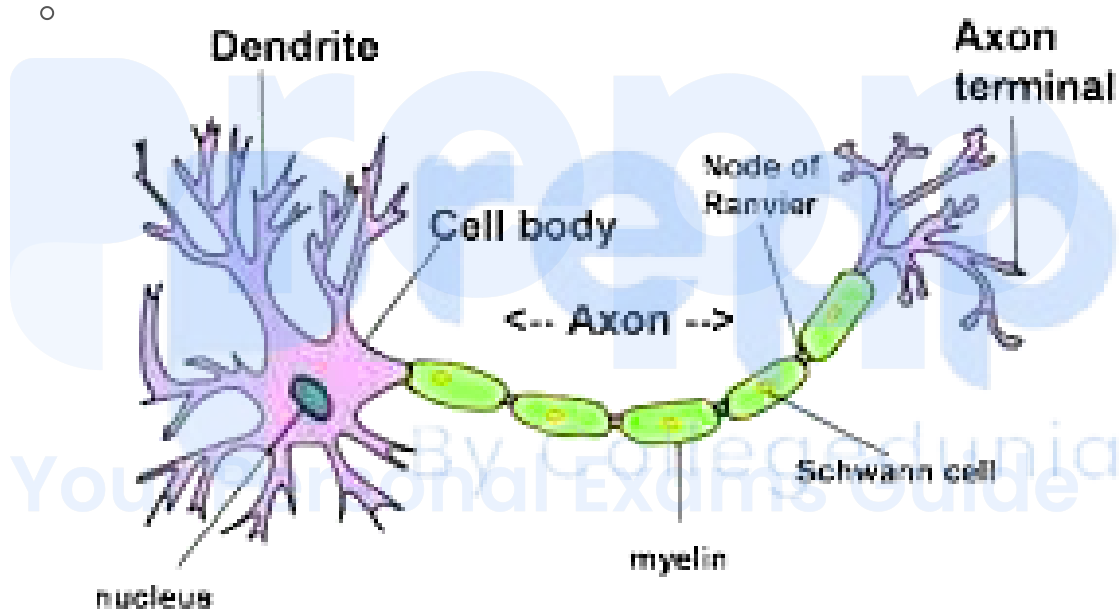
- A cyton is called perikaryon, Cell.
 - Cyton is also called a cell body or perikaryon.
 - It has a central nucleus with abundant cytoplasm called neuroplasm.
 - The cytoplasm has a large granular body called Nissl's granules and other cell organelles like mitochondria, ribosomes, lysosomes, and endoplasmic

reticulum.

- Neurons do not have the ability to divide.

★ Additional Information

- Several **neurofibrils** are present in the cytoplasm that help in the transmission of nerve impulses to and from the cell body.
- **Cyton** is a large part of the fiber of a nerve, or neuron. It is concerned with the regulation of a neuron's maximum metabolism.
 - In other words, the cyton is responsible for regulating a neuron's metabolism.
 - Cyton projections are called dendrons, which separate further and are known as dendrites.



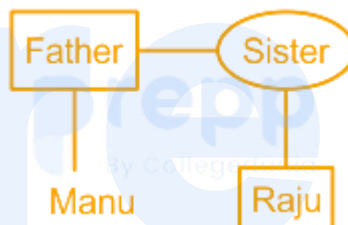
98. Answer: b

Explanation:

Symbol in Diagram	Meaning
○	Female
□	Male
==	Married Couple
—	Siblings
	Difference of A Generation

Manu's father's sister's son is Raju.

The family tree is given below:-



Here gender of Manu is not mentioned so Manu is male or female.

Manu is the cousin of Raju.

Hence, "option 2" is the correct answer.

99. Answer: a

Explanation:

The logic followed here is:

In options 2, 3, and 4 there are two lines connected at 90° inside the circle but in option 1 two lines connected at 180° inside the circle.

Option 1 is different from others.

Hence, "option 1" is the correct answer.

100. Answer: a

Explanation:

Given:

Least number of 5 digits = 10000

Concept used:

Lowest Common Multiple

Dividend = Divisor $\times$ Quotient + Remainder

Calculation:

LCM of (4, 5, 7) = 140

We know, least number of 5 digits = 10000

By dividing 10000 by 140, we get the remainder as:

$$10000 = 140 \times 71 + 60$$

The least number divisible by 140 will be:

$$\Rightarrow 10000 + 80 = 140 \times 71 + 60 + 80$$

$$\Rightarrow 10080 = 140 \times 72$$

$\therefore$ The least number of 5 digits when divided by 4, 5, and 7, leaves the remainder 3 in each case will be = $10080 + 3$

$$\Rightarrow 10083$$