Prepp.in

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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
- UPTET
- IBPS RRB
- IBPS CLERK
- IES
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- SSC Stenogr..
- RRB NTPC
- SSC GD
- RBI GRADE B
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RRB Group D 2018 Prev. Yr. Paper (31 Oct 2018) (Shift 1)

Total Time: 1 Hour : 30 Minute **Total Marks:** 100

Instructions

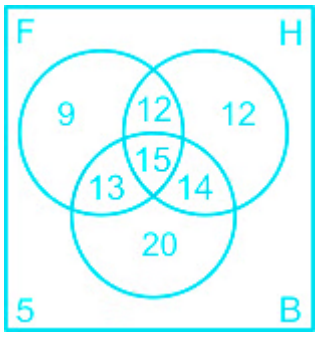
Sl No.	Section Name	No. of Question	Maximum Marks	Negative Marks	Positive Marks
1	CBT	100	100	0.33	1

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.

CBT

1. 

(+1, -0.33)

The given diagram shows the number of students playing Football (F), Hockey (H) and Basketball (B) in a class-

The total number of students who like at most two sports is:

a. 39

b. 54

c. 41

d. 80

---

2. The order of first ionization potential in Na, Mg, Al and Si is- (+1, -0.33)

a. Na > Mg > Al < Si

b. Na < Mg > Al < Si

c. Na > Mg > Al > Si

d. Na < Mg < Al > Si

---

3. Which Indian film has won the Best Short Film award at the Los Angeles Film Festival, 2018? (+1, -0.33)

a. Anukool

b. Taandav

c. Kriti

d. Shunyta

---

4. The basic source of biological diversity is _____- (+1, -0.33)

a. mutation

b. cosmic evolution

c. inheritance

d. fermentative action

---

5. During inhalation, the lungs fill with air due to _____- (+1, -0.33)

a. lung blockage

b. narrowing of the lungs

c. lung inflation

d. dilation of the lungs

---

6. If (10x + 3y) : (5x + 2y) = 9 : 5, then (2x + y) : (x + 2y) = ? (+1, -0.33)

a. 12 : 15

b. 23 : 22

c. 17 : 11

d. 11 : 13

---

7. The product of two numbers is 0.432. If one of them is 1.6, what is the other number? **(+1, -0.33)**

a. 0.027

b. 0.27

c. 2.7

d. 27

---

8. The following statements are followed by two conclusions. and II are given. You have to take the statements to be true even if they seem to be at variance from commonly known facts. And on the basis of that decide which of the conclusions logically follow from the given statements. **(+1, -0.33)**

Statement:

(1) No cake is pie.

(2) All cakes are creams.

(3) Some creams are sour.

Conclusion:

I. All cakes are sour.

II. Some cakes are sour.

a. Only conclusion II follows

b. Neither conclusion I nor II follows

c. Both conclusions I and II follow

d. Only conclusion I follows.

---

9. A and B can do a piece of work in 8 days, B and C together can do it in 12 days. If A, B, and C together can do this work in 6 days, then in how many days will A and C complete twice the work? **(+1, -0.33)**

a. 10

b. 16

c. 15

d. 12

---

10. In which city is the Indira Gandhi Indoor Stadium located? **(+1, -0.33)**

a. New Delhi

b. Mumbai

c. Kolkata

d. Chennai

---

11. Three smaller triangles are inscribed from the three vertices of a larger triangle in such a way that each side of each smaller triangle is 2/5 of the side of the adjacent larger triangle. The ratio of the total area of the three smaller triangles to the remaining part of the larger triangle is - **(+1, -0.33)**

a. 12 : 13

b. 1 : 5

c. 12 : 25

d. 4 : 25

---

12. Which of the following cricket teams won the Ranji Trophy in 2017? **(+1, -0.33)**

a. Madhya Pardesh

b. Chennai

c. Vidarbha

d. Delhi

---

13. An iron ball weighing 8 kg and an aluminium ball of 3 kg is dropped from a height of 20 m. At a height of 10 m above the ground, which of the following will be the same amount? **(+1, -0.33)**

a. kinetic energy

b. acceleration

c. potential energy

d. impulse

---

14. Find out the next letter-pair that appears in the following series- **(+1, -0.33)**

EN, FO, GP, HQ, ?

a. IV

b. IR

c. TC

d. RZ

---

15. There are four numbers in a set. The mean of the three smallest numbers is 19 and the mean of the three largest numbers is 21. What is the range of the set of data? **(+1, -0.33)**

a. 3

b. 6

c. 12

d. 9

---

16. If $x + y = 3$, $xy = 2$ and $x < y$, then find the value of $x^3 - y^3$. **(+1, -0.33)**

a. -7

b. -11

c. +7

d. +11

---

17. Rixia comes under which of the following category? **(+1, -0.33)**

a. Bryophyta

b. Thallophyta

c. Angiosperm

d. Pteridophyta

---

18. Four bells ring in a temple at intervals of 12, 16, 24 and 36 minutes respectively. If they are started playing at a continuous interval from 6 o'clock, then when will they play together again? **(+1, -0.33)**

a. 8 : 24 am

b. 5 : 24 am

c. 7 : 24 am

d. 6 : 24 am

---

19. Which of the following is true about a cup of hot coffee? **(+1, -0.33)**

a. It has a measurable amount of thermal energy gained through the work done by the microwave oven, which in turn takes potential energy from the electrical grid.

b. It has a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes electrical energy from the electrical grid.

c. It consists of a measurable amount of kinetic energy acquired through the work done by the microwave oven.

d. It contains a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes chemical energy from the electrical grid.

---

20. _____ empire was founded by the Sangam princes - Harihara and Bukka- **(+1, -0.33)**

a. Malwa

b. Bahmani

c. Vijaynagar

d. Bengal

---

21. Who was selected for the Yash Chopra Memorial National Award, 2017? **(+1, -0.33)**

a. Shahrukh Khan

b. Shahid kapoor

c. Anupan Kher

d. Abhishek Bacchan

---

22. Six years ago, the ratio of the ages of Saina and Sagar was 6 : 5. So in the next four years, the ratio of their ages will become 11 : 10 respectively. What is the age of Sagar at present? **(+1, -0.33)**

a. 14 years

b. 16 years

c. 12 years

d. 18 years

---

23. In January 2018, who was appointed as the editor of the Economic and Political Weekly? **(+1, -0.33)**

a. Gopal Guru

b. K.V. Anoop

c. Khalid A.H. Ansari

d. Arun Shauri

---

24. Select the most appropriate Venn diagram for the following words- **(+1, -0.33)**

"Shoes, Car, Bicycle"

a. 

b. 

c. 

d. 

---

25. Which date of November 2000 was Thursday? **(+1, -0.33)**

a. 21 November

b. 2 November

c. 10 November

d. 2 and 16 November

---

26. 3 R # 2 A $ K 5 % T 7 & N Y ÷ X B / L Q @ 1 **(+1, -0.33)**

If the second half of the above series is reversed, then using the new series, identify the missing term-

A%T : 52/ :: QY/ : _ _ _ _ _ _ _ _

a. B&L

b. BL&

c. XQN

d. /LN

---

27. The term 'Financial Deficit' is related to which ministry of the Government of India? **(+1, -0.33)**

a. Finance

b. Defence

c. Home M inistry

d. Agriculture

---

28. Read the given question and decide which of the following statements are sufficient to answer the question- **(+1, -0.33)**

Question:

Who is the tallest among M, N, R and S?

Statement:

1. M is taller than R and S.

2. M is wearing a sky coloured shirt.

a. Statements 1 and 2 both are sufficient

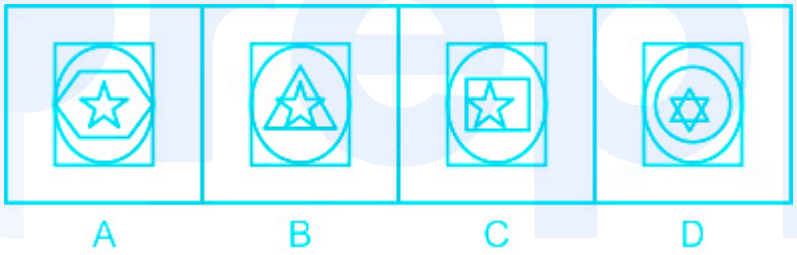
b. Statements 1 and 2 both are insufficient

c. Statement 1 alone is sufficient

d. Statement 2 alone is sufficient

---

29. Which of the following picture is different from the rest? **(+1, -0.33)**



a. C

b. D

c. A

d. B

---

30. Which award was given to former French President Nicolas Sarkozy in 2004? **(+1, -0.33)**

a. Knighthood

b. Knight of the Legion of Honor

c. Night of the Dome

d. French Key Holder

---

31. Solve the following equation- **(+1, -0.33)**

32 - 2(10 + 16 ÷ 4 × 3 - 5 × 2) + 30 = ?

a. 28

b. 38

c. 30

d. 35

---

32. Complete the following series by choosing the appropriate option- **(+1, -0.33)**

ZA, YB, _____, _____, VE.

a. ZC, VD

b. CW, DV

c. CX, DW

d. XC, WD

---

33. _____ recommended that the decision-making power should be decentralized and elected local bodies should be set up. **(+1, -0.33)**

a. Parikar Committee

b. Yuva Sena Committee

c. ABVP Committee

d. Balwant Rai Mehta Committee

---

34. On adding water to CaO, _____ compound is obtained- **(+1, -0.33)**

a. Slaked lime

b. quick lime

c. washing soda

d. bake lime

---

35. When an electric heater receives an electric current of 4A from the source, the potential difference across its ends is 60V. If the potential difference is increased to 127.5 V, then what will be the current received by the heater? **(+1, -0.33)**

a. 24 A

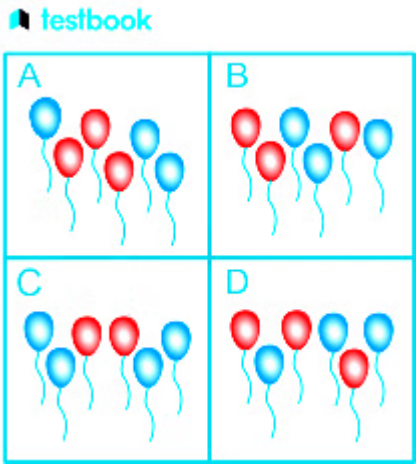
b. 10 A

c. 8.5 A

d. 12 A

---

36. Which figure is different (not related) to the given group below? **(+1, -0.33)**



a. B

b. D

c. A

d. C

---

37. Rachna borrowed Rs. 40,000 at 10% simple interest per annum. Exactly one year later she lent this amount to her friend on the same day at the same rate of interest but compounded annually. How much profit or loss will she get at the end of the third year? **(+1, -0.33)**

a. Rs. 4,000

b. Rs. 3,600

c. Rs. 3,000

d. Rs. 3,100

---

38. On what amount the interest for 3 years 6 months at 5% simple interest per annum will be Rs. 18,480? **(+1, -0.33)**

a. Rs. 112,540

b. Rs. 123,280

c. Rs. 98,730

d. Rs. 105,600

---

39. What is the value of 5.035 + 50.35 + 503.50 - 20.60? **(+1, -0.33)**

a. 538.855

b. 528.285

c. 538.285

d. 536.285

---

40. What is the second group of elements called? **(+1, -0.33)**

a. Halogen

b. Alkaline metals

c. Alkaline earth metals

d. Inert gas

---

41. Who is the present Governor of Andhra Pradesh and Telangana? **(+1, -0.33)**

a. Satya Pal Malik

b. C. Vidyasagar Rao

c. ESL Narasimham

d. K. Rosaiah

---

42. When is World Environment Day celebrated? **(+1, -0.33)**

a. 5 June

b. 5 April

c. 5 December

d. 5 October

---

43. Which of the following mixtures can be separated by different funnels? **(+1, -0.33)**

a. alcohol and water

b. salt and water

c. oil and water

d. iodine in alcohol

---

44. If the mode of observations of the data is 15 and the mean is 6, then its median will be _____- **(+1, -0.33)**

a. 9

b. 7

c. 8

d. 10

45. A statement and two actions numbered from I and II are given below. You have to take all the information given in the statement to be true and on the basis of the information given in the statement decide which of the proposed course of action logically follows from the statement. **(+1, -0.33)**

Statement:

The construction industries in North Karnataka are facing acute water shortage.

Actions :

I. Government should take steps to solve the water crisis.

II. Construction industries should be closed to save water.

a. Neither 1 nor 2 follows

b. Either 1 or 2 follows

c. Only 2 follows

d. Only 1 follows

46. In a code language WEAK is written as DVZP. What will be the code for MEAT in the same language? **(+1, -0.33)**

a. NVZG

b. NVZH

c. MVZH

d. MVZG

47. Who discovered the word 'atom'? **(+1, -0.33)**

a. Dalton

b. Kanaad

c. Lavoisier

d. Democritus

---

48. The median of a set of 11 distinct observations is 12.5. If 11 is added to each of the last five observations of the set, then find the median of the new set? **(+1, -0.33)**

a. 11

b. 12

c. 12.5

d. 11.5

---

49. Rahil had $15\frac{5}{8}$ / petrol in the vehicle's tank at the beginning of the journey. At the end of the journey only $3\frac{1}{8}$ / petrol was left in the fuel tank. What part of the initial quantity of petrol was consumed during the journey? **(+1, -0.33)**

a. $\frac{3}{4}$

b. $\frac{9}{10}$

c. $\frac{5}{6}$

d. $\frac{4}{5}$

---

50. What will be the next term of the given series? **(+1, -0.33)**

9T, 11R, 14P, 18N ?

a. 15C

b. 18K

c. 23L

d. 20G

---

51. _____ is a religious city located in the Rajasthan state of India. **(+1, -0.33)**

a. Rajkot

b. Puri

c. Rishikesh

d. Pushkar

---

52. Spherical mirror whose reflecting surface is bent inward is called- **(+1, -0.33)**

a. Concave Mirror

b. Convex Mirror

c. Plane Mirror

d. Both Concave and Convex Mirror

---

53. Which private sector bank was roped in by the Government of India to introduce cashless payments in e-NAM (Electronic National Agriculture **(+1, -0.33)**

Market), in December 2017?

a. Axis Bank

b. ICICI Bank

c. Federal Bank

d. Karur Vysya Bank

---

54. A and B together can do a piece of work in 35 days. B and C together can complete it in 43.75 days while C and A together can complete the same work in 52.5 days. In how many days can C alone complete the same work? **(+1, -0.33)**

a. 162.5

b. 155

c. 150

d. 156.25

---

55. Select the option which is related to the third term in the same way as the second term is related to the first- **(+1, -0.33)**

Eat : Ate :: Buy : _____

a. Brings

b. Buys

c. Bring

d. Bought

56. The Marathi feature film _____ has won the Best Feature Film award at the 64th National Film Awards- **(+1, -0.33)**

a. Natrang

b. Shaala

c. Kaasav

d. Valu

57. Select the image from the answer images given below so that the given image is complete- **(+1, -0.33)**

a. 

b. 

c. 

d. 

58. Consider the statement and the following statements and decide which of the arguments are strong with respect to the statement. **(+1, -0.33)**

Statement:

The government should work to popularize the medicines available in alternative medicine for cancer treatment.

Argument:

I. Yes, if medicines are available, people should be aware of it and the government is responsible for creating awareness for this treatment.

II. No, those affected will approach alternative medicine centers if necessary.

a. Neither I nor II is strong

b. Only Argument I is Strong

c. Only Argument II is Strong

d. Arguments I and II both are strong

---

59. Solve: **(+1, -0.33)**

$5 + (2 \times (5^2 + 3)) - 84$

a. -22

b. -23

c. -24

d. -20

---

60. The audible range of sound for humans is approximately _____- **(+1, -0.33)**

a. 20 Hz to 2000 Hz

b. 20 Hz to 200 Hz

c. 20 Hz to 20000 Hz

d. 2 Hz to 2000 Hz

---

61. 6 hours is what percent of a day? **(+1, -0.33)**

a. 30%

b. 40%

c. 25%

d. 45%

---

62. Select the mirror image of the figure given below- **(+1, -0.33)**

a. B

b. A

c. C

d. D

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

A. soft

B. tender

C. minute

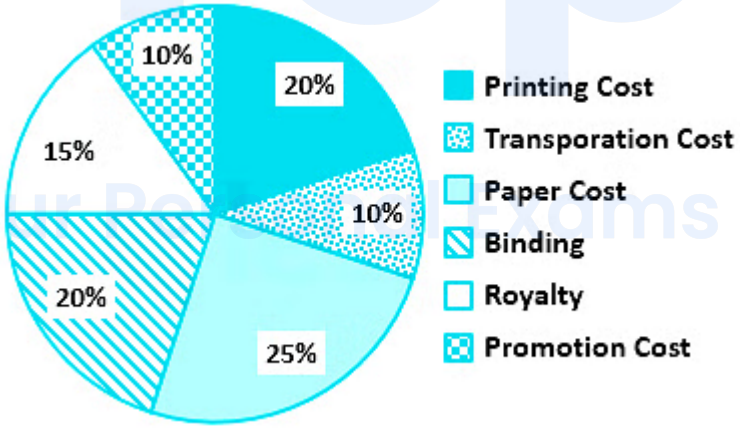
D. hard

a. C

b. D

c. B

d. A



64. (+1, -0.33)

Pie chart shows the expenditure of a publishing house in Karnataka. The angle subtended at the center of the field related to the expenditure of binding is _____ degree-

a. 54

b. 72

c. 36

d. 90

---

65. Identify which one is different from these- **(+1, -0.33)**

T	I	V	D
20	9	15	4
A	B	C	D

a. B

b. C

c. A

d. D

---

66. Select the option which has the same relation with the third word as the second word with the first word. **(+1, -0.33)**

Work : Effort : : Sleep :

a. Rise

b. Freedom

c. Rest

d. Near

---

67. Which of the following statements is **not** true about acids? **(+1, -0.33)**

a. It forms H+ in aqueous medium/liquid state.

b. it is bitter in taste

c. It converts blue litmus to red

d. Reacts with metals and bicarbonates to form H2, CO2 and salts.

---

68. Which of the following statement(s) is/are false? **(+1, -0.33)**

A. The value of G on the Moon is the same as its value on Earth.

B. The force of gravity between the centres of two masses of 2kg placed at a distance of 1m is 26.68 × 10 -11 N .

C. Force is inversely proportional to the square of the distance between two objects.

D. The gravitational force between two objects doubles when the distance between them is halved.

a. Only C and D

b. Only A

c. Only D

d. B, C and D

---

69. Which of the following represents the square root of the expression (3 34 + 3 35) - **(+1, -0.33)**

a. $\sqrt{2} \times 3^{17.25}$

b. $6^{34.5}$

c. 2×3^{17}

d. $3^{34.5}$

---

70. Where is the headquarter of Small Industries and Development Bank (SIDBI) located? **(+1, -0.33)**

a. New Delhi

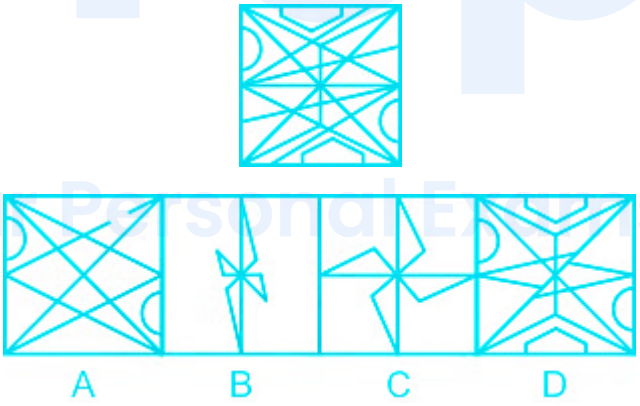
b. Mumbai

c. Hyderabad

d. Lucknow

---

71. Select the answer figure embedded in the given figure- **(+1, -0.33)**



a. A

b. D

c. B

d. C

---

72. _____ is a centrally sponsored scheme in place of Panchayat Yuva Krida and Khel Abhiyan (PYKKA) launched in 2014. (+1, -0.33)

a. Sanjay Gandhi Sports Campaign

b. महात्मा गाँधी खेल अभियान

c. Khelo India

d. Rajiv Gandhi Sports Campaign

---

73. Find the speed of sound in air (+1, -0.33)

a. 331 ms^{-1}

b. 331 ms^{1}

c. 331 ms^{2}

d. 331 ms^{-2}

---

74. When sulfuric oxide reacts with zinc, _____ gas is formed- (+1, -0.33)

a. Oxygen

b. Hydrogen

c. Carbon dioxide

d. Zinc Oxide

---

75. Read the given statement(s) and conclusions carefully and select the conclusion that logically follows from the given statement. (+1, -0.33)

Statement:

1. Some monkeys are not langur.

2. Some langurs are not human.

Conclusion:

1. Some monkeys can be humans.

2. Some Langurs can be Monkeys.

a. Both conclusions 1 and 2 follow

b. Only conclusion 1 follows

c. Only conclusion 2 follows

d. Either conclusion 1 or 2 follows

---

76. You are given a question and two statements. Decide which of the statement(s) is/are necessary/sufficient to answer the question- **(+1, -0.33)**

Question:

Latika has 25 boxes of 3 sizes (small, medium, and big). How many big size boxes does he have?

Statement:

1. The number of large boxes is half the number of medium-sized boxes.

2. The number of small boxes is 10.

a. Statements 1 and 2 both are not sufficient

b. Only Statement 2 is sufficient

c. Statements 1 and 2 together are sufficient

d. Only Statement 1 is sufficient

---

77. Which of the following is true about evaporation? **(+1, -0.33)**

a. it is a superficial phenomenon

b. it only happens in summer

c. It occurs in solids and liquids

d. it's an elaborate phenomenon

---

78. in a particular code language if JINX : 5862, ZEBU : 4371, FUZE : 9143. then what will be the code of BINE ? **(+1, -0.33)**

a. 7836

b. 7863

c. 7869

d. 4863

---

79. A ball thrown vertically upwards returns to the ground in 13.5 seconds. With what velocity was it thrown up? (g = 10ms -2) **(+1, -0.33)**

a. 67.5 m/s

b. 13.5 m/s

c. 10 m/s

d. 135 m/s

---

80. Gene mutation is caused by which of the following? **(+1, -0.33)**

a. Reproduction

b. Change in protein sequence

c. Change in the sequence of nitrogenous bases

d. Secretion of enzymes of hormones

---

81. In the question below is given a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumption/assumptions is implicit in the statement. **(+1, -0.33)**

Statement:

Never before has such an informative book on environmental pollution been available.

Assumptions:

I. Other books on environmental pollution are available.

II. Very few books can be written on environmental pollution

a. Both I and II are implicit

b. Neither I nor II is implicit

c. Only assumption I is implicit

d. Only assumption I lis implicit

---

82. When a compressive spring is released it converts its potential energy into _____. **(+1, -0.33)**

a. Mechanical energy

b. Wind energy

c. Elastic potential energy

d. Kinetic energy

---

83. Mr. X runs a marathon starting from point A. He runs 5 km in the north direction and reaches point B, then turns right and walks 6 km to reach point C, then turns right and runs 8 km to reach point D, then turns right and runs 10 km and reaches point E, then turns right and runs 6 km and reaches point F, then turns right and runs 1 km and reaches point G, then turns right and runs 3 km and reaches point H. **(+1, -0.33)**

If Mr. X turns to the right from point E, then in which of the following direction is he facing now?

a. West

b. South

c. East

d. North

---

84. Train A moving at a speed of 36 km/hr crosses a platform in 80 s. The same train takes 24 s to cross a person moving in the opposite direction with a speed of 18 km/hr. Find the length of the platform- **(+1, -0.33)**

a. 120 m

b. 440 m

c. 300 m

d. 240 m

---

85. A total of 210 balls are to be divided between Ranjit and Rohan in such a way that Ranjit gets 56 balls more than Rohan. What will be the ratio of the number of balls Ranjit gets to the number of balls Rohan gets after the division? **(+1, -0.33)**

a. 19 : 11

b. 13 : 8

c. 5 : 3

d. 3 : 2

---

86. Which day was 18th April 2008? **(+1, -0.33)**

a. Friday

b. Monday

c. Sunday

d. Saturday

---

87. The correct relation of speed, distance and time is _____. **(+1, -0.33)**

a. S = T/D

b. S = D/T

c. S = D × T

d. S = D - T

88. The value of G is _____. (+1, -0.33)

a. $6.673 \times 10^{-11} Nm^{-2} kg^{2}$

b. $6.673 \times 10^{-11} Nm^{2} kg^{2}$

c. 6.673 × 10 -11 Nm 2 kg -2

d. $6.673 \times 10^{-11} Nm^{-2} kg^{-2}$

89. Who was the Foreign Secretary in the Ministry of External Affairs as of February 2018? (+1, -0.33)

a. T.S. Tirumurti

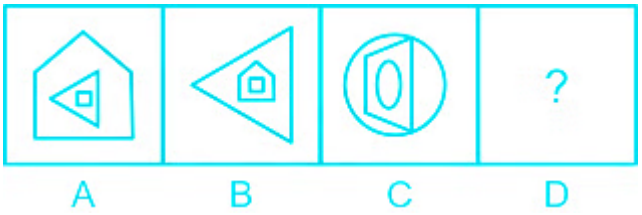
b. Vijay Gokhale

c. S. Jaishankar

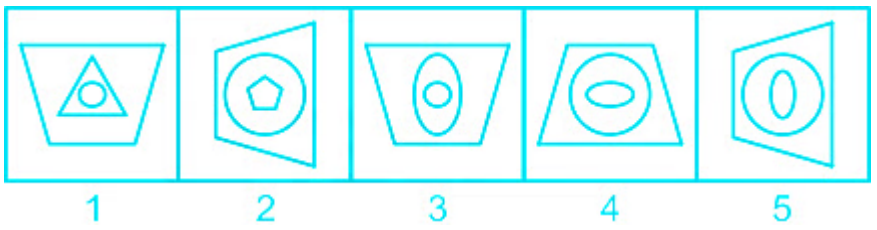
d. Preeti Saran

90. From the given figures, select the figure which is related to the question figure C in the same way as the question figure B is related to question figure A. (+1, -0.33)

Question figures :



Answer figures :



a. 5

b. 2

c. 3

d. 1

---

91. The price of an article decreases by 25%. By how much will the new price have to be increased to maintain the original price? **(+1, -0.33)**

a. 108%

b. $\frac{105}{3}$ %

c. $\frac{50}{7}$ %

d. $\frac{100}{3}$ %

---

92. _____ gives birth to underdeveloped children- **(+1, -0.33)**

a. Echidnas

b. Kangaroo

c. Platypus

d. Rabbit

---

93. _____ is called 'Manchester of India'? (+1, -0.33)

a. Mumbai

b. Ahmedabad

c. Kolkata

d. Surat

---

94. Political leader Naveen Patnaik belongs to which of the following Indian state? (+1, -0.33)

a. Uttar Pradesh

b. Orissa

c. West Bengal

d. Assam

---

95. Consider the given statements and decide which of the given assumptions are implicit in the statement. (+1, -0.33)

Statement:

The teacher announced that "from now on, students will clean the class every Friday in groups of five."

Assumption:

I. Teachers want the students to know the importance of cleanliness.

II. Teachers want to clean up the classroom because no one is employed to do this job.

a. Neither I nor II is implicit

b. Only II is implicit

c. Both I and II are implicit

d. Only I is implicit

---

96. In a group of children 25 play volleyball, 20 badminton and 10 cricket. 5 plays a II three games. 6 plays at least two of these games. How many actually play only one game? **(+1, -0.33)**

a. 48

b. 40

c. 38

d. 45

---

97. If $a + b + c = 9$ and $a^2 + b^2 + c^2 = 29$, Then find the value of $a^3 + b^3 + c^3 - 3abc$. **(+1, -0.33)**

a. 9

b. 27

c. 3

d. 81

---

98. The presence of an element in two or more forms in which physical properties are different but chemical properties are the same is called- **(+1, -0.33)**

a. Chain

b. Alkyne

c. Allotropy

d. Alkane

---

99. _____ was initially formed to trade with the East Indies, but eventually became confined mainly to trade with the Indian subcontinent and China. **(+1, -0.33)**

a. English India Company

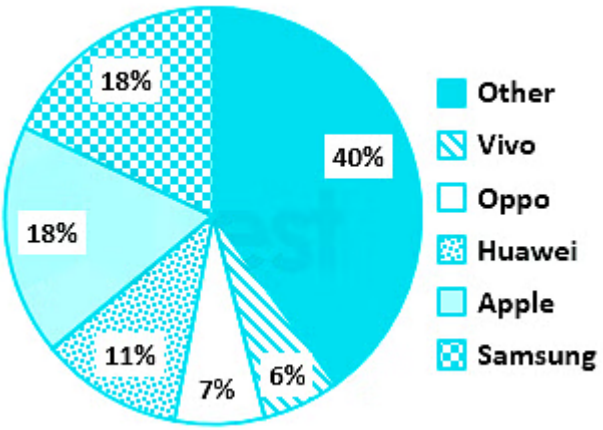
b. London India Company

c. East India Company

d. British India Company

---

100. The pie graph represents the total sales made by different mobile companies in the year 2017. If the total sales in the year 2017 is Rs. 5000 crores, then the sales made by Apple is Rs. _____ crores. **(+1, -0.33)**



a. 350

b. 550

c. 900

d. 2000

Answers

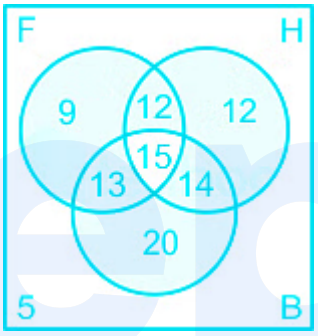
1. **Answer: d**

Explanation:

⭐ Mistake Points

Most two points represent the number who has been involved in all the two parts.

The Venn diagram is given below:-



The total number of students who like at most two sports = (9 + 12 + 12 + 14 + 20 + 13) = 80

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

---

2. **Answer: b**

Explanation:

The correct answer is Na < Mg > Al < Si.

- The correct order of first ionization potential in Na < Mg > Al < Si.

⭐ Key Points

- The **ionisation potential increases as we go along the period from left to right due to a decrease in atomic size.**

- The elements **Na(11), Mg(12), Al(13), Si(14)** all belong to the 3 rd period.
- Therefore trend in ionization potential value should be **Si>Al>Mg>Na** .
- But, the Mg has a higher ionization potential than Al because it has electronic configuration **1s ^{2}2s ^{2}3p ^{6}3s ^{2}**which has fulfilled 3s orbital and it's difficult to remove an electron from the fulfilled orbital.
- On the other hand, **Al has the electronic configuration 1s ^{2}2s ^{2}3p ^{6}3s ^{2}3p ^{1}**and it's easier to remove the 3p electron.
- Therefore, **Mg has a higher ionisation potential than Al** and the correct order of the first ionization potential is **Na < Mg > Al < Si.**

---

3. **Answer: d**

Explanation:

The correct answer is Shoonyta.

- Shunyata has won the Best Short Film award at the Los Angeles Film Festival, 2018.

⭐ Key Points

- Shunyata is a **22-minute short fiction film** directed by Chintan Sarda.
- **Actor Jackie Shroff** has performed in the movie.
- It won the best film award at **the 2018 Best of India Short Film Festival.**
- The festival was held at **Mack Sennett Studios in Los Angeles, the United States.**
- The prize includes a cash prize of **$1,000.**

---

4. **Answer: a**

Explanation:

The correct answer is mutation.

- The basic source of biological diversity is mutation.

Key Points

- **Mutation** :
  - It is a change in a **DNA sequence** .
  - It can be a result of DNA copying mistakes made during cell division, exposure to chemicals called mutagens, exposure to ionizing radiation, or infection by viruses.
  - It is the basic source of **biological diversity.**

Additional Information

- **Cosmic evolution** is the study of change that includes the study of the vast number of developmental and generative changes, accumulated during all time and across all space, from the big bang to humankind.
- **Fermentative action** is a **metabolic process** that produces chemical changes in organic substrates through the action of enzymes.

---

5. **Answer: c**

Explanation:

The correct answer is lung inflation.

- During inhalation, the lungs fill with air due to lung inflation.

Key Points

- **Inhalation** :
  - It is the process of intake of air.
  - During inhalation, muscles of the diaphragm contracts and flattens.
  - The lower ribs are raised upward and outwards, the chest cavity enlarges, the air pressure in the lungs is decreased, air rushes into the lungs and the lungs inflate.

Additional Information

- **Exhalation**
  - Expiration is breathing out of air.
  - During expiration, relaxation of muscles of the ribs and diaphragm takes place.
  - The diaphragm again becomes dome-shaped.
  - The Chest cavity is reduced and the air is forced outward through the nose and trachea.

---

6. Answer: d

Explanation:

Given:

$(10x + 3y) : (5x + 2y) = 9 : 5$

Concept used:

Ratio proportion

Calculation:

$(10x + 3y) : (5x + 2y) = 9 : 5$

$\Rightarrow 50x + 15y = 45x + 18y$

$\Rightarrow x : y = 3 : 5$

Let the common ratio be P.

Then,

$x = 3P$

$y = 5P$

Now,

$(2x + y) : (x + 2y)$

⇒ 11P : 13P

⇒ 11 : 13

∴ The required value of (2x + y) : (x + 2y) is 11 : 13.

---

7. Answer: b

Explanation:

Given:

The product of the two numbers is 0.432.

One of them is 1.6

Concept used:

Calculation:

Let the other number be P.

According to the question,

1.6 × P = 0.432

⇒ P = 0.27

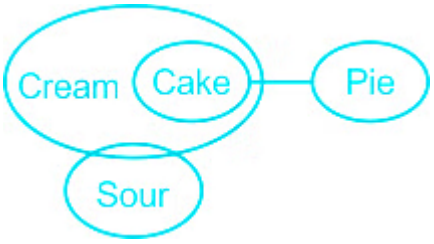
∴ The other number is 0.27.

---

8. Answer: b

Explanation:

The Venn diagram is given below:-



Conclusion:

I. All cakes are sour. → False (it is possible but not definite)

II. Some cakes are sour. → False (it is possible but not definite .)

- Thus, neither conclusion I nor II follows

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

⭐ Additional Information

---

9. **Answer: b**

Explanation:

Given:

A and B together finish the work in 8 days.

B and C together can do it in 12 days.

A, B, and C together can do this work in 6 days

Concept used:

Entire work = Work done each day (in Units) × Total time taken (in days)

Calculation:

LCM (8,12,6) = 24

Let the entire work be the LCM of 8, 12, 6.

So, the entire work is 24 units.

Now,

A & B together do = 24 ÷ 8 = 3 units each day

B & C together do = 24 ÷ 12 = 2 units each day

A, B & C together do = 24 ÷ 6 = 4 units each day

Then,

A + B = 3 ....(1)

B + C = 2 ....(2)

A + B + C = 4 ....(3)

Solving (1), (2), (3),

We get, C = 1, A = 2

So, A & C together do (2 + 1) = 3 units

Then, the time taken by A & C together to finish twice the work = {(24 × 2) ÷ 3} = 16 days

∴ In 16 days, A & C together will complete twice the work.

---

10. Answer: a

Explanation:

The correct answer is New Delhi.

- The Indira Gandhi Indoor Stadium is located in New Delhi.

⭐ Key Points

- Indira Gandhi Indoor Stadium:

- The stadium was earlier known as Indraprastha Stadium and Indira Gandhi Arena.
- It is the largest indoor sports arena in India and also among the largest in Asia.
- It was used the host the events of the indoor game in the 1982 Asian Games.

---

11. Answer: a

Explanation:

Given:

Three smaller triangles are inscribed from the three vertices of a larger triangle in such a way that each side of each smaller triangle is 2/5 of the side of the adjacent larger triangle.

Concept used:

Area of an equilateral triangle = $\sqrt{3}/4 \times A^2$

where A is the length of its side.

Calculation:

Let each of the larger triangles be 20P units.

So, the area of the larger triangle = $\sqrt{3}/4 \times (20P)^2 = 100\sqrt{3}\ P^2$ unit ^{2}

Now, the length of each side of the smaller triangles

$\Rightarrow 2/5 \times 20P$ unit

$\Rightarrow 8P$ unit

So, the area of each smaller triangle = $\sqrt{3}/4 \times (8P)\ 2 = 16\sqrt{3}$ unit 2

The total area of the smaller triangles = $3 \times 16\sqrt{3} = 48\sqrt{3}$ unit ^{2}

So, the remaining area = $100\sqrt{3} - 48\sqrt{3} = 52\sqrt{3}$ unit ^{2}

So, ratio become = $48\sqrt{3} : 52\sqrt{3} = 12 : 13$

∴The ratio of the total area of the three smaller triangles to the remaining part of the larger triangle is 12 : 13.

---

12. Answer: c

Explanation:

The correct answer is **Vidarbha**.

- **Vidarbha won the Ranji Trophy in 2017.**

⭐ **Key Points**

- **Ranji Trophy:**
  - It is a domestic first-class cricket championship with multiple teams representing regional and state cricket associations.
  - It was first held in **1934–35.**
  - It currently consists of 38 teams, with all 28 states in India and four of the eight union territories having at least one representation.
  - It is named after the **first Indian cricketer** who played international cricket, Ranjitsinhji.
  - He was also known as ' **Ranji** '.
- **Bombay** is the **most successful team** in the tournament.
- **Vidarbha team** won the 2017 tournament by **defeating Delhi** by 9 wickets.

---

13. Answer: b

Explanation:

The correct answer is **acceleration**.

⭐ Key Points

- When two balls made of iron and aluminium falls then the acceleration due to gravity will be the same for both.
- This is because, in a free fall, the acceleration does not depend on the mass of the object.

⭐ Additional Information

- **Acceleration** :
  - Acceleration of an object is defined as the **rate of change of velocity of the object.**
  - It is a **vector quantity** and its **SI unit is metre/second** ^{2} **(m/s** ^{2}**).**
  - If velocity decreases with time then acceleration is negative and is called **retardation** .
- **Gravity:**
  - The acceleration due to gravity is the rate of increase of velocity of a body falling freely towards the earth.
  - It is represented by $g = \frac{GM_e}{R_e^2}$

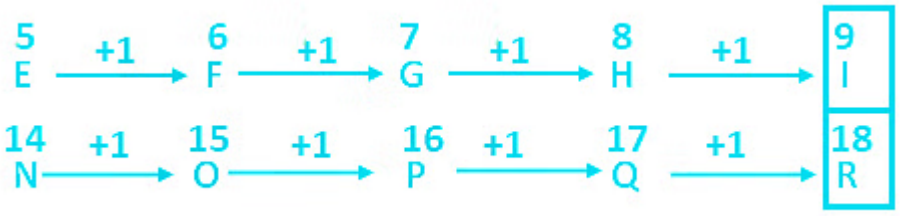
---

14. Answer: b

Explanation:

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

The logic followed here is:-



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

---

15. Answer: b

Explanation:

Given:

The mean of the three smallest numbers is 19

The mean of the three largest numbers is 21

Concept used:

The range of a set of data is given by the difference between the largest and smallest number in the given data set.

Calculation:

Let the four number be A,B,C,D where A < B < C < D.

According to the question,

(A + B + C) ÷ 3 = 19

⇒ (A + B + C) = 57 ....(1)

According to the question,

(B + C + D) ÷ 3 = 21

⇒ (B + C + D) = 63 ....(2)

(2) - (1), we get

(B + C + D) - (A + B + C) = 63 - 57

⇒ D - A = 6

∴ The range of the set of data is 6.

---

16. **Answer: a**

Explanation:

Given:

x + y = 3

xy = 2

x < y

Concept used:

$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

$(x + y)^2 - 4xy = (x - y)^2$

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

Calculation:

x + y = 3

$\Rightarrow (x + y)^2 = 3^2$

$\Rightarrow x^2 + 2xy + y^2 = 9$

$\Rightarrow x^2 + xy + y^2 = 9 - 2$

$\Rightarrow x^2 + xy + y^2 = 7$

Now,

$x + y = 3$

$\Rightarrow (x + y)\ 2 = 3\ 2$

$\Rightarrow (x + y)\ 2\ - 4xy = 9 - (4 \times 2)$

$\Rightarrow\ (x - y)\ 2\ = 1$

$\Rightarrow (x - y)^{2} = 1$

$\Rightarrow (x - y) = \pm 1$

$\Rightarrow (x - y) = (-1)\ (\because x < y)$

So,

$x\ 3\ - y\ 3$

$\Rightarrow\ (x - y)\ (x\ 2\ + xy + y\ 2\ )$

$\Rightarrow (-1)\ \times 7$

$\Rightarrow -7$

∴ The required value of $x\ 3\ - y\ 3$ is (−7).

⭐ Alternate Method

$x + y = 3$

$\Rightarrow (x + y)\ 2 = 3\ 2$

$\Rightarrow x\ 2 + 2xy + y\ 2 = 9$

$\Rightarrow x\ 2\ + xy + y\ 2\ = 7$

Now,

$x + y = 3$

⇒ (x + y) 2 = 3 2

⇒ (x + y) 2 - 4xy = 9 - (4 × 2)

⇒ (x - y) 2 = 1

⇒ (x - y) 2 = 1

⇒ (x - y) = ±1

Here, taking the value of (x - y) as (-1), considering logically if (x + y) is 3 and x < y, then (x - y) can't be +1.

So,

x 3 - y 3

⇒ (x - y) (x 2 + xy + y 2)

⇒ (-1) × 7

⇒ -7

∴ The required value of x 3 - y 3 **is (-7).**

⭐ **Shortcut Trick**

x = 1, y = 2

x < y

Then,

⇒ $1^3 - 2^3$

⇒ 1 - 8

⇒ - 7

∴ The required value of x 3 - y 3 is (-7).

17. **Answer: a**

Explanation:

The correct answer is **Bryophyta**.

- **Rixia comes under Bryophyta.**

⭐ **Key Points**

- **Bryophyta**
  - In Bryophyta, there is a lack of xylem and phloem tissues.
  - They lack true roots, stem and leaves.
  - This community is also called the **amphibian category** of the plant kingdom.
  - Examples of Bryophyta are **rixia, liverworts and hornworts.**

⭐ **Additional Information**

- **Thalophyta**
  - This is the largest group of the plant kingdom.
  - There is no conducting tissue.
- **Pteridophyta**
  - In Pteridophytes, the body of the plant is differentiated into root, stem and leaf.

---

18. **Answer: a**

Explanation:

Given:

Four bells ring in a temple at intervals of 12, 16, 24, and 36 minutes respectively.

They are started playing at a continuous interval from 6 o'clock

Concept used:

The LCM of 12, 16, 24, and 36 minutes will give us the next time they will all ring together.

Calculation:

LCM (12, 16, 24, 36) = 144

So, the bells will play together after 144 mins i.e. 2 hours 24 mins.

So, the bells will play together again at = (6.00 + 2.24) = 8.24 AM

∴ At 08.24 AM they will play together again.

---

19. **Answer: b**

Explanation:

The correct answer is **It has a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes electrical energy from the electrical grid.**

Concept:

Energy

- The capacity of doing work is called energy.
- SI unit of energy is the joule.
- Various forms of energy are heat energy, light energy, nuclear energy, electrical energy, mechanical energy, etc.
- Energy can be converted from one form to another.
- This happens through various processes or using certain appliances.
- For example, when a bulb glows by electricity, electrical energy is converted into light energy.

Explanation:

This question is about the conversion of energy for making a cup of coffee in a microwave oven. The process must follow in a sequence.

- It has a measurable amount of thermal energy gained through the work done by the microwave oven, which in turn takes potential energy from the electrical grid. - Thermal - Work done microwave - Potential energy(false)- Electrical energy.
- It has a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes electrical energy from the electrical grid. Thermal - Work done microwave - Electrical energy - Electrical grid. - Correct Sequence
- It consists of a measurable amount of kinetic energy acquired through the work done by the microwave oven. -False
- It contains a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes chemical energy from the electrical grid. Thermal energy - Work done - Chemical energy(false)- Electric grid

---

20. **Answer: c**

Explanation:

The correct answer is Vijaynagar.

- Vijaynagar empire was founded by the Sangam princes - Harihara and Bukka.

⭐ Key Points

- **Vijayanagar Empire (1336 AD-1580 AD)**
  - Vijayanagar empire and the city were founded by Harihar and Bukka.
  - Muhammad-bin-Tughlaq, converted them to Islam and sent them to the South to control rebellion but motivated by a Bhakti saint Vidyaranya, they established the **Vijayanagar kingdom in 1336 AD.**
  - The period of Vijayanagar can be divided into four distinct dynasties, that are **Sangam, Saluva, Tuluva and Aravidu.**

⭐ Additional Information

- The **Bahamani kingdom of Deccan** was founded by **Hasan Gangu.**

---

21. Answer: a

Explanation:

The correct answer is **Shahrukh Khan**.

- **Shahrukh Khan was selected for the Yash Chopra Memorial National Award, 2017.**

⭐ Key Points

- **Yash Chopra Memorial Award:**
  - It was instituted in **2013** by the **T. Subbarami Reddy** from **TSR Foundation** in memory of the late producer-director **Yash Chopra** ,
  - Yash Chopra died in **2012** .
  - The award was first awarded to melody queen **Lata Mangeshkar** .
  - **T. Subbarami Reddy** is an industrialist, politician, film producer and philanthropist.
  - In the year 2017, the award was given to **Shahrukh Khan** .

---

22. Answer: b

Explanation:

Given:

Six years ago, the ratio of the ages of Saina and Sagar was 6 : 5

In the next four years, the ratio of their ages will become 11 : 10 respectively.

Concept used:

Calculation:

Let the common ratio be P.

So, six years ago, the ages of Saina and Sagar were 6P & 5P respectively.

According to the question,

$(6P + 10)/(5P + 10) = 11/10$

$\Rightarrow P = 2$

Six years ago,

Age of Saina = $6 \times 2 = 12$ years

Age of Sagar = $5 \times 2 = 10$ years

So, the present age of Sagar = $(10 + 6) = 16$ years.

∴ The present age of Sagar is 16 years.

---

23. Answer: a

Explanation:

The correct answer is **Gopal Guru**.

- **In January 2018, Gopal Guru was appointed as the editor of the Economic and Political Weekly.**

⭐ **Key Points**

- Gopal Guru was appointed as the editor of the **Economic and Political Weekly.**
- Gopal Guru is currently a **Professor at the Centre for Political Studies at the Jawaharlal Nehru University in New Delhi.**
- He replaced **Paranjoy Guha Thakurta** .

⭐ **Additional Information**

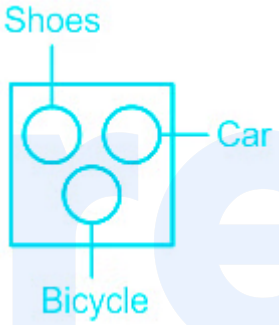
- **Economic and Political Weekly:**
  - It started in **1949** .
  - Its Publisher is**Sameeksha Trust.**

---

24. Answer: b

Explanation:

- Shoes, cars, and bicycles all are different things.
- The most appropriate Venn diagram is as follows:



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

---

25. Answer: d

Explanation:

⭐ Important Points

- 2 November is the earliest date among the given options.
- So, we will calculate the day on 2 November and then use that information to calculate the day on the other dates of November if needed.

Concept:

- In an ordinary year, there are 365 days and on dividing 365 by 7, we get remainder = 1, so this extra one day is taken as an odd day.

- Similarly, in a leap year, there are 366 days and on dividing 366 by 7, we get remainder = 2, so these extra days are taken as the odd days.

Thus, the remainder, which we get after dividing the number of days by 7 is considered as odd days.

- 1999 = 1600 + 300 + 99 years
- In 1600 years the odd days = **0**
- In 300 years the odd days = **1**
- In 99 years (from 1901 to 1999), = 99/4 = 24 leap years and 75 normal years.
- In 24 leap years, odd days = 48, and 75 normal years = 75 odd days
- So total = 48 + 75 = 123 odd days i.e. 123/7 = **4**odd days

In 2000, the number of days up to 2 November
= 31 (Jan) + 29 (Feb - leap year) + 31 (Mar) + 30 (Apr) + 31 (May) + 30 (Jun) + 31 (Jul) + 31 (Aug) + 30 (Sep) + 31 (Oct) + 2 (Nov)
= 307 days
= **6**odd days.
Total in 2000 years up to 2 November = 0 + 1 + 4 + 6 = 11/7 = 4 odd days.
The codes for the weekdays are as follows:

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0	1	2	3	4	5	6

- Thus, the day of the week on 2 November 2000 was Thursday.
- Now, 2 November + 14 days (0 odd days) = 16 November. So, 16 November is also a Thursday.

Hence, "option 4" is the correct answer.

---

26. Answer: b

Explanation:

Given series:-

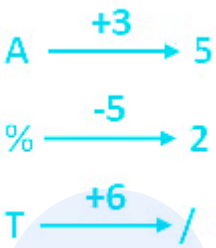
3 R # 2 A $ K 5 % T 7 & N Y ÷ X B / L Q @ 1

Second half: & N Y ÷ X B / L Q @ 1

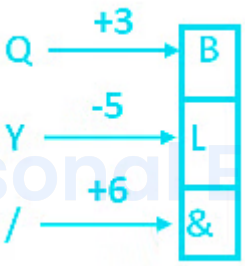
The second half of the above series is reversed, then the new series is:-

3 R # 2 A $ K 5 % T 7**1 @ Q L / B X ÷ Y N &**

From the above series:-



Similarly,



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

---

27. Answer: a

Explanation:

The correct answer is **Finance**.

- The term 'Financial Deficit' is related to the Finance Ministry of the Government of India.

⭐ Key Points

- **Fiscal Deficit:**
  - It is the difference between total expenditure (revenue, capital, and loans net a repayment) and the revenue receipts plus those capital receipts which are not in the form of borrowings but which in the end accrue to the government.
  - The term is related to the Finance Ministry of the Government of India.

---

28. Answer: b

Explanation:

1. M is taller than R and S.

M > R and S

- Here, there is no information given about the height of N. Therefore, statement 1 alone is not sufficient.

2. M is wearing a sky coloured shirt.

- No information is given about the height of M, N, R, and S. Therefore, statement 2 alone is not sufficient.

- From statements 1 and 2:-

M > R and S. No definite relationship was established.

- Here, statements 1 and 2 are insufficient.

Hence, "option 2" is the correct answer.

---

29. **Answer: b**

Explanation:

The logic followed here is:-

- Figures A, B, and C have 5-pointed stars inside them.
  - 

- Figure D has a 6-pointed star.

So, figure D is different from the rest.

Hence, "option 2" is the correct answer.

---

30. **Answer: b**

Explanation:

The correct answer is **Knight of the Legion of Honor**.

- **Knight of the Legion of Honor was given to former French President Nicolas Sarkozy in 2004.**

⭐ **Key Points**

- **Nicolas Sarkozy:**
  - He served as the President of France from May 2007 until May 2012.

- The **Russo-Georgian War** and the **Arab Spring** took place during his tenure.
- He was awarded the Knight of the Legion of Honour by President Chirac in **2005** .

[redacted]

31. **Answer: b**

Explanation:

Given:

32 - 2(10 + 16 ÷ 4 × 3 - 5 × 2) + 30

Concept used:

B	Brackets in order (), {}, []	ब्रैकेट (), {}, [] क्रम में
O	of	का
D	Division (÷)	विभाजन (÷)
M	Multiplication (×)	गुणा (×)
A	Addition (+)	जोड़ (+)
S	Subtraction (–)	घटाव (–)

Calculation:

32 - 2(10 + 16 ÷ 4 × 3 - 5 × 2) + 30

⇒ 32 - 2(10 + 4 × 3 - 5 × 2) + 30

⇒ 32 - 2(10 + 12 - 10) + 30

⇒ 32 - 24 + 30

⇒ 38

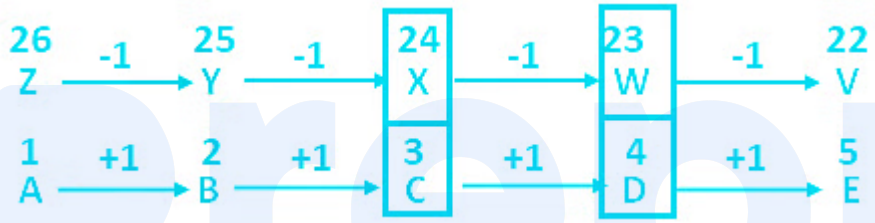
∴ The required value of 32 - 2(10 + 16 ÷ 4 × 3 - 5 × 2) + 30 is 38.

32. **Answer: d**

Explanation:

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

The logic followed here is:-



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

---

33. **Answer: d**

Explanation:

The correct answer is **Balwant Rai Mehta Committee**.

- **Balwant Rai Mehta Committee recommended that the decision-making power should be decentralized and elected local bodies should be set up.**

⭐ **Key Points**

- **Balwant Rai Mehta Committee**
  - The Government of India appointed a committee in **1957.**
  - This committee was set up to examine the work of the **Community Development Programme (1952)** , and the **National Extension Service**

(1953).
- The committee submitted its report in **1958** .
- **Recommendations**
  - This committee recommends three levels of governance viz **Zila Parishad, Panchayat Samiti (Block) and Gram Panchayat (village).**
  - The district collector should be a chairperson of Zila Parishad.
  - The members of **Zila Parishad and Panchayat Samiti** should be **elected indirectly** while the **members of Gram Panchayat** should be **elected directly** .
  - These recommendations were accepted by **National Development Council (NDC)** in Jan **1958** .

---

34. Answer: a

Explanation:

The correct answer is **Slaked lime**.

- **On adding water to CaO, a slaked lime compound is obtained.**

⭐ **Key Points**

- Quick lime is chemically called calcium oxide (CaO), when it is added to water, calcium hydroxide is formed.
  - Calcium hydroxide is also called **slaked lime.**
- This reaction is highly exothermic in which a large amount of heat is released in the process.
- $CaO + H_2O \rightarrow Ca(OH)_2$

⭐ **Additional Information**

- The chemical formula of washing soda is **Na_2CO_3.**

---

35. Answer: c

Explanation:

The correct answer is

⭐ Key Points

- Given,
  - Current, I= 4A.
  - The potential difference, V= 60 V
  - According to Ohm's Law, V= IR
    - $R = \frac{V}{I}$
    - $R = \frac{60}{4}$
    - = 15 Ω
  - New current, I= 127.5 V
    - $I = \frac{V}{R}$
    - $I = \frac{127.5}{15}$
    - = 8.5 A

⭐ Additional Information

- Ohm's Law
  - The electric current flowing through a conductor is directly proportional to the potential difference across its ends.
  - It is given by the formula:
    - V=IR

---

36. Answer: d

Explanation:

The logic followed here is:-

- Figures A, B, and D have 3 red balloons and 3 blue balloons.
- Figre C has 2 red balloons and 4 blue balloons.

So, figure C is different from the rest.

Hence, **"option 4"** is different from others.

---

37. Answer: b

Explanation:

Given:

Rachna borrowed Rs. 40,000 at 10% simple interest per annum.

Exactly one year later she lent this amount to her friend.

Concept used:

Simple Interest, SI = (P × R × T) ÷ 100

where

P = Principal amount

R = Rate of interest per year

T = Time in years

Compound interest, CI = $P(1 + R/100)^{n} - P$

where

P = Principal amount

R = Rate of interest per year

N = Time in years

Calculation:

Simple interest accumulated on Rs. 40,000 at 10% per annum in 3 years

⇒ (40000 × 10 × 3) ÷ 100

⇒ 12000

She lent the principal amount to her friend after exactly one year.

So, the compound interest accumulated on the principal amount in 2 years

⇒ 40000 (1 + 10/100) 2 - 40000

⇒ 8400

So, Rachna faces a loss of = Rs. (12000 - 8400) = Rs. 3600

∴ She will get a loss of Rs. 3600 at the end of the third year.

---

38. Answer: d

Explanation:

Given:

Simple interest acquired is Rs. 18,480

Time = 3 years 6 months

Rate = 5%

Concept used:

Simple interest, A = (P × R × T) ÷ 100

A = Interest amount

P = Principal amount

R = annual interest rate

T = time (in year)

Calculation:

3 years 6 months = 3 + 6/12 = 3.5 years.

Let P be the principal amount.

According to the question,

18480 = (P × 5 × 3.5) ÷ 100

⇒ P = 105600

∴ On Rs. 105600 the interest for 3 years 6 months at 5% simple interest per annum will be Rs. 18,480 .

---

39. Answer: c

Explanation:

Given:
5.035 + 50.35 + 503.50 - 20.60

Concept used:

B	Brackets in order (), {}, []	ब्रैकेट (), {}, [] क्रम में
O	of	का
D	Division (÷)	विभाजन (÷)
M	Multiplication (×)	गुणा (×)
A	Addition (+)	जोड़ (+)
S	Subtraction (–)	घटाव (–)

Calculation:

5.035 + 50.35 + 503.50 - 20.60

⇒ 5035 × (0.001 + 0.01 + 0.1) - 20.60

⇒ 5035 × 0.111 - 20.60

⇒ 558.885 - 20.60

⇒ 538.285

∴ The value of (5.035 + 50.35 + 503.50 - 20.60) is 538.285.

---

40. Answer: c

Explanation:

The correct answer is **Alkaline earth metals**.

- **The second group of elements are called a lkaline earth metals.**

⭐ **Key Points**

- **Alkaline Earth Metals:**
  - It consists of **Group 2 (IIa) elements** of the periodic table.
  - These are **beryllium (Be), magnesium (Mg), calcium (Ca), strontium (Sr), barium (Ba), and radium (Ra)** .
  - **Properties of alkaline earth metals:**
    - they are **shiny** in appearance.
    - They have a **silvery-white colour.**
    - They are reactive metals at standard temperature and pressure.
    - They readily lose their two outermost electrons and form cations with a 2^{+} charge.
    - They have **low densities.**
    - They have **low melting points.**
    - They have **low boiling points** .

⭐ **Additional Information**

- **Halogens** are kept in the **Group 17** of the periodic table.
- **Alkaline metals** are kept in **Group 1** of the periodic table.
- **Inert gases** are kept in the **Group 18** of the Periodic Table.

41. **Answer: c**

Explanation:

The correct answer is **ESL Narasimham**.

- **ESL Narasimham is the present Governor of Andhra Pradesh and Telangana.**(in 2018)

⭐ **Key Points**

- **ESL Narasimham:**
  - He is an IPS officer and served as the **Director of the Intelligence Bureau.**
  - He served as the **governor of Andhra Pradesh and Telangana** .
    - He was the **first Governor of Telangana.**
  - He also served as the **Governor of Chhattisgarh.**

⭐ Additional Information

- **Biswabhusan Harichandan** is the current **governor of Andhra Pradesh. (in Jan 2022)**
- **Tamilisai Soundararajan** is the current governor of **Telangana. (in Jan 2022)**

42. **Answer: a**

Explanation:

The correct answer is **5 June**.

- **World Environment Day is celebrated on the 5th of June.**

⭐ **Key Points**

- **World Environment Day:**
  - It is celebrated every year on the **5th of June.** It was **established in 1972** by the United Nations at the Stockholm Conference on the Human Environment
  - It was first celebrated in the year **1974.**
  - The theme of first-World Environment Day was ***Only One Earth.***
  - The theme for world environment day 2022 is ***Only One Earth***.

⭐ **Additional Information**

- **United Nations:**
  - The UNO was formed on **24 October 1945** .
  - At present, 193 countries are members of the UN.
  - **South Sudan** is the latest and the **193rd member** to join the UN in **2011**
  - The **UN Charter** came into force on October 24, 1945, when the Governments of **China, France, the UK, the Soviet Union, the USA** and a majority of other counties had ratified it.
  - The **headquarters of the UN** is situated in **New York (USA)** .

43. **Answer: c**

Explanation:

The correct answer is **oil and water**.

- **oil and water can be separated by different funnels.**

⭐ Key Points

- **Separating funnel:**
  - It is a funnel used to **separate immiscible liquids** .
  - Liquids that do not mix with each other are called **immiscible** .
  - Such two **immiscible liquids are oil and water** and they can be separated by using a separating funnel.
  - The **oil and water form two separate layers** , with the oil being the less dense liquid being on top.

⭐ Additional Information

- The density of **oil** is **0.930 kg/m³.**
- The density of **water** is **1.003 kg/m³.**

---

44. Answer: a

Explanation:

Given:

Mode = 15

Mean = 6

Formula used:

Mode = 3Median - 2Mean

Calculation:

Mode = 3Median - 2Mean

⇒ 15 = 3 × Median - (2 × 6)

⇒ 3 × Median = 27

⇒ Median = 9

∴ The median of the observation is 9.

---

45. Answer: d

Explanation:

The statement highlights the water shortage problem faced by the construction industries in North Karnataka.

- Action I suggests that the government take some steps to address this situation. Since there is a problem, it is reasonable to look for ways to resolve it. Thus, action 1 follows.
- Action II stands illogical with respect to the statement since it says that the construction industries be closed to save water, while the problem of water shortage is faced by those industries themselves. Construction industries are also important for the economy and the citizens. Thus, action II does not follow.

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

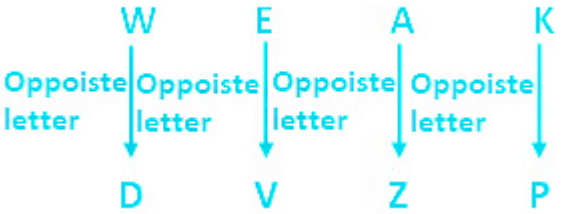
---

46. Answer: a

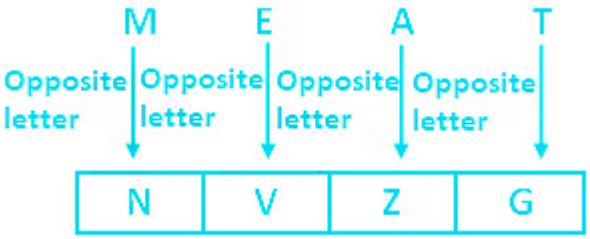
Explanation:

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

The logic followed here is:-



Similarly,



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

---

47. Answer: d

Explanation:

The correct answer is **Democritus**.

- **The word atom was discovered by Democritus.**

⭐ **Key Points**

- Democritus was a **Greek philosopher.**
- He was the one who first proposed the Greek word ***atomos***.
  - **Atomos means uncuttable.**
- He further explained that all matter was eventually reducible to discrete, small particles or atomos.

⭐ **Additional Information**

- **Laws of Multiple Proportion** and **the Atomic Theory** was proposed by **John Dalton.**
- **Antoine Laurent Lavoisier** is known as the **father of modern chemistry** .

---

48. Answer: c

Explanation:

Given:

The median of a set of 11 distinct observations is 12.5.

Concept used:

Median is the middlemost term in given data.

Calculation:

So, if there are a total of 11 terms then the middlemost term is 6 th term.

So, 6th term = 12.5

If the last five observations of the set are increased by 11, then the 6th term of the data still remains the same.

So, the Median remains the same as that of the Original set.

∴ The median of the new set is 12.5.

---

49. Answer: d

Explanation:

Given:

Initial quantity = $15\frac{5}{8}$ L

Remaining quantity at the end of the journey = $3\frac{1}{8}$ L

Concept used:

Calculation:

The quantity of Petrol consumed during the journey = $15\frac{5}{8}$ - $3\frac{1}{8}$ = (25/2) L

So, the quantity of petrol consumed = (25/2) ÷ $15\frac{5}{8}$ = 4/5 part of the initial quantity.

∴ 4/5 part of the initial quantity of petrol was consumed during the journey.

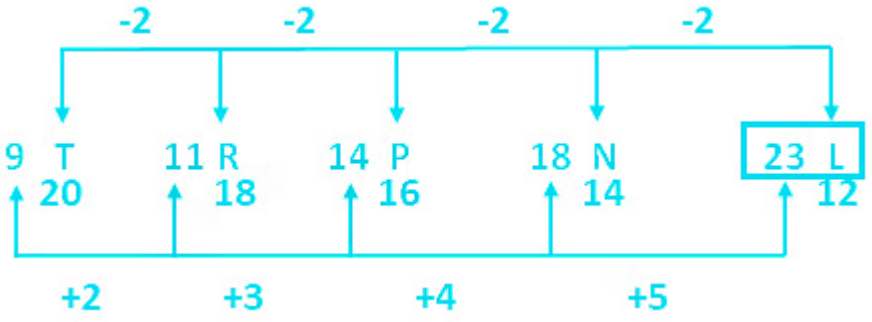
---

50. Answer: c

Explanation:

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

The logic followed here is:-



Hence, **"option 3"** is the correct answer.

---

51. Answer: d

Explanation:

The correct answer is **Pushkar**.

- **Pushkar is a religious city located in the Rajasthan state of India.**

⭐ **Key Points**

- **Pushkar** :
  - Pushkar is a city in the **Ajmer district of Rajasthan.**
  - It is famous for Pushkar Camel Fair.
  - It is a trading gathering of cattle, horses and camels.

⭐ **Additional Information**

- **Rajkot** is a city in **Gujarat** .
- **Puri** is a city located in **Odisha** .
- **Rishikesh** is a city located in **Uttarakhand** .

---

52. Answer: a

Explanation:

The correct answer is **Concave Mirror**.

- **A spherical mirror whose reflecting surface is bent inward is called Concave Mirror.**

⭐ **Key Points**

- **Concave Mirror:**
  - A concave mirror is a part of a spherical mirror where the inner surface is the reflecting surface.
  - The image formed by a **concave mirror** is **real and virtual.**
  - **Uses of Concave Mirror**
    - As a shaving glass.

- As a reflector for the headlights of a vehicle, searchlight.
- In ophthalmoscope to examine the eye, ear, nose by doctors.
- In solar cookers.

⭐ Additional Information

- **Convex Mirror:**
  - Convex Mirror is a part of a spherical mirror where the reflective surface bulges out towards the light source.
  - The images formed by a **convex mirror** are always **virtual and erect.**
  - Uses of Convex Mirror
    - In the **rearview mirror in vehicles** because it provides the **maximum rear field of view** and image formed is always erect.
    - In **sodium reflector lamp.**

---

53. Answer: b

Explanation:

The correct answer is **ICICI Bank.**

- **ICICI Bank was roped in by the Government of India to introduce cashless payments in e-NAM (Electronic National Agriculture Market), in December 2017.**

⭐ Key Points

- The government roped in ICICI Bank to enable online payments.
- It will enable online payments at **470 mandis** integrated with the national portal of electronic National Agriculture Market (e-NAM).
- The bank will enable **BHIM (Bharat Interface for Money)** and **Unified Payments Interface (UPI)** on the e-NAM portal.
- **ICICI Bank:**
  - Its full form is **Industrial Credit and Investment Corporation of India (ICICI).**
  - It was founded in the year **1995** .
  - Its headquarter is located in Vadodara, Gujarat.

- **Sir Arcot Ramasamy Mudaliar** was the **first Chairman of ICICI bank.**
- **Girish Chandra Chaturvedi** is the current **chairperson of ICICI bank.**
- **Sandeep Bakshi** is the current **CEO of ICICI bank. (As of Jan 2022).**

---

54. Answer: c

Explanation:

Given:

A and B together can do a piece of work in 35 days

B and C together can complete it in 43.75 days

C and A together can complete the same work in 52.5 days

Concept used:

Total work = Work done in each day × Total time taken

Total work is to be considered as the LCM of the time taken by three parties i.e. 35, 43.75, and 52.5.

Calculation:

LCM (35, 43.75, 52.5) = 525

So, the total work is to be considered as 525 units.

So, (A + B) does each day = (525/35) = 15 units

So, (B + C) does each day = (525/43.75) = 12 units

So, (C + A) does each day = (525/52.5) = 10 units

Now,

(A + B) = 15 ....(1)

(B + C) = 12 ....(2)

(C + A) = 10 ....(3)

So, (A + B + C) = 18.5

So, C = 3.5

Now, the total time taken to complete the total work by C = (525 ÷ 3.5) = 150 days

∴ In 150 many days can C alone complete the same work.

---

55. Answer: d

Explanation:

The logic followed here is:-

- Ate is the past tense of "eat".

Similarly,

- Bought is the past tense of "buy".

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

---

56. Answer: c

Explanation:

The correct answer is **Kaasav**.

⭐ **Key Points**

- Kaasav won the " **Best Feature Film** " award in **64th National Film Awards.**
- It was released in the year **2016 in the Marathi language.**
- Its directors were **Sumitra Bhave and Sunil Suthankar**
- It was produced by **Mohan Agashe**

- **64th National Film Awards:**
  - Organized by Directorate of Film Festivals to present awards to films of 2016
  - Presented by - Pranab Mukherjee
  - Jury members - Madhur Bhandakar, Kaushik Ganguly, Radhakrishna Jagalamudi, Mohan Kanda
  - Best film-friendly state - Uttar Pradesh
  - Best non-feature film - Fireflies in the Abyss
  - Best book - Lata: Sur Gatha
  - Best film critic - G Dhananjayan
  - Dada Saheb Phalke Award - Kasinadhuni Viswanath

⭐ Additional Information

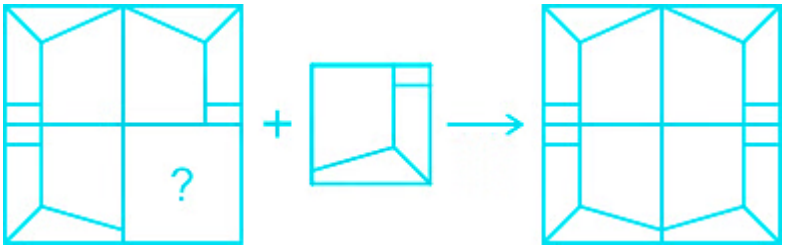
- **Dada Saheb Phalke Award:**
  - Dadasaheb Phalke Award is **India's highest award in cinema.**
  - It is presented annually at the National Film Awards ceremony by the **Directorate of Film Festivals** (an organisation set up by the Ministry of Information and Broadcasting).
  - The award prize consists of a golden lotus, a cash prize of **₹10 lakh and a shawl.**
  - The award is given to people for their outstanding contribution to the growth and development of Indian cinema.
  - It was first presented in **1969** .
  - The first recipient of the award was actress **Devika Rani** , " **the first lady of Indian cinema.**

---

57. Answer: a

Explanation:

The correct option which will complete the format of the given image is shown below:-



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

---

58. Answer: b

Explanation:

The statement highlights the need to popularize alternative medicines for cancer treatment.

- It is reasonable to expect that the government should take responsibility to spread awareness about available alternative cancer treatments. Ensuring the outreach of adequate and appropriate healthcare facilities to the citizens is one of the primary responsibilities of a government. Thus, argument I is strong.
- If the affected people aren't aware of the availability of alternative medicines, they won't be able to approach such centers. Thus, argument II does not hold strong.

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

---

59. Answer: b

Explanation:

Given:

5 + (2 × (5 2 + 3)) - 84

Concept used:

B	Brackets in order (), {}, []	ब्रैकेट (), {}, [] क्रम में
O	of	का
D	Division (÷)	विभाजन (÷)
M	Multiplication (×)	गुणा (×)
A	Addition (+)	जोड़ (+)
S	Subtraction (–)	घटाव (–)

Calculation:

5 + (2 × (5 2 + 3)) - 84

⇒ 5 + (2 × (25 + 3)) - 84

⇒ 5 + (2 × 28) - 84

⇒ 5 + 56 - 84

⇒ (-23)

∴ The required value of 5 + (2 × (5 2 + 3)) - 84 is (-23).

---

60. **Answer: c**

Explanation:

The correct answer is **20 Hs to 20000 Hz**.

- The audible range of sound for humans is approximately 20 Hz to 20000 Hz.

⭐ **Key Points**

- Sound Wave
  - It is a **longitudinal mechanical wave** .

- The longitudinal mechanical waves which lie in the range of **20 Hz to 20,000 Hz** are called audible or sound waves.
- **It cannot travel in a vacuum.**
- The longitudinal mechanical waves having frequencies **less than 20 Hz are called infrasonic.** These are produced by earthquakes, volcanic, eruptions, Ocean waves, elephants, and whales.

- The longitudinal mechanical waves having frequencies greater than 2000 Hz are called **ultrasonic waves** .

---

61. Answer: c

Explanation:

Given:

6 hours

Concept used:

A day = 24 hours

Calculation:

So, 6 hours = (6/24) × 100% = 25% of a day.

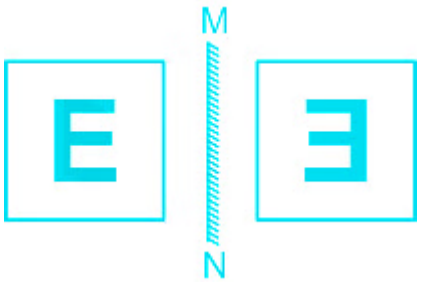
∴ 6 hours is 25% of a day.

---

62. Answer: c

Explanation:

- The mirror image of the question figure is as follows:



Hence, **"option 3"** is the correct answer.

---

63. Answer: a

Explanation:

The logic followed here is:-

- Soft, tender and hard are used to describe the state or condition of objects.
- Minute is used to describe the size of objects

So, gentle is different from others.

Hence, **"option 3"** is the correct answer.

---

64. Answer: b

Explanation:

The pie chart shows the expenditure of binding is 20% of total expenditure.

A pie chart defines 360° as 100%.

So, The angle subtended at the center of the field related to the expenditure of binding = 360° ÷ (100/20) = 72°

∴ The angle subtended at the center of the field related to the expenditure of binding is 72°.

65. **Answer: b**

Explanation:

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

The logic followed here is:-

- Figure A - T and its positional value 20
- Figure B - I and its positional value 9
- *Figure C - V and 15. Positional value of V is 22.*
- Figure D - D and its positional value 4

So, figure C is different from others.

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

66. **Answer: c**

Explanation:

The logic followed here is:-

- Work requires efforts

Similarly,

- Sleep provides rest.

Hence, **"option 3"** is the correct answer.

67. **Answer: b**

Explanation:

The correct answer is **it is bitter in taste.**

⭐ Key Points

- **Acid** :
  - An acid is a substance which
  - Is sour to taste.
  - Turns blue litmus paper into red.
  - Contains replaceable hydrogen.
  - Gives hydrogen ion (H+) in an aqueous solution.
  - Can donate a proton.
  - Can accept an electron

⭐ Additional Information

- **Bases**
  - A Base is a substance which:
  - Is bitter in taste.
  - Turns red litmus paper into the blue.
  - Gives hydroxyl ions (OH−) in an aqueous solution.
  - Can accept a proton.
  - Can donate electrons.

---

68. **Answer: c**

Explanation:

The correct answer is **Only D**.

⭐ Key Points

- **Gravity:**
  - The acceleration due to gravity is the rate of increase of velocity of a body falling freely towards the earth.
  - It is represented by: $g = \frac{GM_e}{R_e^2}$

⭐ **Additional Information**

- **Gravitational Force:**
  - Mathematically, it is represented as:
  - $F = \frac{GMm}{r^2}$
  - Where,
    - F is the gravitational force
    - G is gravitational constant
    - M is the mass of the first particle
    - m is the mass of the second particle
    - r is the distance between them.
  - This is called **Newton's universal law of gravitation.**
  - The **value of G is 6.67 × 10 $^{-11}$ N m ^{2}/kg ^{2}.**
  - The value of g on the Moon is 1/6th of that on the earth.

⭐ **Mistake Points**

- **"g" is the Gravitational acceleration** but **"G" is the Gravitational constant.**
  - **g can vary from place to place;** on **Moon, it is 1.62 m/s², but on earth, it is 9.807 m/s²**
  - **But G remains constant.**

---

69. **Answer: c**

Explanation:

2Given:

(3 34 + 3 35)

Concept used:

Index

Calculation:

$(3^{34} + 3^{35})$

$\Rightarrow 3^{34}(1 + 3)$

$\Rightarrow 3^{34} \times 4$

So,

$\sqrt{(3^{34} + 3^{35})}$

$\Rightarrow \sqrt{(3^{34} \times 4)}$

$\Rightarrow 3^{17} \times 2$

∴ The required value of $(3^{34} + 3^{35})$ is 2×3^{17}.

---

70. **Answer: d**

Explanation:

The correct answer is **Lucknow**.

- **The headquarter of Small Industries and Development Bank (SIDBI) is located in Lucknow.**

⭐ **Key Points**

- **Small Industries Development Bank of India (SIDBI):**
  - It was formed in the year **1990** .
  - It is the **apex regulatory body** for the licensing and regulation of micro, small and medium enterprise finance companies in India.
  - It comes under the jurisdiction of the **Ministry of Finance** .
  - Its headquarters is located at **Lucknow, Uttar Pradesh.**
  - **SIDBI** is **regulated and supervised** by the **Reserve Bank of India** .

⭐ Additional Information

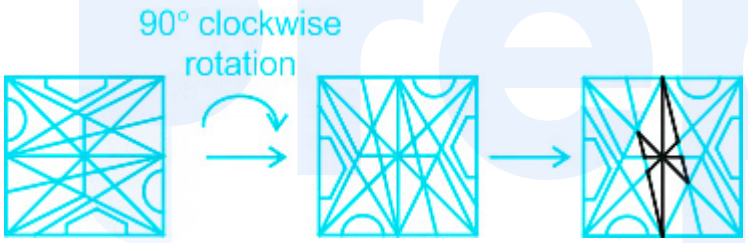
- **Reserve Bank of India (RBI):**
  - RBI was set up on the basis of the **Hilton Young Commission** recommendation in April **1935**, with the enactment of the **RBI Act, 1934**.
  - Its **first Governor** was **C.D. Deshmukh**.
  - The **headquarters** of RBI is in **Mumbai**.
  - Current **Governor is Shaktikanta Das**

---

71. **Answer: c**

Explanation:

The embedded answer figure is shown below:-



No.	Option	Question	Answer
1.			Not Embedded
2.			Embedded
3.			Not Embedded
4.			Not Embedded

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

---

72. Answer: d

Explanation:

The correct answer is **Rajiv Gandhi Sports Campaign**.

⭐ **Key Points**

- Rajiv Gandhi Sports Campaign is a centrally sponsored scheme in place of **Panchayat Yuva Krida and Khel Abhiyan (PYKKA).**
- It was launched in **2014** .

- The scheme was launched to encourage sports players and find out the talent residing in small villages and districts.
- The scheme was merged with Khelo India in the year 2016.

⭐ Additional Information

- **Khelo India program** was launched in **2017-18.**
- **Major Dhyan Chand Khel Ratna Award (Rajiv Gandhi Khel Ratna):**
  - The Rajiv Gandhi Khel Ratna Award is **India's highest honour** given for **achievement in sports** .
  - The award was instituted in the year **1991- 92** and was awarded by the Government of India.
  - **Vishwanathan Anand** was the **first person to win the Rajiv Gandhi Khel Ratna award.**
  - The award was **rechristened** as **Major Dhyan Chand Khel Ratna Award** in the year **2021.**

---

73. Answer: a

Explanation:

The correct answer is **331 ms $^{-1}$**.

⭐ Key Points

- **Sound Wave**
  - It is a **longitudinal mechanical wave** .
  - The speed of sound in air is **331 m/s.**
  - The longitudinal mechanical waves which lie in the range of **20 Hz to 20,000 Hz** are called audible or sound waves.
  - **It cannot travel in a vacuum.**
  - The longitudinal mechanical waves having frequencies **less than 20 Hz are called infrasonic.** These are produced by earthquakes, volcanic, eruptions, Ocean waves, elephants, and whales.

- The longitudinal mechanical waves having frequencies greater than 2000 Hz are called **ultrasonic waves** .

---

74. Answer: a

Explanation:

The correct answer is Oxygen.

- **When sulfuric oxide reacts with zinc, oxygen gas is formed.**

⭐ Key Points

- The following reaction can be given by
- $SO_2 + Zn \rightarrow ZnS + O_2$.
- Hence, when sulfuric oxide reacts with zinc, oxygen gas is formed.

---

75. Answer: a

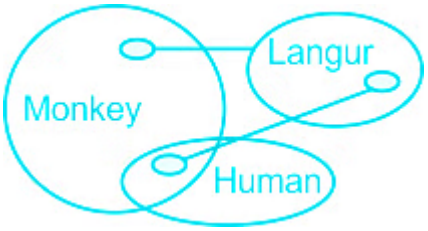
Explanation:

The least possible Venn diagram is as follows:

Conclusions:

1. Some monkeys can be humans. → Follows (The possibility that some monkeys can be humans exists. This is shown in the below possibility diagram.)

The possibility diagram is as follows:



2. Some Langur can be monkeys. → Follows (The possibility that some langur can be monkey exists. This is shown in the below possibility diagram.)

The possibility diagram is as follows:

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

⭐ Additional Information

---

76. **Answer: c**

Explanation:

Given:

Latika has 25 boxes of 3 sizes (small, medium, and big).

Statement:

1. The number of large boxes is half the number of medium-sized boxes.

2. The number of small boxes is 10.

Calculation:

Taking only statement 1, we won't be able to figure the distinct numbers of small, medium & big boxes.

Similarly, taking only statement 2, we won't be able to figure the distinct numbers of small, medium & big boxes.

Now, taking both the statements, we can figure out the number of large, medium, and small-sized boxes accordingly.

The number of small Boxes = 10.

Remaining Boxes = 25 - 10 = 15.

Now, The number of large boxes is half the number of medium-sized boxes.

So, the number of Medium-Sized Boxes = 10.

And,

The number of Large Boxes = half the number of medium-sized boxes.

The number of Large Boxes = 10 / 2 = 5.

∴ Statements 1 and 2 together are sufficient.

---

77. **Answer: a**

Explanation:

The correct answer is**it is a superficial phenomenon**.

⭐ Key Points

- **Evaporation**
  - The process of vapourisation takes place only from the exposed surface of the liquid and that at all temperatures is called evaporation.
  - It is a **superficial phenomenon.**
  - Evaporation causes cooling.

⭐ Additional Information

- **Vaporisation:**

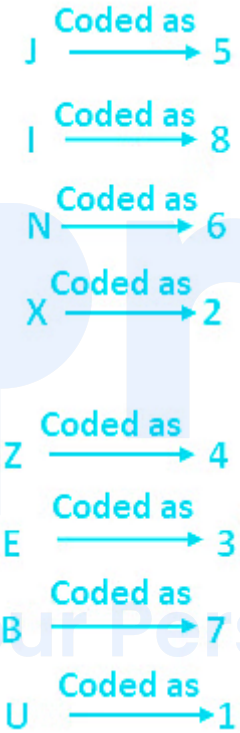
- The process by which a substance is changed from a liquid state to a vapour state is called vaporisation.

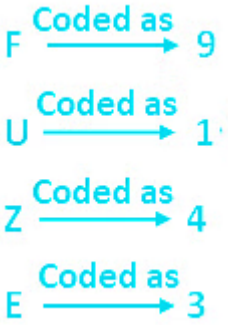
---

78. **Answer: b**

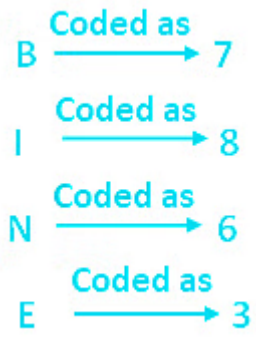
Explanation:

The logic followed here is:-





Similarly,



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

---

79. Answer: a

Explanation:

The correct answer is 67.5 m/s.

Concept:

Kinematic equations of motion:

- These equations define the relationship between initial velocity u, final velocity v, time t, and displacement s of an object with respect to its motion in uniform acceleration a.
- Following are the three kinematic equations for uniformly accelerated motion:

⇒ v = u + at

⇒ s = ut + 0.5at 2

⇒ v 2 - u 2 = 2as

Calculation:

Given

Time t = 13.5 s for going up and coming down

So for going up = t = 13.5/2 = 6.75

For going up initial velocity u = ?

At highest point velocity = v = 0

We know that,

v = u - gt

⇒ 0 = u - (10 × 6.75)

⇒ u = 67.5 m/s

---

80. **Answer: c**

Explanation:

The correct answer is a change in the sequence of nitrogenous bases.

- Gene mutation is caused by the change in the sequence of nitrogenous bases.

⭐ Key Points

- **Gene Mutation:**
  - It is a change in **one or more genes** .
  - It is **caused by the change in one or more nucleotides of DNA.**
- **Deoxyribonucleic Acid (DNA):**
  - It is a long polymer made from repeating units called **nucleotides** .
  - Each **nucleotide consists of a nucleoside and a phosphate group, joined together by ester bonds.**
  - It has four bases, i.e. **adenine, guanine, cytosine and thymine.**
  - DNA double-helix model was discovered by **James D Watson and Francis Crick.**
  - He was awarded the **Nobel Prize for this discovery.**

---

81. **Answer: c**

Explanation:

The statement implies that the said book is the ***most*** informative book on environmental pollution that has ever been available.

- This means among all the available books on environmental pollution, this is the most informative. Hence, there are other books available on the topic. So, Assumption I is implicit.
- Nothing can be said about the number of books that are available or that can be written on environmental pollution from the given statement. Hence, assumption II is not implicit.

Hence the correct answer is **option 3** .

⭐ Additional Information

- *In the case of comparative sentences with the word 'never', try to convert it to an affirmative sentence. It helps in understanding the statement easily and clarifies the logic.*

---

82. **Answer: d**

Explanation:

The correct answer is **Kinetic energy**.

- **When a compressive spring is released it converts its potential energy into Kinetic energy.**

⭐ Key Points

- **Kinetic Energy:**
  - If a body of mass m is moving with velocity v, then kinetic energy

- $KE = 1/2mv^2 = \frac{P^2}{2m}$, where p is the linear momentum.
- When **momentum is doubled, kinetic energy becomes four times** .
- If a body is moving in a horizontal circle then its kinetic energy is the same at all points, but if it is moving in a vertical circle, then the kinetic energy is different at different points.

- **Potential Difference:**
  - Work done in bringing a unit positive charge from one point to another point is the potential difference between the two points.
  - Its SI unit is **volt.**
  - It is a **scalar quantity.**

---

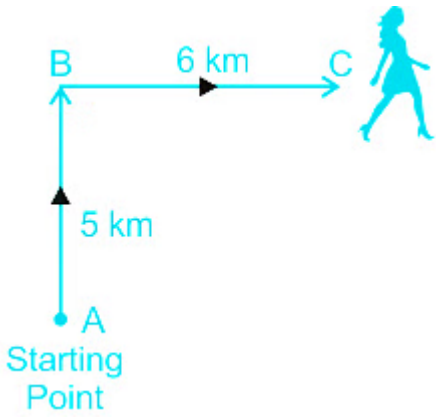
83. Answer: d

Explanation:

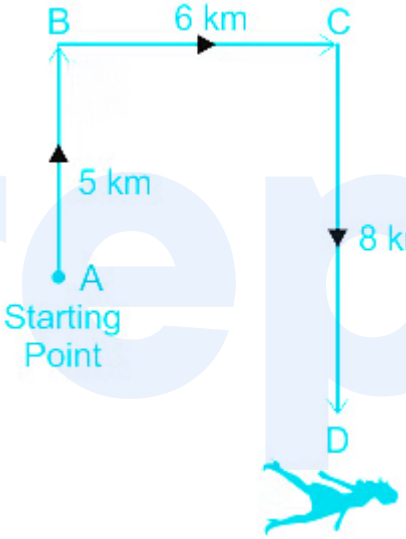
The diagram is given below:-

1) Mr. X runs a marathon starting from point A. He runs 5 km in the north direction.

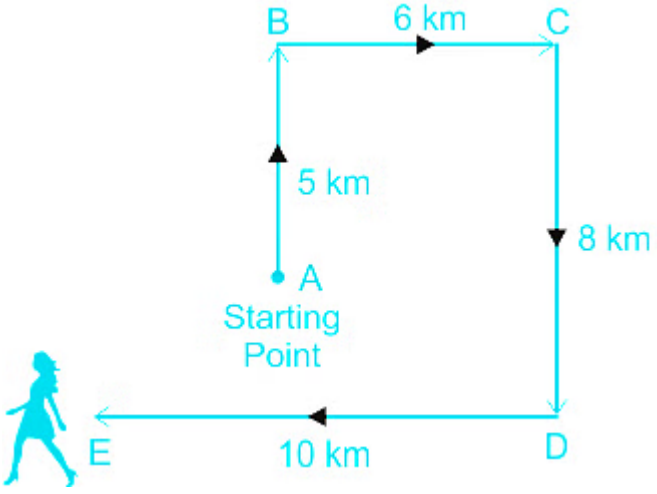
2) Reaches point B, then turns right and walks 6 km to reach point C.



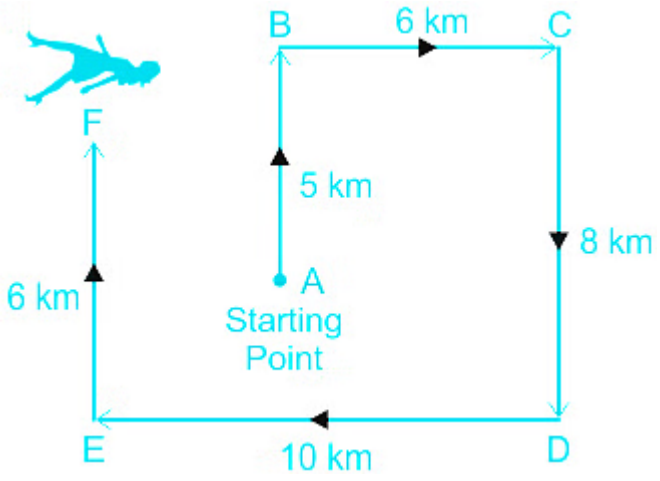
3) Then turns right and runs 8 km to reach point D.



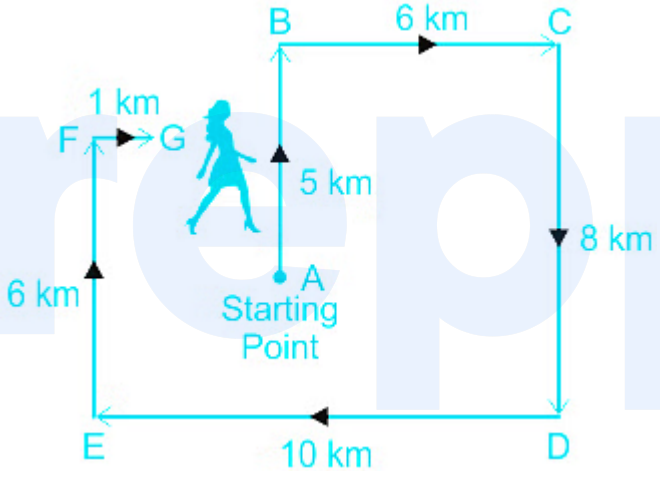
4) Then turns right and runs 10 km and reaches point E.



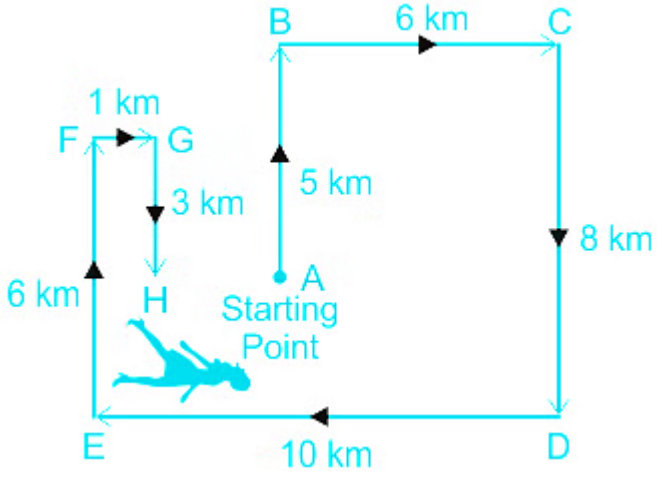
5) Then turns right and runs 6 km and reaches point F.



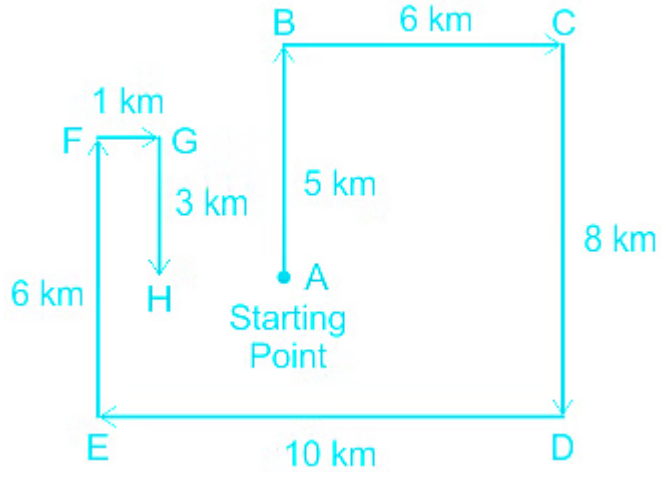
6) Then turns right and runs 1 km and reaches point G.



7) Then turns right and runs 3 km and reaches point H.



Final, Diagram is represent below:



If Mr X turns to the right from point E, then he is facing north direction now.

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

---

84. **Answer: b**

Explanation:

Given:

Train A moving at a speed of 36 km/hr crosses a platform in 80 s.

It takes 24 s to cross a person moving in the opposite direction with a speed of 18 km/hr.

Concept used:

Distance = Speed × Time

Kilometer per hour (kmph) = 3.6 × Meter per second (mps)

While a train crosses a platform, it crosses the sum of its length and the length of the platform

While a train crosses a person, it crosses its own length.

Relative speed is the sum of their individual speeds while two bodies are coming from the opposite direction.

Calculation:

Speed of the train in mps = 36 ÷ (3.6) = 10 mps

Speed of the person in mps = 18 ÷ (3.6) = 5 mps

So, relative speed while crossing the person = (10 + 5) = 15 mps

So, the length of the train = 24 × 15 = 360m

Let the length of the platform be P meter.

According to the question,

(360 + P) = 10 × 80

⇒ P = 440

∴ The length of the platform is 440 m.

---

85. Answer: a

Explanation:

Given:

Total number of balls = 210

Ranjit gets 56 more balls than Rohan

Concept used:

Calculation:

Let Rohan gets P balls.

So, Ranjit gets = (P + 56) balls

According to the question,

P + (P + 56) = 210

⇒ P = 77

⇒ P + 56 = 133

So, Rohan gets 77 balls and Ranjit gets 133 balls

So, the ratio of the number of balls of Ranjit to Rohan

⇒ 133 : 77

⇒ 19 : 11

∴ **The ratio of the number of balls Ranjeet gets to the number of balls Rohan gets after the division will be 19 : 11.**

---

86. Answer: a

Explanation:

- In an ordinary year, there are 365 days and on dividing 365 by 7, we get remainder = 1, so this extra one day is taken as an odd day.
- Similarly, in a leap year, there are 366 days and on dividing 366 by 7, we get remainder = 2, so these extra days are taken as the odd days.
- Thus, the remainder, which we get after dividing the number of days by 7 is considered as odd days.
- 2007 = 2000 + 7 years
  - In 2000 years the odd days = **0**
  - In 7 years (from 2001 to 2007), = 7/4 = 1 leap year and 6 normal years.
  - In 1 leap year, odd days = 2, and 6 normal years = 6 odd days
  - So total = 2 + 6 = 8 odd days i.e. 8/7 = **1**odd day
- In 2008, the number of days up to 18 April = 31 (Jan) + 29 (Feb - leap year) + 31(Mar) + 18(Apr) = 109/7 = **4** odd days.

- Total in 2008 years up to 18 April = 0 + 1 + 4 = 5 odd days.

The codes for the weekdays are as follows:

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0	1	2	3	4	5	6

- The day of the week on 18 April 2008 was Friday.

Hence, "option 1" is the correct answer.

---

87. Answer: b

Explanation:

The correct answer is S = D/T.

- **The correct relation of speed, distance and time is S = D/T.**

⭐ Key Points

- **Speed** :
  - Distance travelled by the moving object in unit time interval is called speed.
  - It is a scalar quantity and its SI unit is **metre/second (m/s).**
  - It is given by the formula: $Speed = \frac{Distance}{Time}$

---

88. Answer: c

Explanation:

The correct answer is **6.673 × 10 -11 Nm 2kg $^{-2}$.**

- **The value of G is 6.673 × 10 -11 Nm 2 kg $^{-2}$.**

⭐ Key Points

- **Gravitational Force:**
  - Mathematically, it is represented as:
  - $F = \frac{GMm}{r^2}$
  - Where,
    - F is the gravitational force
    - G is gravitational constant
    - M is the mass of the first particle
    - m is the mass of the second particle
    - r is the distance between them.
  - This is called **Newton's universal law of gravitation.**
  - The **value of G is 6.67 × 10 $^{-11}$ N m ^{2}kg $^{-2}$.**

⭐ Additional Information

- **Variation in g :**
  - **The value of g decreases with height or depth from the earth's surface.**
  - g is **maximum at poles** . Hence, it will be maximum at the Camp in Antarctica
  - g is **minimum at the equator.**
  - g **decreases due to the rotation of the earth** .
  - g decreases if the angular speed of earth increases and increases if the angular speed of earth decreases

---

89. Answer: b

Explanation:

The correct answer is **Vijay Gokhale**.

- **Vijay Gokhale was the Foreign Secretary in the Ministry of External Affairs as of February 2018.**

⭐ Key Points

- **Vijay Gokhale** :
  - He is an **IFS officer.**
  - He served as the **32nd Foreign Secretary of India.**
  - He also served as the Ambassador of India to China.
  - He held the office from **January 2018 – January 2020** .
- **Harsh Vardhan Shringla** is the current Foreign Secretary of India. (as of Jan 2022)

⭐ Additional Information

- **T.S. Tirumurti** is currently the **Permanent Representative of India to the United Nations.**
- **S. Jaishankar** is the current **Foreign Minister.**
- **Preeti Saran** was **Secretary of the Ministry of External Affairs.**

---

90. Answer: a

Explanation:

The logic followed here is:-

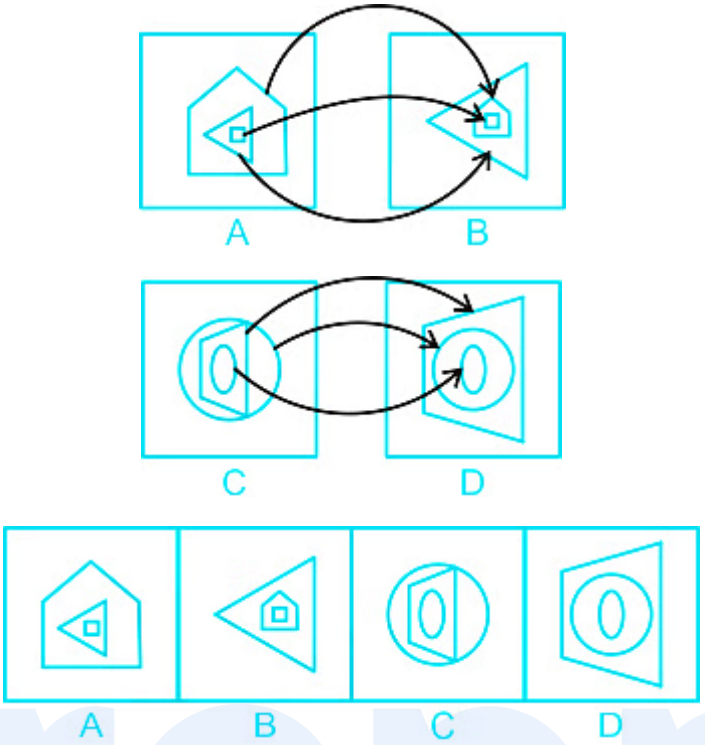
- Innermost shape of A = Innermost shape of B.
- Middle shape of A = Outermost shape of B.
- Outermost shape of A = Middle shape of B.

Similarly,

- Innermost shape of C = Innermost shape of D.
- Middle shape of C = Outermost shape of D.
- Outermost shape of C = Middle shape of D.

The figure is:-

DIAGRAM



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

Note: This question was ignored for students in the official paper due to discrepancy. We have modified the question to make it logically correct.

---

91. Answer: d

Explanation:

Given:

The price of an article decreases by 25%

Concept used:

Basic percentage application

Calculation:

Let the price of the articles be 100P.

So, the new price = 100P - 25% of 100P = 75P

Now, it has to go up by = (100P - 75P) = 25P

So, percentage increase = (25P ÷ 75P) × 100% = 100/3 %

∴ By (100/3)% the new price will have to be increased to maintain the original price.

Using percentage change graphics method,

⭐ Shortcut Trick

100 → 75 → 100

So, percentage change = {(100 - 75) ÷ 75} × 100% = (100/3)%

∴ By (100/3)% the new price will have to be increased to maintain the original price.

---

92. Answer: b

Explanation:

The correct answer is **Kangaroo.**

- **Kangaroo gives birth to underdeveloped children.**

⭐ Key Points

- Kangaroos are known as **marsupials** .
- Kangaroo gives birth to **underdeveloped children** .
- The young kangaroo is born at a very immature stage.
- At this stage, it is only about 2 centimetres long and weighs less than a gram.

⭐ Additional Information

- **Platypus** is the mammal that lay eggs.
  - It is found only in **Australia** .
- **Rabbits** are mammals.
- **Echidnas** is also a mammal that **lay eggs.**

93. **Answer: b**

Explanation:

The correct answer is **Ahmedabad**.

- **Ahmedabad is called 'Manchester of India'.**

⭐ **Key Points**

- **Ahmedabad** is known as the **Manchester of India.**
- The city is known because of the well-known cotton textile centre of **Manchester, Great Britain.**
- The city is the **second-largest producer of cotton** in India.
- The city is also known as **Boston of East.**
- The city was earlier known as **Karnavati** .

⭐ **Additional Information**

- **Mumbai city** is also known as ' **The City Of Dreams** '.
- **Kolkata** is also known as ' **City of joy** '.
- **Surat** is known as the ' **Diamond City of India'.**

94. **Answer: b**

Explanation:

The correct answer is **Orissa**.

- **Political leader Naveen Patnaik belongs to Orissa.**

⭐ **Key Points**

- **Navin Patnaik** is the **Chief Minister of Odisha.**
- He is the president of the Biju Janata Dal.

- He is the longest-serving chief minister of Odisha.

⭐ Additional Information

- **Yogi Adityanath** is the **Chief Minister of Uttar Pradesh. (as of Jan 2022)**
- **Mamta Banerjee** is the **Chief Minister of West Bengal. (as of Jan 2022)**
- **Himanta Biswa Sarma** is the **Chief Minister of Assam. (as of Jan 2022)**

---

95. Answer: d

Explanation:

The statement implies that the teacher is encouraging the students to clean every week.

- Cleanliness in school is important to provide a healthy and safe environment for students. By enforcing this practice, it can be understood that the teacher wants the students to understand the importance of cleanliness. So, assumption I is implicit.
- The given statement does not imply that the classroom needs to be cleaned by the student because there is no one else to do the job. The availability of cleaners is not discussed in the statement. Assumption II is therefore not implicit.

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

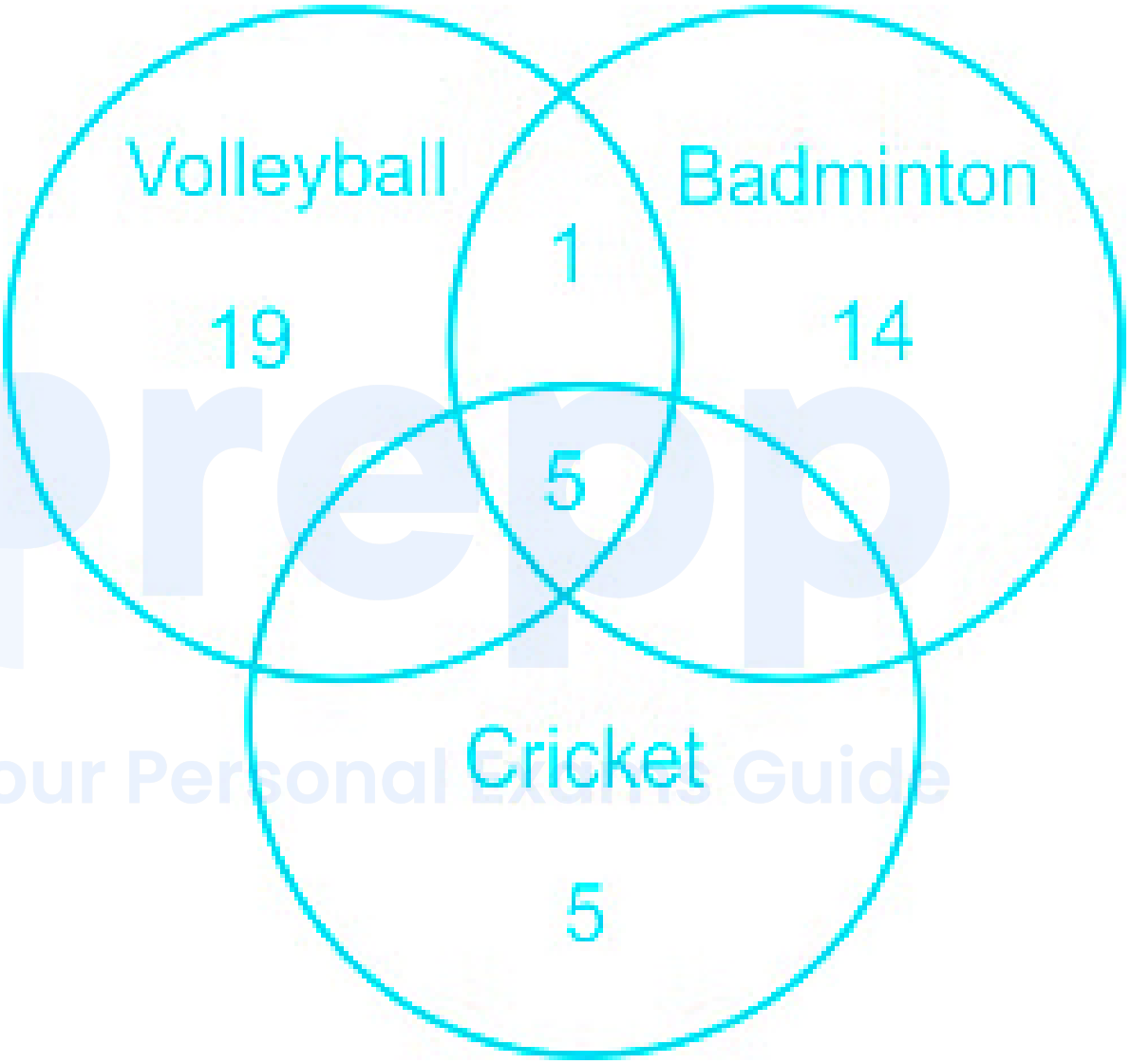
---

96. Answer: c

Explanation:

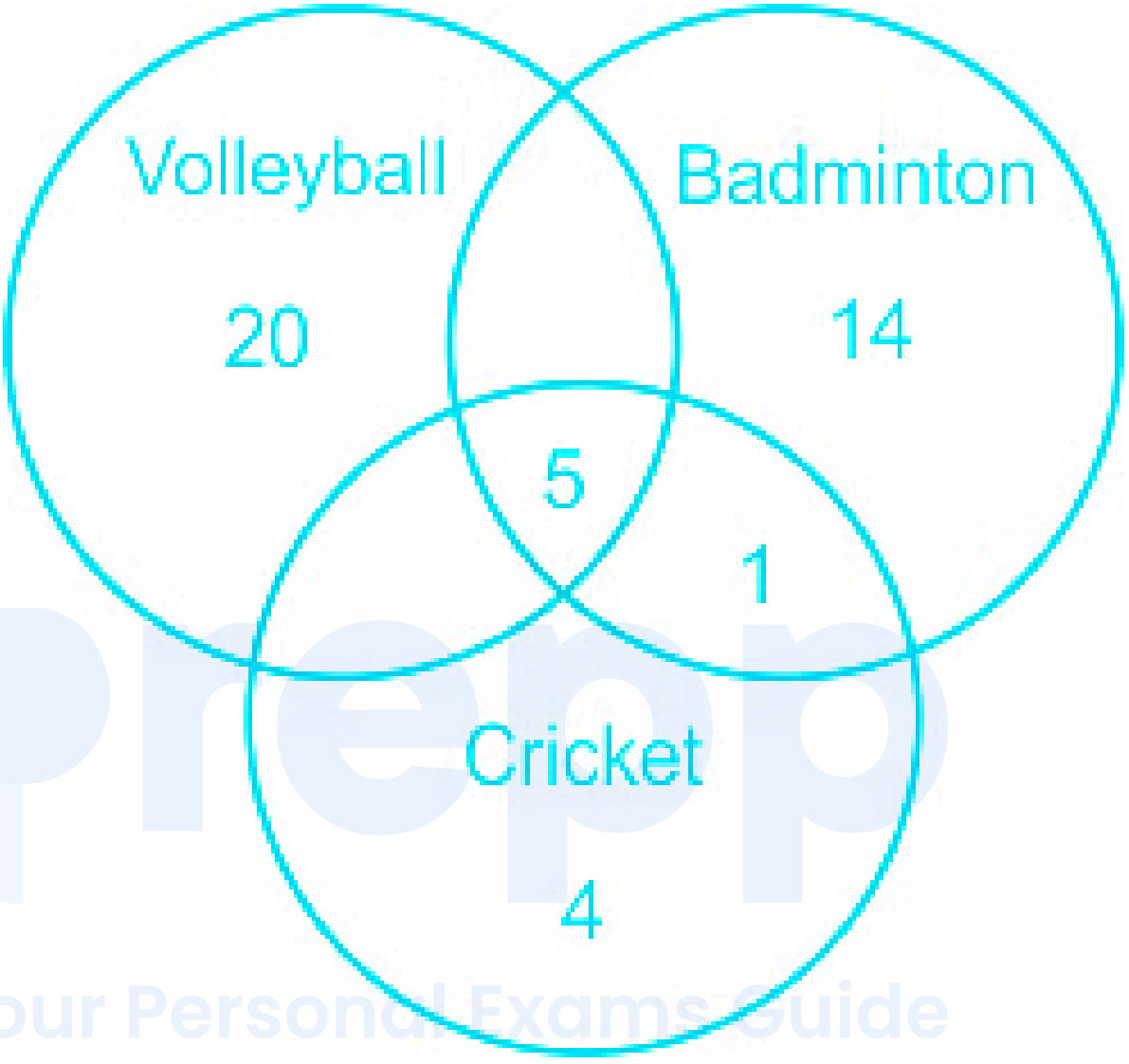
- From the statement " 6 plays at least two of these games. ", we can understand that these two games can be Volleyball and Badminton, or Badminton and Cricket or Volleyball and Cricket.
- Case 1:

- Children who play Volleyball = 25
- Children who play at least Volleyball and Badminton = 6 = 1 + 5 (all three games)
- Children who play only Volleyball = 25 - 6 = **19**
- Then children who play only Badminton = 20 - 6 = **14**
- Children who play only Cricket = 10 - 5 = **5**
-



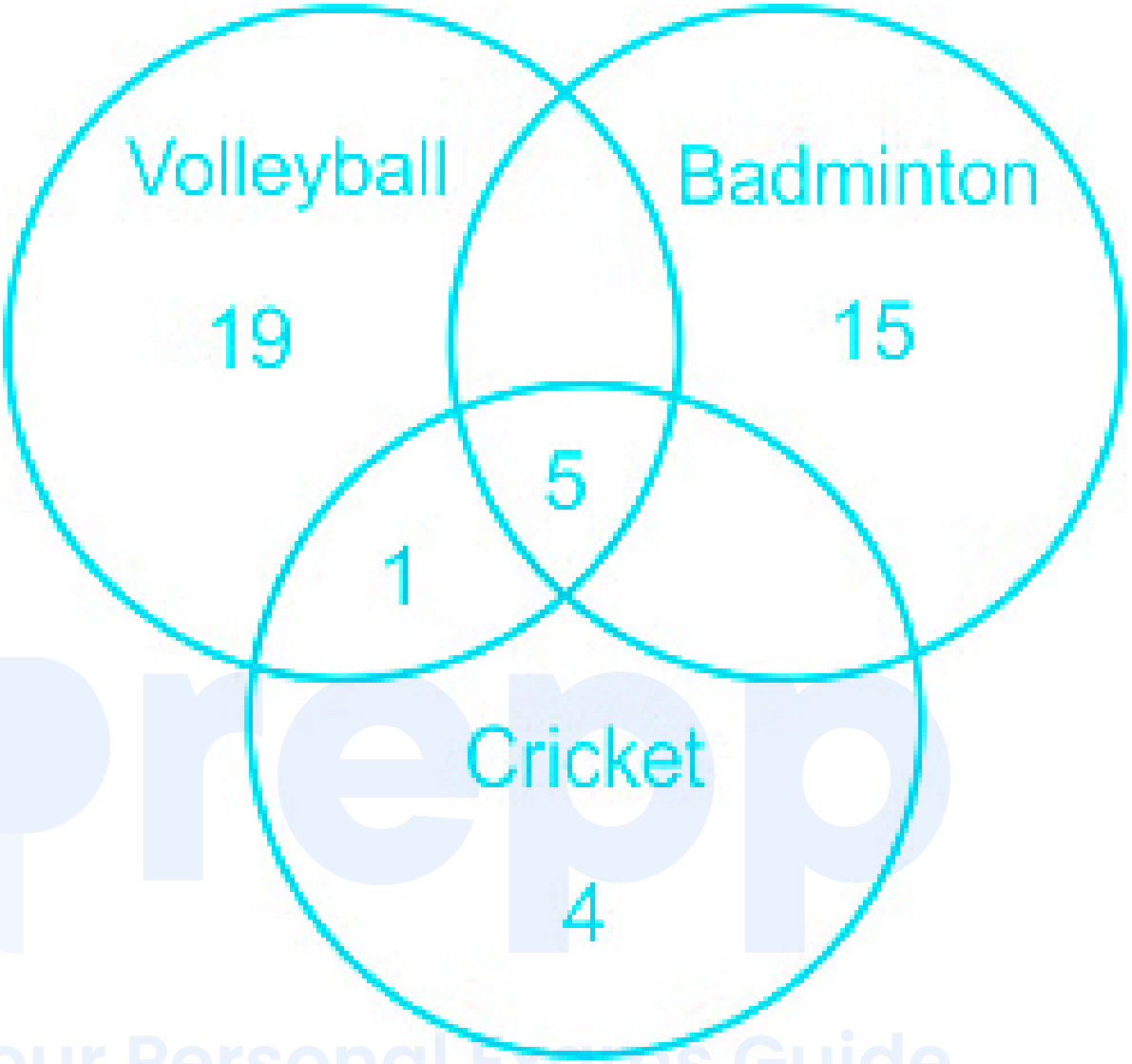
- Therefore, children who play exactly one game = 19 + 14 + 5 = 38.

- Case 2:
  - Children who play Badminton = 20
  - Children who play at least Badminton and Cricket = 6 = 1 + 5 (all three games)
  - Children who play only Badminton = 20 - 6 = **14**
  - Then children who play only Cricket = 10 - 6 = **4**

- Children who play only Volleyball = 25 - 5 = **20**
- 

- Therefore, children who play exactly one game = **14 + 4 + 20 = 38.**

- Case 3:
  - Children who play Cricket = 10
  - Children who play at least Cricket and Volleyball = 6 = 1 + 5 (all three games)
  - Children who play only Cricket = 10 - 6 = 4
  - Then children who play only Volleyball = 25 - 6 = 19
  - Children who play only Badminton = 20 - 5 = 15



- Therefore, children who play exactly one game = 4 + 19 + 15 = 38.

Hence, **38** children play exactly one game.

---

97. Answer: b

Explanation:

Given:

$a + b + c = 9$

$a^2 + b^2 + c^2 = 29$

Concept used:

$(a^3 + b^3 + c^3 - 3abc) = (a + b + c) \times (a^2 + b^2 + c^2 - ab - bc - ac)$

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2 \times (ab + bc + ac)$

$(a^3 + b^3 + c^3 - 3abc) = (a + b + c) \times (a^2 + b^2 + c^2 - ab - bc - ac)$

Calculation:

$a + b + c = 9$

$\Rightarrow (a + b + c)^2 = 9^2$

$\Rightarrow a^2 + b^2 + c^2 + 2 \times (ab + bc + ac) = 81$

$\Rightarrow 29 + 2 \times (ab + bc + ac) = 81$

$\Rightarrow (ab + bc + ac) = 26$

$\Rightarrow (a^2 + b^2 + c^2) - (ab + bc + ac) = 29 - 26$

$\Rightarrow (a^2 + b^2 + c^2 - ab - bc - ac) = 3$

$\Rightarrow (a + b + c) \times (a^2 + b^2 + c^2 - ab - bc - ac) = 9 \times 3$

$\Rightarrow (a^3 + b^3 + c^3 - 3abc) = 27$

$\therefore$ The required value of $(a^3 + b^3 + c^3 - 3abc)$ is 27.

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98. Answer: c

Explanation:

The correct answer is **Allotropy**.

- The presence of an element in two or more forms in which physical properties are different but chemical properties are the same is called Allotropy.

⭐ **Key Points**

- **Allotropy**
  - The substances which have the same chemical properties, but different physical properties are called allotropes and this property is called allotropy.
  - Example: Allotropes of Carbon are diamond, graphite and charcoal.

⭐ **Additional Information**

- **Triply-bonded carbon:**
  - Hydrocarbons containing at least one carbon-carbon triple bond between two carbon atoms are called **alkynes** .
  - The general formula of alkynes is C_nH_{2n-2}.
- The hydrocarbons in which carbon atoms are singly bonded are called saturated hydrocarbons.
- Saturated hydrocarbons are also called **alkanes or paraffin** .
  - The general formula of alkane– C_nH_{2n+2}.

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99. **Answer: c**

Explanation:

The correct answer is **East India Company**.

- **East India Company was initially formed to trade with the East Indies, but eventually became confined mainly to trade with the Indian subcontinent and China.**

⭐ **Key Points**

- **East India Company** :
  - It was earlier known as the English East India Company.
  - The company was initially formed to trade with the East Indies, but eventually became confined mainly to trade with the Indian subcontinent and China.
  - It was formed to share in the **East Indian spice trade.**

- Various European powers formed their East India companies and came to India.
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The Advent of Europeans	
Countries	**Year of Arrival**
Portuguese	1498
English	1600
Dutch	1602
Danish	1616
French	1664

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100. Answer: c

Explanation:

Total sales made by different companies in 2017 = Rs. 5000 crores.

Total sales made by Apple in 2017

⇒ Rs. (5000 × 18%) crore

⇒ Rs. 900 crore

∴ The sales made by Apple is Rs. 900 crore.