



Your Personal Exams Guide



NDA



CDS



SSC CGL



CBSE UGC NET



IAS



SSC CHSL



CTET



MPSC



AFCAT



CSIR UDC NET



IBPS PO



UP POLICE



SSC MTS



SBI PO



BPSC



UP TET



IBPS RRB



IBPS CLERK



IES



UPSC CAPF



SSC Stenogr..



RRB NTPC



SSC GD



RBI GRADE B



RBI Assistant



DSSSB

RRB NTPC 2021 (CBT 1) Previous Year Paper (12 Jan 2021) 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	Test	100	100	0.33	1

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

Your Personal Exams Guide

Test

1. A can complete 25% of a task in 10 days. B can complete 40% of the task in 40 days and C can complete $\frac{1}{3}$ of the task in 13 days. Who among them has the fastest speed to complete the same task? (+1, -0.33)
- a. B
 - b. A
 - c. All have the same speed
 - d. C
-
2. If $(2, 7)$, $(5, 1)$, $(x, 3)$ are the vertices of a triangle whose area is 18 (sq. units), then find the possible value of x . (+1, -0.33)
- a. -7
 - b. 7
 - c. 10
 - d. -10
-
3. The cost price of a car was Rs. 150000. Raju sold it to Montoo at a profit of 5%, and later Montoo sold it back to Raju at 2% loss. Find The total profit or loss in the entire transaction. (+1, -0.33)
- a. Raju's gain Rs. 4,500
 - b. Raju's loss Rs. 4,350
 - c. Raju's gain Rs. 3,150

d. Raju's gain Rs. 4,350

4. Given that $\triangle ABC \sim \triangle DEF$, if $BC = 12.5$ cm and $EF = 10$ cm, then the areas of $\triangle ABC$ and $\triangle DEF$ are in the ratio of: (+1, -0.33)

a. 3 : 4

b. 25 : 16

c. 16 : 25

d. 1 : 2

5. Sariska National Park is located in : (+1, -0.33)

a. Karnataka

b. Uttarakhand

c. Rajasthan

d. Sikkim

6. Read the given statements carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, select the conclusion from the given options which logically **does NOT follow** from the statements. (+1, -0.33)

Statements:

(i) All balls are flowers.

(ii) All bats are balls.

- a. No ball is a flower.
 - b. Some flowers are bats.
 - c. Some ball are bats.
 - d. All bats are flowers.
-

7. Who was Speaker of 16th Lok Sabha? (+1, -0.33)

- a. Manohar Joshi
 - b. Sumitra Mahajan
 - c. Somnath Chatterjee
 - d. Meira Kumar
-

8. The Challenger Deep in the _ _ _ _ _ is considered to be the deepest point known on Earth. (+1, -0.33)

- a. Mariana Trench
 - b. Lake Eyre
 - c. Puerto Rico Trench
 - d. Java Trench
-

9. In India, all the bills introduced and passed by both the houses (Lok Sabha & Rajya Sabha) can come into force only after they receive the assent of: (+1, -0.33)

- a. President

- b. Parliament
- c. Supreme Court
- d. Prime Minister

10. In a certain code language, 'BUREAK' is written as 'PZVIFY'. What is the code for 'CASPTL' in that code language? (+1, -0.33)

- a. OHKGZX
- b. PHKGYX
- c. PGKHYX
- d. OGKHZX

11. The present age of Myra and Meera are in the ratio of 6 : 5 and after fifteen years the ratio will be 9 : 8. Meera's age is: (+1, -0.33)

- a. 30 years
- b. 35 years
- c. 25 years
- d. 20 years

12. The Ajanta caves are located in _____. (+1, -0.33)

- a. Chhattisgarh
- b. Delhi

- c. Tamilnadu
 - d. Maharashtra
-

13. Which of the following is the oldest Nuclear research reactor of India? (+1, -0.33)

- a. Kamini
 - b. Cirus
 - c. Dhruva
 - d. Apsara
-

14. Identify the number that **DOES NOT** belong to the following series. (+1, -0.33)

10, 17, 26, 39, 50

- a. 26
 - b. 39
 - c. 17
 - d. 50
-

15. ISRO has established the _ _ _ _ _ , at Bharati station, Antarctica, for receiving IRS data. (+1, -0.33)

- a. NCAOR
- b. NRSC
- c. AGEOS

d. IMGEOS

16. What is the value of the following expression? (+1, -0.33)

$$(243)^2 \div (27)^2 \times 6 \div 18$$

- a. 81
 - b. 162
 - c. 27
 - d. 1
-

17. 'Glove' is related to 'Hand' in the same way as 'Cap' is related to (+1, -0.33)

'-----'.

- a. Foot
 - b. Neck
 - c. Head
 - d. Back
-

18. Which of the following is the correct full form of 'MRTP' in MRTP Act 1969? (+1, -0.33)

- a. Money Reservation Trade Policy Act
- b. Money Reservation Trade Practices Act
- c. Monopolies and Restrictive Trade Practices Act
- d. Monopolies Reservation Trade Practices Act

19. Which one country of the following was not a part of former USSR? (+1, -0.33)

- a. Moldova
- b. Georgia
- c. Finland
- d. Russia

20. If $\sin(A + B) = \frac{\sqrt{3}}{2}$ and $\cos(A - B) = \frac{\sqrt{3}}{2}$ then which of the following will be possible values of A and B? (+1, -0.33)

- a. $A = 45^\circ, B = 15^\circ$
- b. $A = 45^\circ, B = 30^\circ$
- c. $A = 10^\circ, B = 45^\circ$
- d. $A = 50^\circ, B = 10^\circ$

21. In a certain code language, 'Car have wheels' is written as '@ mu #', 'Wheels are red' is written as 'Su bc mu', 'I have red car' is written as '7 @ Su #'. Which among the following is the code for 'Wheels car' in that language? (+1, -0.33)

- a. # @
- b. mu Su
- c. mu #
- d. Su #

22. If $19\frac{2}{3} - 7\frac{1}{4} = x + 2\frac{1}{2}$, then what will be the value of x? (+1, -0.33)

- a. $11\frac{9}{12}$
- b. $\frac{11}{12}$
- c. $9\frac{1}{12}$
- d. $9\frac{11}{12}$

23. If the radii of two circles are 4.5 cm and 3.5 cm and the length of the transverse common tangent is 6 cm, then the distance between the two centers will be: (+1, -0.33)

- a. 8 cm
- b. 12 cm
- c. 10 cm
- d. 9 cm

24. In Excel, what shortcut key is used to fill the selected cell with active cells to the right? (+1, -0.33)

- a. Ctrl + S
- b. Ctrl + R
- c. Ctrl + D
- d. Ctrl + V

25. If $(3x + 2y) : (3x - 2y) = 5 : 3$ then find x : y. (+1, -0.33)

- a. $\frac{16}{3}$
 - b. $\frac{8}{3}$
 - c. $\frac{32}{3}$
 - d. $\frac{4}{3}$
-

26. According to the Constitution of India, the minimum age requirement for being a member of Panchayat is _____. (+1, -0.33)

- a. 24 years
 - b. 18 years
 - c. 21 years
 - d. 28 years
-

27. Which of the following terms best describes the biological study of animal behaviour? (+1, -0.33)

- a. Ethology
 - b. Ethnology
 - c. Entomology
 - d. Etiology
-

28. 10.53 divided by 0.09 gives: (+1, -0.33)

- a. 117

- b. 100.9
 - c. 1.019
 - d. 109
-

29. Shree Guru Nanak Dev Ji was born in Rai Bhoi Ki Talwandi (present day Nankana Sahib) in: (+1, -0.33)

- a. 1539
 - b. 1465
 - c. 1456
 - d. 1469
-

30. Who invented the modern mercury thermometer with a standardised scale? (+1, -0.33)

- a. Anders Celsius
 - b. Galileo Galilei
 - c. Grand Duke
 - d. Daniel Gabriel Fahrenheit
-

31. Hampi was declared a World Heritage site by _____. (+1, -0.33)

- a. IMF
- b. UNO

c. WHO

d. UNESCO

- 32.** Seven students A, B, C, D, E, F and G take a series of test. No two students get the same marks. A always scores more than B. G always scores more than A. Each time either C scores the highest and E scores the least or D scores the highest and F or B scores the least. (+1, -0.33)

If D is ranked sixth and B is ranked fifth according to their marks, then which of the following can be true?

- a. G is ranked first or fourth
 - b. E is ranked fourth or third
 - c. F is ranked third or fourth
 - d. A is ranked second or seventh
-

- 33.** According to India's Election Commission, political parties cannot release their manifesto in pre poll silence period of: (+1, -0.33)

- a. 60 h
 - b. 36 h
 - c. 24 h
 - d. 48 h
-

- 34.** In a certain code language FMOPRA is written as 834207 and KQMATL is written as 953761. How will QTMPRL be written as in that language? (+1, -0.33)

- a. 652301
 - b. 563201
 - c. 562301
 - d. 635210
-

35. Which of the following monument is built with some influence of Gujarati style to welcome King George V and Queen Mary to India? (+1, -0.33)

- a. Jallianwala Bagh
 - b. Sun Temple
 - c. India Gate
 - d. Gateway of India
-

36. Study the given information and answer the question that follows. (+1, -0.33)

- i) Six students P, Q, R, S, T, and U are in a class.
- ii) Q and R are lighter than U but taller than P.
- iii) S is taller than Q and heavier than R.
- iv) T is lighter than S but heavier than U.
- v) U is taller than S.
- vi) P is lighter than T but heavier than U.
- vii) P is taller than T.

Who among the students is the shortest?

- a. T
 - b. R
 - c. Q
 - d. P
-

37. When did Sir William Jones found Asiatic Society? (+1, -0.33)

- a. 1793
 - b. 1784
 - c. 1854
 - d. 1782
-

38. When did Nadir Shah invade India and sack Delhi? (+1, -0.33)

- a. 1739
 - b. 1765
 - c. 1750
 - d. 1754
-

39. If the average age of A, B and C is 22 years and the average age of B and C is 25 years, then find A's age after 9 years. (+1, -0.33)

- a. 35 years
- b. 50 years

- c. 45 years
- d. 25 years

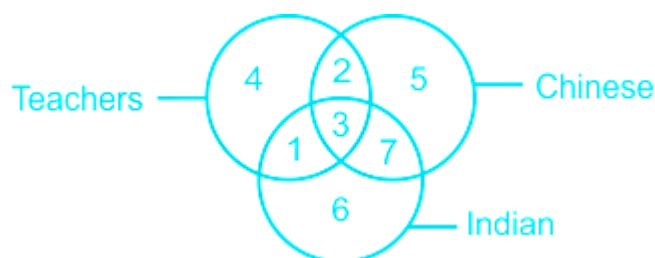
40. Which organisation has launched Samwad with students (SWS) as a part of its programme on New Year Day, 2019? (+1, -0.33)

- a. NCERT
- b. BARC
- c. DRDO
- d. ISRO

41. Who has written Bahuroopi Gandhi? (+1, -0.33)

- a. Jawaharlal Nehru
- b. Chakravarti Rajagopalachari
- c. Amrita Pritam
- d. Anu Bandyopadhyaya

42. Study the diagram and identify the region representing teachers who are not Indian and not Chinese. (+1, -0.33)



- a. 4, 2
- b. 4, 1
- c. 4, 2, 1
- d. 4

43. Privatisation of the public sector enterprises by selling off part of the equity of PSEs to the public is known as: (+1, -0.33)

- a. outsourcing
- b. commercialisation
- c. modernisation
- d. disinvestment

44. In an examination, 35% students failed in one subject and 42% failed in the other subject, 30% failed in both the subjects. If total number of students is 2500 then how many students passed only in one subject? (+1, -0.33)

- a. 1050
- b. 1750
- c. 750
- d. 425

45. Which of the following is the major hazard of nuclear power generation? (+1, -0.33)

- a. Limited availability

- b. Storage and Dispersal
- c. Installation
- d. Energy requirement

46. Who among the following freedom fighters was NOT involved in the Kakori Train Robbery? (+1, -0.33)

- a. Chandrashekhar Azad
- b. Ram Prasad Bismil
- c. Bhagat Singh
- d. Ashfaqullah Khan

47. The digit of hundred's place value of $19!$ is: (+1, -0.33)

- a. 1
- b. 0
- c. 4
- d. 9

48. LCM and HCF of two numbers are 1920 and 16 respectively. If one of the numbers is 240, then find the other number. (+1, -0.33)

- a. 128
- b. 182

c. 150

d. 112

49. When was WTO (World Trade Organization) established? (+1, -0.33)

a. 1995

b. 1948

c. 1999

d. 1983

50. Which of the following neighbouring countries is separated from India by a narrow channel of sea formed by the Palk Strait and the Gulf of Mannar? (+1, -0.33)

a. Nepal

b. Sri Lanka

c. Maldives

d. Pakistan

51. Who among the following received Mexico's highest civilian honour for foreigners in 2019? (+1, -0.33)

a. Pratibha Singh Patil

b. Narendra Modi

c. Amitabh Bacchan

d. Pranab Mukherji

52. What is the value of the following expression?

(+1, -0.33)

$$(-20)^3 + (13)^3 + (7)^3$$

- a. 4560
 - b. -5460
 - c. -4650
 - d. 4566
-

53. Which of the following plants has 'hidden reproductive organs'?

(+1, -0.33)

- a. Ipomoea
 - b. Marsilea
 - c. Pinus
 - d. Deodar
-

54. The perimeter of a rhombus is 120 m and the distance between any two parallel sides is 15 m. The area of the rhombus is:

(+1, -0.33)

- a. 450 cm^2
 - b. 450 m^2
 - c. 4.5 m^2
 - d. 45 m^2
-

55. Which of the following is the process of converting sugar into alcohol? (+1, -0.33)

- a. Oxidation
- b. Pasteurisation
- c. Bleaching
- d. Fermentation

56. During which financial year was Jal Kranti Abhiyan launched by the Government of India? (+1, -0.33)

- a. 2015-16
- b. 2003-2004
- c. 2018-19
- d. 2017-18

57. If $16 \sec^2 \theta - 40 \sec \theta + 25 = 0$ and θ is an acute angle, then what will be the value of $\tan \theta$? (+1, -0.33)

- a. $\frac{3}{4}$
- b. $\frac{4}{5}$
- c. $\frac{4}{3}$
- d. $\frac{3}{5}$

58. A shopkeeper gives 20% discount on MRP. Joginder buys a suitcase from the shop, at an additional discount of 20% on the reduced price. If the MRP of the suitcase is Rs. 1,200, then find the purchasing price paid by Joginder. (+1, -0.33)

- a. Rs. 864
- b. Rs. 800
- c. Rs. 768
- d. Rs. 600

59. Which of the following includes genetic engineering? (+1, -0.33)

- a. Gene revolution
- b. Bloodless revolution
- c. Globalisation
- d. Green revolution

60. Who among the following was the first Indian woman to win the Booker Prize? (+1, -0.33)

- a. Anita Desai
- b. Amrita Pritam
- c. Arundhati Roy
- d. Sarojini Naidu

61. Which of the following options defines Operating System? (+1, -0.33)

- a. It is a set of programs used to convert high level language to low level language.
- b. It is a set of programs that controls the way a computer works and runs other programs.
- c. It is a software that is used to convert source program instructions to set programs.
- d. It is the actual way of working on computers.

-
62. A company sold six different cars Swift, Santro, Creta, Audi, I10 and Magna during a period of Monday to Saturday. Only one car was sold on a particular day. No car was sold twice. Atleast four cars were sold after the car Santro. The car Magna was sold on Tuesday. The car Audi was sold immediately after the car Creta and car Creta was sold atleast before three cars. Both the cars Santro and I10 were sold atleast before one car. On which day was Swift car sold? (+1, -0.33)
- a. Thursday
 - b. Friday
 - c. Monday
 - d. Saturday

-
63. For which of the following diseases has U.S. FDA approved the first vaccine Dengvaxia in 2019? (+1, -0.33)
- a. Dengue
 - b. Cholera
 - c. Swine flu

d. Chikungunya

64. What is the value of the following expression?

(+1, -0.33)

$$394 \times 394 + 2 \times 394 \times 106 + 106 \times 106$$

- a. 25000
 - b. 500
 - c. 250000
 - d. 2500
-

65. PQ is the diameter of a circle whose centre is O. If a point R lies on the circle and $\angle RPO$ is 39° , then what will be the measure of $\angle RQP$?

(+1, -0.33)

- a. 51°
 - b. 129°
 - c. 125°
 - d. 151°
-

66. In a certain code language, VUFOTJM is written as XWHQVLO. How will ENTGYH be written as in that code language?

(+1, -0.33)

- a. GPVIJA
 - b. GPVJAI
 - c. GPVJIA
-

d. GPVIAJ

67. Find the smallest positive number which must be subtracted from the number 5970 for the difference to be a perfect square (+1, -0.33)

- a. 9
 - b. 25
 - c. 41
 - d. 16
-

68. In a reunion of class XII, out of 45 students, 30 students participated in the function. If all present in the function shake hands with one other, find the total number of handshakes. (+1, -0.33)

- a. 870
 - b. 435
 - c. 841
 - d. 900
-

69. When did Moplah revolt (Malabar Rebellion) in Kerala take place? (+1, -0.33)

- a. 1928
 - b. 1921
 - c. 1945
 - d. 1934
-

70. In $\triangle ABC$, $\angle BAC = 60^\circ$, and O is a point inside $\triangle ABC$. If $\angle OBC$ is two times $\angle OBA$ and $\angle OCB$ is two times $\angle OCA$, then what will be the measure of $\angle BOC$? (+1, -0.33)

- a. 60°
- b. 120°
- c. 80°
- d. 100°

71. In which of the following states is the famous Sun Temple situated? (+1, -0.33)

- a. Punjab
- b. Tamil Nadu
- c. Andhra Pradesh
- d. Odisha

72. In the field of computers and Internet, what does W3C stand for? (+1, -0.33)

- a. World Wide Web Content
- b. World Wide Web Centre
- c. World Wide Web Consortium
- d. World Wide Web Commission

73. A sum of money doubles itself at a compound interest in 8 years. In how (+1, -0.33)

many years will it become four times itself?

- a. 12
- b. 20
- c. 14
- d. 16

74. If we increase 50% of the numerator and 80% of the denominator of a fraction, then what fraction of the original will be the new fraction? (+1, -0.33)

- a. $\frac{6}{5}$
- b. $\frac{5}{6}$
- c. $\frac{7}{9}$
- d. $\frac{5}{8}$

75. The number between 6000 and 7000 that is divisible by each of 12, 21, 32 and 18 is: (+1, -0.33)

- a. 6040
- b. 6480
- c. 6048
- d. 6064

76. Among the four letter-clusters listed, three are alike in some manner and one is different. Select the odd one. (+1, -0.33)

- a. NARD
 - b. CPGL
 - c. AUEQ
 - d. PWTS
-

77. Rohan can travel from Delhi to Kanyakumari in 30 h. If he reduces his speed by $\frac{1}{15}th$, he will go 10 km less in the same time. His speed is: (+1, -0.33)

- a. 8 km/h
 - b. 5 km/h
 - c. 3 km/h
 - d. 2.5 km/h
-

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

Patient : Doctor :: Student : ?

- a. Monitor
 - b. School
 - c. Teacher
 - d. Lecture
-

79. Among the four words listed, three are alike in some manner and one is different. Select the odd one. (+1, -0.33)

- a. Bitter
 - b. Salty
 - c. Sour
 - d. Delicious
-

80. The inner lining of the small intestine has numerous finger like projections that are called: (+1, -0.33)

- a. enzymes
 - b. tissues
 - c. villi
 - d. cells
-

81. Select the letter-cluster that can replace the question mark (?) in the following series. (+1, -0.33)

AYD, BVF, CSH, ?

- a. DWS
 - b. DQI
 - c. EQK
 - d. DPJ
-

82. The National Informatics Centre (NIC) was established in: (+1, -0.33)

- a. 1979
 - b. 1977
 - c. 1978
 - d. 1976
-

83. If α and β are the zeroes of the polynomial $x^2 - 5x + m$ such that $\alpha - \beta = 1$, then what will be the value of m . (+1, -0.33)

- a. 6
 - b. 10
 - c. 3
 - d. 2
-

84. According to National Waterways 1 (NW1) in India, what is the length (stretch) of Allahabad (Prayagraj)–Haldia in km? (+1, -0.33)

- a. 891 km
 - b. 205 km
 - c. 1078 km
 - d. 1,620 km
-

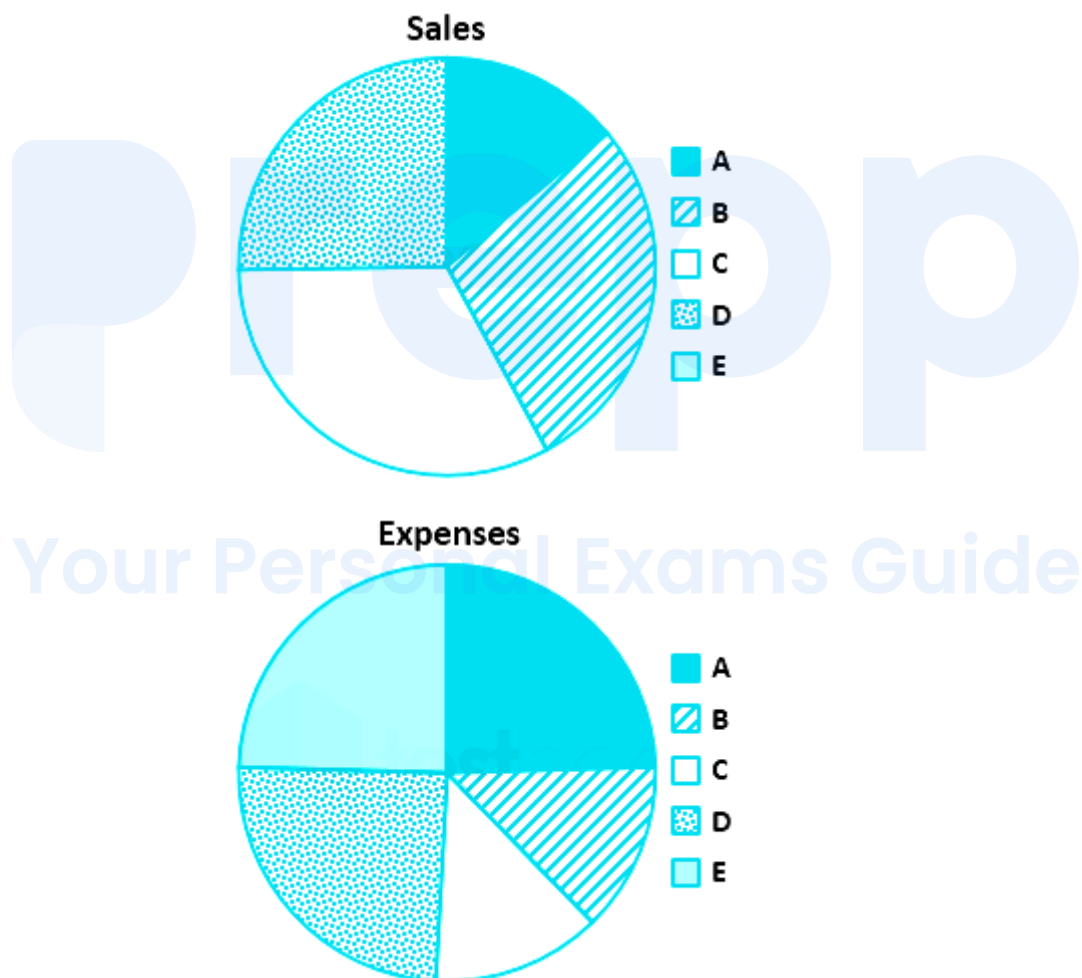
85. The least positive number, which must be added to the greatest number of 4 digits in order that the sum may be exactly divisible by 307, is: (+1, -0.33)

- a. 132

- b. 131
- c. 176
- d. 175

86. Study the given pie charts and answers the question that follows. (+1, -0.33)

The pie charts represent the values of sales and expenses of five companies A, B, C, D, E in terms of percentages.



Based on the visual reading of the pie-chart, which company is the most profitable in percentage terms.

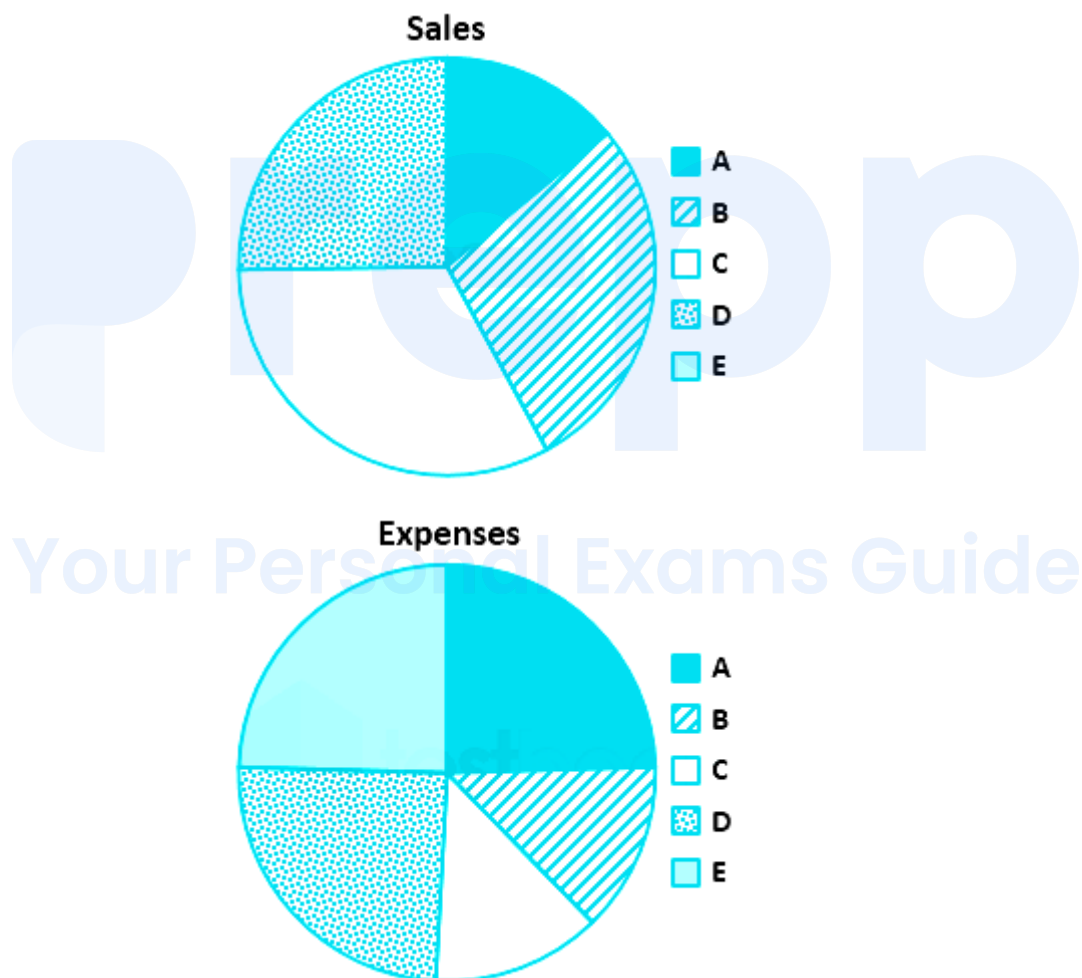
- a. C

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

87. Study the given pie charts and answers the question that follows.

(+1, -0.33)

The pie charts represent the values of sales and expenses of five companies A, B, C, D, E in terms of percentages.



Based on the visual reading of the pie-chart, which of the companies has the highest percentage loss?

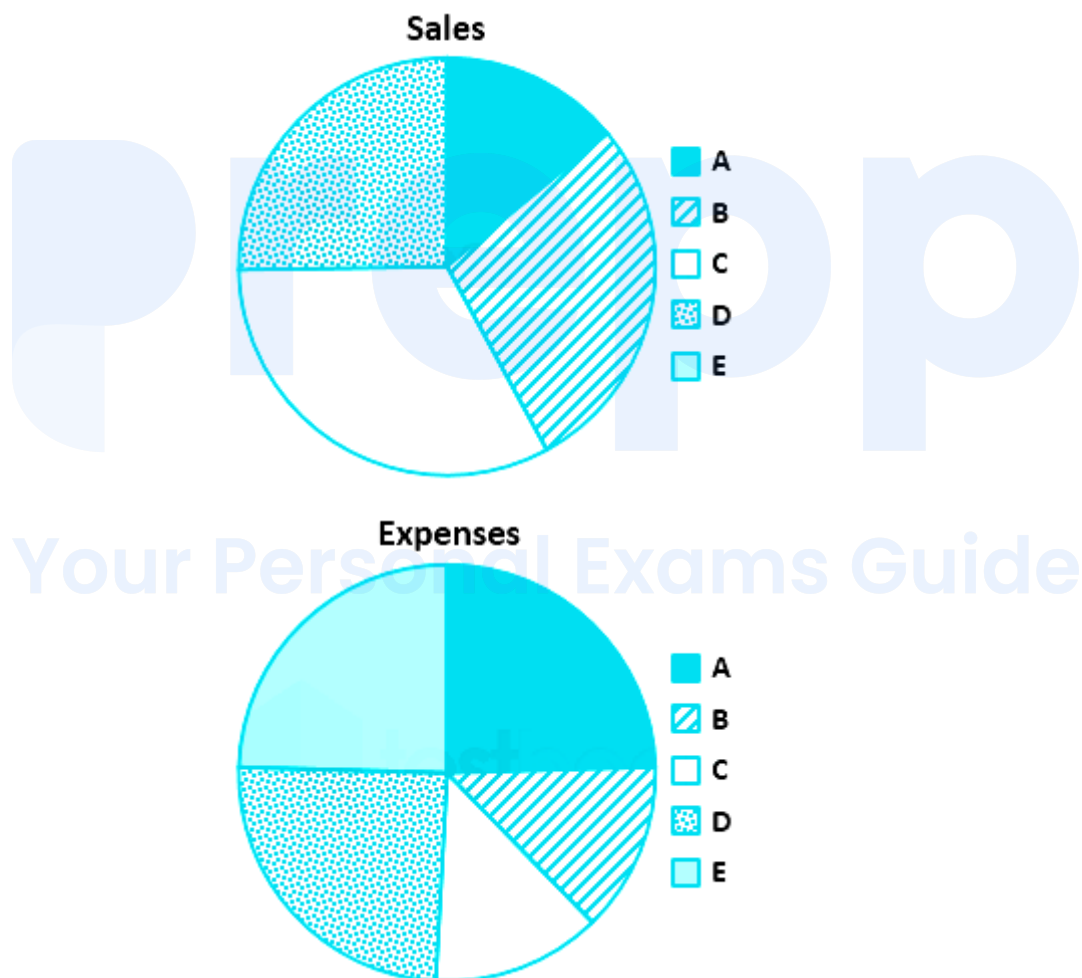
- a. E

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

88. Study the given pie charts and answers the question that follows.

(+1, -0.33)

The pie charts represent the values of sales and expenses of five companies A, B, C, D, E in terms of percentages.

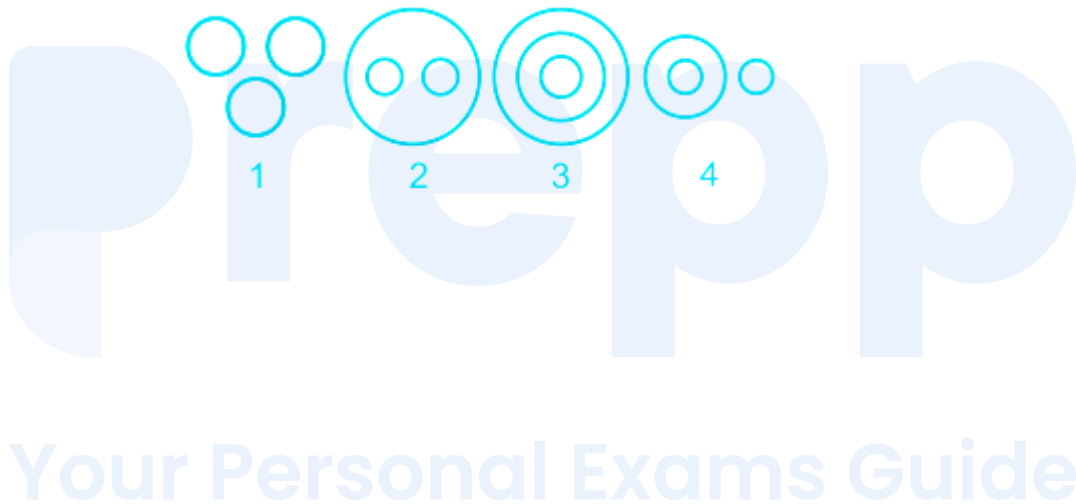


Based on the visual reading of the pie-chart, which of the companies reported no percentage profit/loss?

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

89. Select the Venn diagram that best represents the relationship between the following classes. (+1, -0.33)

Mammals, Horse, Elephant



- a. 3
- b. 4
- c. 1
- d. 2

90. Among the four places listed, three are alike in some manner and one is different. Select the odd one. (+1, -0.33)

- a. Ranchi
- b. Patna
- c. Bhopal
- d. Punjab

91. Read the given statements carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, select the conclusion from the given options which logically does **NOT follow** from the statements. (+1, -0.33)

Statements:

(i) All children are cats.

(ii) All pots are children.

a. Some children are pots.

b. No pot is a cat.

c. Some cats are pots.

d. All pots are cats.

92. In a certain code language, HSBTQ is written as CNWOL. How will DSBOF be written as in that code language? (+1, -0.33)

a. IOXKB

b. YWNJA

c. YNWJA

d. IXOWA

93. If ' \div ' means '+', ' $-$ ' means ' \times ', ' \times ' means ' $-$ ' and '+' means ' \div ', then find the value of (+1, -0.33)

$$40 \div 20 \times 10 + 10 - 5.$$

- a. 25
 - b. 1
 - c. 52
 - d. 55
-

94. Study the following carefully and answer the question that follows. (+1, -0.33)

9 B Q = 5 R \$ J @ 4 * P & 9 M X # G

Which of the given options is exactly midway between B and X?

- a. @
 - b. *
 - c. &
 - d. \$
-

95. 7 members A, B, C, D, E, F and G are going to office in a particular order (+1, -0.33)

(not necessarily in the same order). C reached the office in the end. None of them reached the office at the same time. Atleast 3 members reached the office after G. E reached the office just after A and G reached the office just after E. F reached the office just before A but didn't reached the office after D.

Who among them reached the office first?

- a. G
- b. F
- c. D

d. B

96. 'Cow' is related to 'Animal' in the same way as 'Sparrow' is related to (+1, -0.33)
'-----'.

a. Flower

b. Bird

c. Food

d. Insect

97. There are five girls in a group. K is second tallest. P is taller than M. R is taller than M. N is taller than P. Which of the following sequence about their height is **not possible**? (+1, -0.33)

a. $R > K > N > P > M$

b. $N > K > R > P > M$

c. $R > K > P > N > M$

d. $N > K > P > R > M$

98. If ' \times ' means '+', ' $+$ ' means \div ', ' $-$ ' means ' \times ', and ' \div ' means '-', then find the value of $16 \times 15 + 5 - 2 \div 4$. (+1, -0.33)

a. 26

b. 18

c. 16

d. 22

-
99. Select the word that will come in the middle if the given words are arranged in the order in which they would appear in an English dictionary. (+1, -0.33)

Sports → Spoil → Spouse → Spit → Sparrow

- a. Spit
- b. Spouse
- c. Sports
- d. Spoil

-
100. Select the option that is related to the third expression in the same way as the second expression is related to the first expression. (+1, -0.33)

$L \times V : 12 \times 22 :: Q \times Z : ?$

- a. 17×26
- b. 18×10
- c. 11×15
- d. 12×14

Answers

1. Answer: d

Explanation:

Given:

A can complete 25% work in = 10 days

B can complete 40% work in = 40 days

C can complete $\frac{1}{3}$ rd of work in = 13 days

Calculation:

Number of days taken by A to complete work alone = $100/25 \times 10 = 40$ days

Number of days taken by B to complete work alone = $100/40 \times 40 = 100$ days

Number of days taken by C to complete work alone = $3 \times 13 = 39$ days

\therefore From above, C has the fastest speed to complete the work.

Your Personal Exams Guide

2. Answer: c

Explanation:

Given:

Vertices of triangle = (2, 7), (5, 1), (x, 3)

Formula:

Area of triangle = $\frac{1}{2} \times [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$

Calculation:

$$\Rightarrow 18 = 1/2 \times [2(1 - 3) + 5(3 - 7) + x(7 - 1)]$$

$$\Rightarrow 36 = -4 - 20 + 6x$$

$$\Rightarrow 6x = 60$$

$$\Rightarrow x = 10$$

\therefore Value of $x = 10$.

NOTE: Options are changed as given options are not correct.

3. Answer: c

Explanation:

Given:

The cost price of car = Rs.150000

Formula:

$$\text{Profit} = \text{SP} - \text{CP}$$

$$\text{SP} = \text{CP} \times (100 + \text{Profit\%})/100$$

Calculation:

$$\text{SP for Raju} = 150000 \times 105/100 = \text{Rs.157500}$$

$$\text{CP for Montoo} = \text{SP for Raju}$$

Then,

$$\text{CP for Raju} = 157500 \times 98/100 = \text{Rs.154350}$$

$$\text{Total profit Raju had} = 157500 - 154350 = \text{Rs.3150}$$

\therefore Raju's profit in entire transaction is Rs.3150

★ Mistake Points

$154350 - 15000 = 4350$ is wrong, raju already earn 157500 after 5% profit, then entire transaction is $157500 - 154350 = 3150$.

4. Answer: b

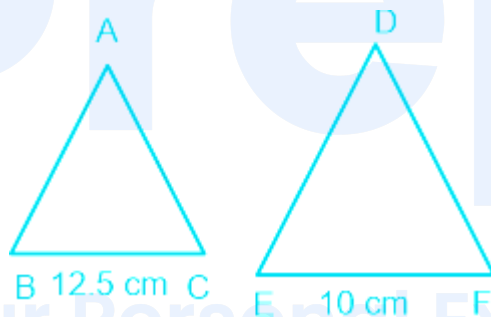
Explanation:

Given:

$$\Delta ABC \sim \Delta DEF,$$

If $BC = 12.5$ cm and $EF = 10$ cm

Calculation:



According to the question $\Delta ABC \sim \Delta DEF$,

Applying similarity rule

$$AB/DE = BC/EF = AC/DF$$

Then, Using formulae

$$\text{Area of } (\Delta ABC) : \text{Area of } (\Delta DEF) = BC^2/EF^2 = (12.5/10)^2 = 25/16$$

$$\therefore \text{Area of } (\Delta ABC) : \text{Area of } (\Delta DEF) = 25 : 16$$

5. Answer: c

Explanation:

The correct answer is Rajasthan.

- **Sariska National park** is located in **Rajasthan** .
 - **Sariska Tiger Reserve** is well nestled in the **Aravali Hills** covering an **800 sq km area** divided into **grasslands, dry deciduous forests, sheer cliffs, and rocky landscape**.
 - The **Sariska Wildlife Sanctuary** houses the ruins of **medieval temples** of **Garh-Rajor** that date back to the **10th and 11th centuries** . Also, a **17th-century** castle on a hilltop at **Kankwari** provides a panoramic view of flying **vultures** and **eagles** .
 - The **Sariska** was declared a sanctuary in **1955** and attained the status of a **National Park** in **1979**.

★ Key Points

- **Rajasthan** is a state in **northern India** . It covers **342,239 square kilometers** or **10.4 percent** of India's total geographical area.
- It is the **largest Indian state** by **area** and the **seventh-largest** by **population** .
- **Rajasthan's capital** is **Jaipur** and its current Governor is **Kalraj Mishra**.
- The chief minister of Rajasthan is **Ashok Gehlot**.

★ Additional Information

State	Governor	Chief Minister	Capital
Karnataka	Thawar Chand Gehlot	Basavaraj Bommai	Bengaluru
Uttarakhand	Gurmit Singh	Pushkar Singh Dhami	Dehradun (Winter), Gairsain (Summer)
Sikkim	Ganga Prasad	Prem Singh Tamang	Gangtok

6. Answer: a

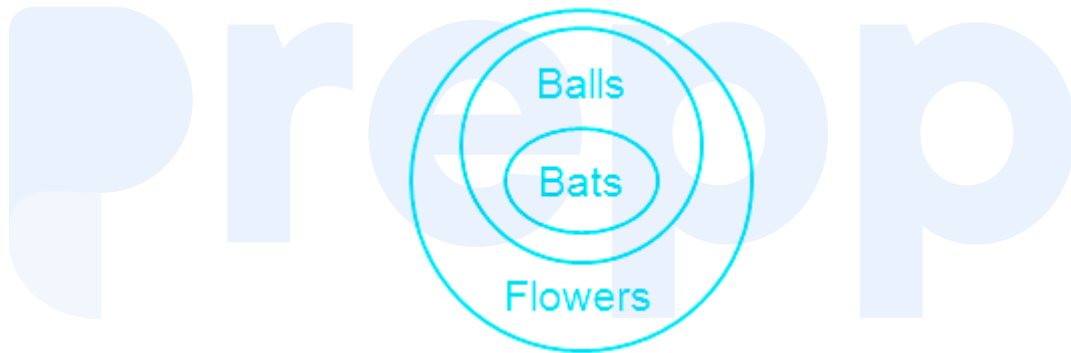
Explanation:

Given:

Statements:

- (i) All balls are flowers.
- (ii) All bats are balls.

The least possible diagram for the given statements is as follows



Conclusions:

Option (1) No ball is a flower → False (Because All balls are flowers so some flowers will be also balls).





Option (2) Some flowers are bats → True (Because All bats are balls and All balls are flowers so definitely some flowers will be bats).

Option (3) Some balls are bats → True (Because All bats are balls so some balls will be also bats).

Option (4) All bats are flowers → True (Because All bats are balls and All balls are flowers so definitely all bats will be also flowers).

Hence, " Option (1) " does NOT follow from the statements .

★ Additional Information

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

7. Answer: b

Explanation:

The correct answer is Sumitra Mahajan.

★ Key Points

- **Sumitra Mahajan** was the Speaker of the 16 th Lok Sabha.
- Sumitra Mahajan was born on 12 April 1943, is an Indian politician who was the **Speaker of Lok Sabha from 2014 to 2019**. She belongs to **Bharatiya Janata Party**.
- On **6 June 2014**, Mahajan was **unanimously elected as the Speaker of the 16th Lok Sabha**. She had earlier worked as a member of the 'Panel of Chairmen' in the Lok Sabha.
- She was the **eldest and seniormost among woman Members of Parliament in the 16th Lok Sabha**. She is the second woman after Meira Kumar to be elected as the

Speaker of the Lok Sabha. She was awarded India's third highest civilian award the **Padma Bhushan** in 2021 .

- She represented the **Indore constituency of Madhya Pradesh from 1989 to 2019** as the longest-serving Woman Member of Parliament, and then retired from electoral politics.

★ Additional Information

Name	Description
Manohar Joshi	<ul style="list-style-type: none">• Manohar Joshi (born 2 December 1937) is a prominent politician from the state of Maharashtra.• He was the Chief Minister of Maharashtra from 1995 to 1999.• He was the 13th Speaker of the Lok Sabha from 2002 to 2004 during the National Democratic Alliance (NDA) administration.
Somnath Chatterjee	<ul style="list-style-type: none">• Somnath Chatterjee was the 14th Speaker of the Lok Sabha (House of the People) from 2004 to 2009.
Meira Kumar	<ul style="list-style-type: none">• Meira Kumar was the 15th Speaker of the Lok Sabha from 2009 to 2014.

★ Important Points

- Om Birla MP is the 17th and current Speaker of the Lok Sabha.

8. Answer: a

Explanation:

The correct answer is Mariana Trench.

- The Challenger Deep in the **Mariana Trench** is considered to be the **deepest point** known on **Earth**.
 - The **Mariana Trench** is a **crescent-shaped trench** in the **Western Pacific**, just east of the **Mariana Islands** near **Guam**.
 - The **Mariana Trench** contains the deepest known points on **Earth**, vents bubbling up **liquid sulfur** and **carbon dioxide**, active **mud volcanoes**, and **marine life** adapted to pressures **1,000 times** that at **sea level**.
 - In **2010**, the **Challenger Deep** was pegged at **36,070 feet** (10,994 m), as measured with **sound pulses** sent through the ocean during a **2010** survey by the **National Oceanic and Atmospheric Administration** (NOAA).
 - The **ocean's second-deepest place** is also in the **Mariana Trench**. The **Sirena Deep**, which lies **124 miles** (200 kilometres) to the east of Challenger Deep, is a bruising **35,462 feet deep** (10,809 m).

★ Key Points

Prepp

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Name of the Place	Details
Lake Eyre	<ul style="list-style-type: none"> • Lake Eyre, officially known as Kati Thanda–Lake Eyre, is an endorheic lake in east-central Far North South Australia. • The lake was named in honour of Edward John Eyre, the first European to see it in 1840. The lake's official name was changed in December 2012 to combine the name Lake Eyre with the Aboriginal name, Kati Thanda.
Puerto Rico Trench	<ul style="list-style-type: none"> • The Puerto Rico Trench is located on the boundary between the Caribbean Sea and the Atlantic Ocean. • The trench is 800 kilometres (497 mi) long and has a maximum depth of 8,376 meters (27,480 ft) or 5.20 miles. This constitutes the single deepest point in the Atlantic Ocean.
Java Trench	<ul style="list-style-type: none"> • The Sunda Trench, earlier known as and sometimes still indicated as the Java Trench, is an oceanic trench located in the Indian Ocean near Sumatra, formed where the Australian-Capricorn plates subduct under a part of the Eurasian Plate. • It is 3,200 kilometres long with a maximum depth of 7,290 meters.

9. Answer: a

Explanation:

The correct answer is President.

★ Key Points

- In India, all the bills introduced and passed by both the houses (Lok Sabha & Rajya Sabha) can come into force only after they receive the assent of the **President of India**.
- A **Bill** is a proposed legislative proposal that, when enacted, becomes a Law. Bills are roughly grouped into four types:
 - **Ordinary Bill (Article 107, Article 108)** – It is concerned with any matter other than financial subjects.
 - **Money Bill (Article 110)** – It is concerned with financial matters like **taxation, public expenditure, etc.**
 - **Financial Bill (Article 117 [1], Article 117[3])** – It is concerned with financial matters (but are different from money bills).
 - **Constitutional Amendment Bill (Article 368)** – It is concerned with the amendment of the provisions of the Constitution.

★ Additional Information

- The **Indian President** is the head of the state and he is also called the **first citizen of India**. He is a part of the **Union Executive**.
- He is a part of the Union Executive along with the **Vice-President, Prime Minister, Council of Ministers, and Attorney-General of India**.
- **Article 54** mentions that there shall be an election for the President of India.
- **Article 55** states the manner of the **election of the President**.

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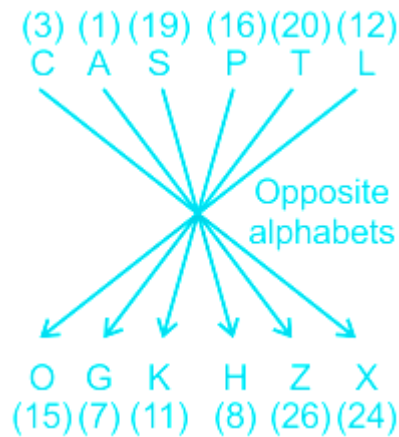
10. Answer: d

Explanation:

Table show alphabet serial number –

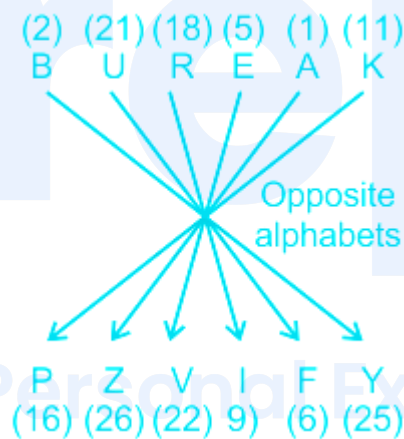
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern for the code is as follows,



So, 'BUREAK' is written as 'PZVIFY'

Similarly,



Hence, **CASPTL** is coded as **OGKHZX**.

11. Answer: c

Explanation:

The ratio of the present ages of Myra and Meera is 6 : 5.

Calculation:

Let the present ages of Myra and Meera be $6x$ & $5x$ respectively.

According to question,

After fifteen years the ratio of Myra and Meera age will be $9 : 8$

$$\Rightarrow (6x + 15) : (5x + 15) = 9 : 8$$

Cross multiplication both side;

$$\Rightarrow (6x + 15) \times 8 = (5x + 15) \times 9$$

$$\Rightarrow 48x + 120 = 45x + 135$$

$$\Rightarrow 48x - 45x = 135 - 120$$

$$\Rightarrow 3x = 15$$

$$\Rightarrow x = 5$$

Meera present date is $5x = 5 \times 5 = 25$.

\therefore The present age of Meera is 25 years.

12. Answer: d

Explanation:

The correct answer is Maharashtra.

- The **Ajanta caves** are located in the **Aurangabad** district of **Maharashtra**.
 - The **first Buddhist cave** monuments at Ajanta date from the **2nd** and **1st centuries B.C.** During the **Gupta period** (5th and 6th centuries A.D.).
 - The **Ajanta caves** were first found by a **few British soldiers** in the **19th century** when they were out hunting and one of them happened to lay his eyes on a **cave covered with bushes, leaves, and stones**.
 - The **walls** and **ceilings** of the famous **Ajanta caves** are **chiselled, carved, and painted** with the **life** and **teachings** of **Lord Buddha**.

- There is a total of **30 caves** that bring to your notice the talent of the people and their dedication to preserving the past in the form of a **never-fading art**.

★ Key Points

- The **Ajanta caves** are a set of **3 rock-cutout Buddhist** caves that date back to the period between **2nd century BC** and **650 CE**.
- The **Ajanta caves** are considered one of the most **prestigious monuments** of **India** as they house many beautiful **paintings** and **sculptures depicting** the rich **cultural heritage of India**.
- The site is a protected monument in the care of the **Archaeological Survey of India**, and since **1983**, the **Ajanta Caves** have been a **UNESCO World Heritage Site**.

★ Additional Information

State	Details
Chhattisgarh	<ul style="list-style-type: none"> • Chhattisgarh is a heavily forested state in central India known for its temples and waterfalls. • It was founded on 1st November 2000.
Delhi	<ul style="list-style-type: none"> • Delhi, India's capital territory, is a massive metropolitan area in the country's north.
Tamilnadu	<ul style="list-style-type: none"> • Tamil Nadu, a South Indian state, is famed for its Dravidian-style Hindu temples. • In Madurai, Meenakshi Amman Temple has high 'gopuram' towers ornamented with colourful figures. • On Pamban Island, Ramanathaswamy Temple is a pilgrimage site. • The town of Kanyakumari, at India's southernmost tip, is the site of ritual sunrises.

13. Answer: d

Explanation:

The correct answer is Apsara.

- **Apsara** is the oldest Nuclear research reactor in India.
 - **Apsara** is a **highly versatile swimming pool-type** of reactor that was built in **August 1956**. It was shut down in **2009** for a revamp.
 - The research reactor's earlier **French-made enriched fuel** has been replaced with an **Indian-made enriched fuel**.
 - Nearly **62 years** after **Apsara** came into existence, a **swimming pool-type** research reactor **Apsara-upgraded** of higher capacity was commissioned. The reactor made indigenously uses **plate-type dispersion fuel elements** made of low **enriched uranium**.
 - The Apsara reactor was utilized for various experiments including **neutron activation analysis, radiation damage studies, forensic research, neutron radiography**, and **shielding experiments**.

★ Key Points

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Nuclear Reactor	Details
Kamini	<ul style="list-style-type: none"> KAMINI (Kalpakkam Mini reactor) is a research reactor at Indira Gandhi Center for Atomic Research in Kalpakkam, India, it is the world's only thorium-based experimental reactor. KAMINI was the first and is currently the only reactor in the world designed specifically to use Uranium-233 fuel.
Cirus	<ul style="list-style-type: none"> CIRUS was a research reactor at the Bhabha Atomic Research Center in Trombay near Mumbai, India. CIRUS was supplied by Canada in 1954 but used heavy water supplied by the United States. It was the second nuclear reactor to be built in India.
Dhruva	<ul style="list-style-type: none"> The Dhruva reactor is India's largest nuclear research reactor. It was the first nuclear reactor in Asia proper. Located in the Mumbai suburb of Trombay at the Bhabha Atomic Research Centre, it is India's primary generator of weapons-grade plutonium-bearing spent fuel for its nuclear weapons program.

14. Answer: b

Explanation:

The pattern followed is given below



As it is seen that addition is done in a particular sequence.

And '39' is wrong, the correct sequence should be



Hence, the correct answer is "39"

★ Alternate Method

The pattern followed here is -

$$10 + 7 = 17$$

$$17 + 9 = 26$$

$$26 + 11 = 37$$

$$37 + 13 = 50$$

Hence, the correct answer is "39"

15. Answer: c

Explanation:

The correct answer is AGEOS.

★ Key Points

- ISRO has established the **AGEOS**, at Bharati Station, Antarctica, for receiving IRS data.
- ISRO has established the **Antarctica Ground Station for Earth Observation Satellites (AGEOS)**, at Bharati Station, Larsemann Hills, Antarctica, for receiving Indian Remote sensing Satellites (IRS) data.

- This state-of-the-art advanced Ground station was commissioned during **August 2013** and is **receiving data from IRS satellites (like CARTOSAT-2 Series, SCATSAT-1, RESOURCESAT-2/2A, CARTOSAT-1)** and transferring the same to **NRSC**, Shadnagar near Hyderabad.
- This Satcom station is providing vital communication support to the **Indian scientific community for pursuing their research work at Maitri throughout the year**. With the commissioning of the Earth station at **NCAOR, Goa**, the Indian station, Maitri has been brought into the ambit of the World Wide Web.
- The **AGEOS** is continuously operated and maintained by the **Engineers of ISRO** who are under **deputation to Bharati Station, Antarctica on a regular basis**.

★ Additional Information

Prepp

Your Personal Exams Guide

Organization	Description
NCAOR	<ul style="list-style-type: none"> • The National Centre for Antarctic & Ocean Research (NCAOR) , an Autonomous Society under the Ministry of Earth Sciences, Govt. of India, New Delhi, is the nodal agency responsible for planning, coordinating and executing the Indian Polar Programme . • In addition, the Centre has a well-focused scientific mandate of basic and applied research in various disciplines and themes of polar and ocean sciences.
NRSC	<ul style="list-style-type: none"> • National Remote Sensing Centre (NRSC) is one of the primary centres of the Indian Space Research Organisation (ISRO), Department of Space (DOS). • NRSC operates through multiple campuses to meet the national and regional remote sensing data and applications needs of the country .
IMGEOS	<ul style="list-style-type: none"> • Integrated Multi-Mission Ground Segment for Earth Observation Satellites (IMGEOS) facility is established in Shadnagar campus. • This facility is equipped with state of the art data acquisition systems which receive data from various satellites.

16. Answer: c

Explanation:

Given:

$$? = (243)^2 \div (27)^2 \times 6 \div 18$$

Concept:

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

Calculation:

$$\Rightarrow ? = (243)^2 \div (27)^2 \times 6 \div 18$$

$$\Rightarrow ? = 81 \times 6 \div 18$$

$$\Rightarrow ? = 27$$

$$\therefore (243)^2 \div (27)^2 \times 6 \div 18 = 27$$

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17. Answer: c

Explanation:

The logic followed here is:

'Glove' is related to 'Hand' → **Gloves** are worn on the **hands**.

Similarly,

'Cap' is related to 'Head' → **Cap** is worn on the **head**.

Hence, '**Head**' is the correct answer.

18. Answer: c

Explanation:

The correct answer is the Monopolies and Restrictive Trade Practices Act.

★ Key Points

- the correct full form of 'MRTP' in the MRTP Act 1969 is the **Monopolies and Restrictive Trade Practices Act**.
- The **Monopolies and Restrictive Trade Practices Act (MRTP Act)** was passed by the Parliament of India on **18 December 1969** and got the president's assent on December 27, 1969, But it came into force on **June 1, 1970**.
- Monopolies and Restrictive Trade Practices Commission (MRTPC) was set up under section 5 of the Monopolies and Restrictive Trade Practices Act, 1969. The MRTPC is an organ of the Department of Company Affairs, **Ministry of Company Affairs, Government of India**.
- On the basis of the recommendation of the **Dutt Committee**, MRTP Act was enacted in **1969** to ensure the **concentration of economic power in hands of a few rich**. The act was there to prohibit monopolistic and restrictive trade practices. It extended to all of India except Jammu & Kashmir.
- The act defines the Monopolistic Trade Practice as **Such practice indicates misuse of one's power to abuse the market in terms of production and sales of goods and services**.

★ Additional Information

- The aims and objectives of this act were:
 1. To ensure that the operation of the economic system does not result in the concentration of economic power in hands of a few rich.
 2. To provide for the control of monopolies, and
 3. To prohibit monopolistic and restrictive trade practices.
- This act is not in force in India currently as it was repealed and was replaced by Competition Act 2002 with effect from September 1, 2009. The MRTP

Commission was replaced by the Competition Commission of India .

19. Answer: c

Explanation:

The correct answer is Finland.

★ Key Points

- **Finland** was not a part of the former USSR.
- In 1991 , the Soviet Union included present-day **Russia, Ukraine, Belarus, Moldova, Latvia, Lithuania, Estonia, Armenia, Georgia, Azerbaijan, Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, and Kazakhstan** .
- It also included the disputed territories of **Transnistria, Artkash (Nagorno-Karabakh), South Ossetia, Abkhazia, Donetsk, and Luhansk** . It also included some disputed border regions (such as Tabarov Island and Bolshoy Ussuriyski Island) which have been **transferred to China after the fall of the USSR** .
- The territories which were part of the Russian Empire but were not part of the Soviet Union are **Poland, Finland , Alaska (a state of the USA), Kars and Ardahan (parts of Turkey)**, and some additional slices of territories in China and Iran.
- The capital of the USSR was **Moscow** , which is also modern Russia's capital city.

★ Additional Information

- The **USSR was founded in 1922** , five years after the Russian Revolution overthrew the monarchy of **Czar Nicholas II** .
- During its existence, the USSR was the largest country by area in the world. It included more than **8.6 million square miles** (22.4 million square kilometers) and stretched 6,800 miles (10,900 kilometres) from the Baltic Sea in the west to the Pacific Ocean in the east.
- **USSR decades after it was established, the Russian-dominated Soviet Union grew into one of the world's most powerful and influential states and eventually encompassed 15 republics** –Russia, Ukraine, Georgia, Belorussia, Uzbekistan,

Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Moldova, Turkmenistan, Tajikistan, Latvia, Lithuania, and Estonia.

20. Answer: a

Explanation:

Given:

$$\sin(A + B) = \frac{\sqrt{3}}{2} \text{ and } \cos(A - B) = \frac{\sqrt{3}}{2}$$

Calculation:

$$(A + B) = \sin^{-1}(\sqrt{3}/2)$$

$$A + B = 60^\circ$$

Then,

$$(A - B) = \cos^{-1}(\sqrt{3}/2)$$

$$A - B = 30^\circ$$

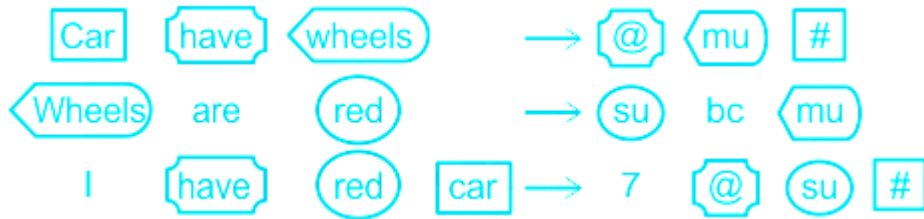
Solving,

$$\therefore A = 45^\circ \text{ and } B = 15^\circ$$

21. Answer: c

Explanation:

According to the given information,



Car is coded as # or @.

Wheels are coded as mu.

'Wheels car' is coded as 'mu #'.

Or,

'Wheels car' is coded as 'mu @'.

But "mu @" is not given in options.

Hence, 'mu #' is the correct answer.

22. Answer: d

Explanation:

Given:

$$19\frac{2}{3} - 7\frac{1}{4} = x + 2\frac{1}{2},$$

Concept:

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

Calculation:

$$19\frac{2}{3} - 7\frac{1}{4} = x + 2\frac{1}{2},$$

$$\Rightarrow 59/3 - 29/4 = x + 5/2$$

$$\Rightarrow 236 - 87 = 12x + 30$$

$$\Rightarrow x = 119/12$$

$$\therefore x = 9\frac{11}{12}$$

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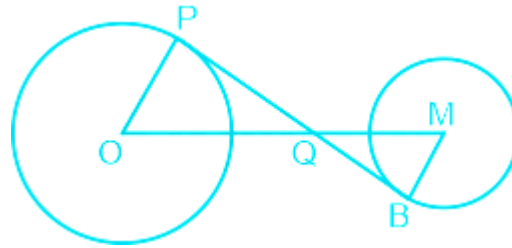
23. Answer: c

Explanation:

Given:

Radii of two circles = 4.5 cm and 3.5 cm

Calculation:



In $\triangle OPQ$ and $\triangle MBQ$

$$\Rightarrow \angle OPQ = \angle MBQ = 90^\circ$$

$$\Rightarrow \angle PQO = \angle MQB \text{ ---- (Vertically opposite angles)}$$

$$\triangle OPQ \sim \triangle MBQ.$$

$$\Rightarrow OQ/QM = OP/MB = PQ/QB = 4.5/3.5 = 9/7$$

Then,

$$\Rightarrow PQ + QB = 6$$

$$\Rightarrow PQ = 9QB/7$$

$$PQ = 3.375\text{cm and } QB = 2.625\text{ cm}$$

Let OQ and QM be $9a$ and $7a$ respectively.

$$\Rightarrow OM = OQ + QM = 16a$$

In $\triangle OPQ$,

Using pythagoras theorem,

$$\Rightarrow OP^2 + PQ^2 = OQ^2$$

In $\triangle MBQ$,

Using pythagoras theorem,

$$\Rightarrow BQ^2 + BM^2 = QM^2$$

Adding,

$$\Rightarrow 81a^2 + 49a^2 = 4.5^2 + 3.5^2 + 3.375^2 + 2.625^2$$

$$\Rightarrow a = 0.625$$

$$\therefore \text{then the distance between the two centers} = 9a + 7a = 16a = 10\text{cm}$$

★ Shortcut Trick

$$\text{Transverse common tangent} = \sqrt{D^2 - (R + r)^2}$$

$$\Rightarrow 6 = \sqrt{D^2 - (4.5 + 3.5)^2}$$

Squaring both side

$$\Rightarrow 36 = D^2 - 64$$

$$\Rightarrow D^2 = 100$$

$$\Rightarrow D = 10\text{ cm}$$

\therefore The Distance between the two centre is 10 cm.

24. Answer: b

Explanation:

The correct answer is Ctrl + R.

★ Key Points

- In Excel, shortcut key **Ctrl + R** is used to fill the selected cell with active cells to the right.
- In Microsoft Excel and other spreadsheet programs, pressing **Ctrl+R** fills the row cell to the **right** with the contents of the selected cell.
- To fill more than one cell, select the source cell and press the **Ctrl+Shift+Right** arrow to select multiple cells. Then press **Ctrl+R** to fill them with the contents of the original cell.

- In **Microsoft Word, Excel, and other** word processor programs, pressing **Ctrl+R** aligns the line or selected text to the **right of the screen**.

★ Additional Information

Shortcut key	Description
Ctrl + S	<ul style="list-style-type: none"> • In Microsoft Excel and other spreadsheet programs, pressing Ctrl+S saves the current worksheet. • If it has never been saved, the Save As the window opens, allowing you to choose a name and file extension for your worksheet.
Ctrl + D	<ul style="list-style-type: none"> • In Microsoft Excel and Google Sheets, pressing Ctrl+D fills and overwrites a cell(s) with the contents of the cell above it in a column. • To fill the entire column with the contents of the upper cell, press Ctrl+Shift+Down to select all cells below, and then press Ctrl+D.
Ctrl + V	<ul style="list-style-type: none"> • In Microsoft Excel and other spreadsheet programs, pressing Ctrl+V will paste anything stored in the clipboard into the currently-selected cell. • If you've copied more than one cell, Ctrl+V will paste them starting from your current position.

25. Answer: b

Explanation:

Given:

$$(3x + 2y) : (3x - 2y) = 5 : 3$$

Calculation:

$$\Rightarrow 9x + 6y = 15x - 10y$$

$$\Rightarrow 6x = 16y$$

$$\Rightarrow x/y = 16/6 = 8/3$$

$$\therefore x:y = 8:3$$

26. Answer: c

Explanation:

The correct answer is 21 years.

★ Key Points

- According to the Constitution of India, the minimum age requirement for being a member of Panchayat is **21 years**.
- **Panchayati Raj Institution or PRI** is a system of local self-government in rural areas of the Indian subcontinent. Local Self Government helps in the management of local affairs.
- Such local bodies have representatives who have been elected by the local people and hence have a better understanding of grass-root level issues. Thus, **the minimum age that a person should have for contesting elections is 21 years**.
- A candidate for the seat of **Member or Sarpanch of Gram Panchayat**, you must be a registered voter in the electoral roll of that Gram Panchayat, and must not be less than **21 years** of age. candidate age will be computed as on the date of scrutiny of nominations.
- The leader of the Panchayat was often called the **president mukhiya, sarpanch, or pradhan**, an elected or generally acknowledged position.
- The Panchayati Raj Institutions are the **nodal point at the district level**. Their role is to **help plan, coordinate, monitor, and wherever required regulate the implementation of various national programs**.

★ Additional Information

- Established in various states of India, the Panchayat Raj system has **three tiers** : **Zila Parishad**, at the district level ; **Nagar Palika**, at the block level ; and **Gram Panchayat**, at the village level.
- **Gram Panchayats** are at the lowest level of Panchayat Raj institutions (PRIs), whose legal authority is the 73rd Constitutional Amendment of 1992, which is concerned with rural local governments.
- The Gram Panchayat is divided into wards and each ward is represented by a Ward Member or Commissioner, also referred to as a **Panch or Panchayat Member** , who is directly elected by the villagers. The Panchayat is chaired by the president of the village, known as a **Sarpanch** .
- The term of the elected representatives is **five years** . The **Secretary of the Panchayat is a non-elected** representative, appointed by the **state government** , to oversee Panchayat activities.

27. Answer: a

Explanation:

The correct answer is Ethology.

★ Key Points

- **Ethology** is best describes the biological study of animal behaviour.
- Ethology is the scientific study of animal behaviour, usually with a focus on behaviour under natural conditions, and viewing behaviour as an evolutionarily adaptive trait.
- The term "**Ethology**" derives from the Greek language **ethos** meaning "character" and **logia** meaning "the study of". The term was first popularized by American myrmecologist (a person who studies ants) **William Morton Wheeler** in 1902 .
- The first modern ethologist was **Charles Darwin** (1809–1882) explored the expression of emotions in animals .

- **Ethology** is a rapidly growing field. Since the dawn of the 21st-century researchers have re-examined and reached new conclusions in **many aspects of animal communication, emotions, culture, learning, and sexuality that the scientific community long thought it understood**. New fields, such as neuroethology, have developed.
- **Ethology** combines laboratory and field science, with a strong relation to some other disciplines such as **neuroanatomy, ecology, and evolutionary biology**. Ethologists typically show interest in a behavioural process rather than in a particular animal group, and often study one type of behaviour, such as aggression, in a number of unrelated species.

★ Additional Information

Term	Description
Ethnology	<ul style="list-style-type: none"> • Ethnology is the branch of anthropology that deals with the study of the origin and descent of human races and ethnic groups and their distribution and relationships.
Entomology	<ul style="list-style-type: none"> • Entomology 'insect', and logia 'study of' is the scientific study of insects, a branch of zoology.
Etiology	<ul style="list-style-type: none"> • The Etiology of a disease is its cause or origin. Etiology is also the name for the study of the causes of diseases. • It can also refer to the study of the cause of things in other fields, such as philosophy and physics. But it is most commonly used in the context of medicine.

28. Answer: a

Explanation:

Calculation:

$$? = 10.53/0.09$$

$$= 1053/9$$

$$= 117$$

$$\therefore 10.53/0.09 = 117$$

29. Answer: d

Explanation:

The correct answer is 1469.

★ Key Points

- Shree Guru Nanak Dev Ji was born in Rai Bhoi Ki Talvandi (present day Nankana Sahib) in **1469**.
- Shree Guru Nanak Dev Ji was born **April 15, 1469**, Rai Bhoi di Talwandi (now Nankana Sahib), **near Lahore**, Pakistan, and died **22 September 1539**, Kartarpur, Punjab, India.
- The township was founded by **Rai Bhoi** and thus was known as **Rai Bhoi-Di-Talwandi**. His great-grandson **Rai Bular Bhatti** renamed it 'Nankana Sahib' after the birth of Guru Nanak.
- The **Gurdwara Nankana Sahib**, originally constructed in around **1600 CE** was renovated in **1819–20 CE** by Gian-Punjab **Maharaja Ranjit Singh** The Sikh Conference of Panjab, Jammu and Kashmir, Peshawar, Kangra, and Hazara.
- He was the founder of **Sikhism** and is the first of the ten Sikh Gurus. His birth is celebrated worldwide as **Guru Nanak Gurpurab** on Katak Pooranmashi ('full-moon of Kattak'), around October–November.

★ Additional Information

- Shree Guru Nanak Dev was the founder of Sikhism and Indian spiritual teacher who was the first Guru of the Sikhs, a monotheistic religious group that combines Hindu and Muslim influences.
- He spread the message of oneness and purity, he travelled several miles. Mainly, his teachings involved three things, **namely 'Vand Chakko', 'Kirat Karo' and 'Naam Japna'**.
- **'Vand Chakko'** means sharing with others and helping the needy person. **'Kirat Karo'** is making a living honestly without exploiting anyone and without any fraud, and **'Naam Japna'** involves controlling our evils by meditating on the name of God.
- In 2007, the Pakistan government announced a plan to set up a university on Sikh religion and culture at **Nankana Sahib**, the birthplace of Guru Nanak. Chairman of Pakistan's Evacuee Trust Property Board (ETPB), Gen (R) **Zulfikar Ali Khan**, said that "The international Guru Nanak University planned at Nankana Sahib would have the best architecture, curricula and research centre on Sikh religion and culture".
- In 2019 after prolonged efforts of the Sikh community the historical **Gurudwara on Nankana sahib** was given direct access to pilgrims via the **Kartarpur corridor project**.

30. Answer: d

Explanation:

The correct answer is Daniel Gabriel Fahrenheit.

- **Daniel Gabriel Fahrenheit** invented the modern mercury **thermometer** with a **standardised scale**.
 - In **1654** the **first sealed glass tube** was developed by **Ferdinand II**, the **Grand Duke** of Tuscany. It contained alcohol and had a **numerical scale**, but **wasn't very accurate**.
 - The more modern thermometer was invented in **1709** by **Daniel Fahrenheit**. It was an enclosed **glass tube** that had a **numerical scale**, called the **Fahrenheit scale**.

- The early version of this thermometer contained alcohol and in **1714 Fahrenheit** developed a **mercury thermometer** using the same scale. He assigned the freezing point of water at **32 degrees**, the boiling point of water as **212 degrees**, and the normal body temperature as **98.6 degrees**.
- Later on, in that same century, the inventor **Anders Celsius** developed a **numerical scale**, called the **Celsius** or **Centigrade scale**.
 - This scale was based on a scale of **zero** to **one hundred** where the freezing point of **water is zero**, the boiling point of water is **100 degrees** and normal body temperature is **37 degrees**.
- The first real medical thermometer was invented by **Sir Thomas Allbut** in **1867**. It was **six inches long** and took about **five minutes** to take a person's temperature

★ Key Points

- Daniel Gabriel Fahrenheit:
 - **Daniel Gabriel Fahrenheit** FRS was a **physicist, inventor, and scientific instrument, maker**.
 - Fahrenheit was born on **24 May 1686, Gdansk, Poland**, then a predominantly German-speaking city in the **Pomeranian Voivodeship** of the Polish–Lithuanian Commonwealth.
- Daniel Gabriel Fahrenheit received the **Fellow of the Royal Society award**.

★ Additional Information

Person Name	Details	Invention
Anders Celsius	<p>Anders Celsius was a Swedish astronomer, physicist, and mathematician.</p> <p>He was a professor of astronomy at Uppsala University from 1730 to 1744 but travelled from 1732 to 1735 visiting notable observatories in Germany, Italy, and France.</p>	The Celsius temperature scale.
Galileo Galilei	<p>Galileo was an astronomer, physicist, and engineer, sometimes described as a polymath, from Pisa, in modern-day Italy.</p> <p>Galileo has been called the "father" of observational astronomy, modern physics, the scientific method, and modern science.</p>	Celaton, Galileo's micrometre, Galileo's proportional compass, and Galileo's escapement.

31. Answer: d

Explanation:

The correct answer is UNESCO.

★ Key Points

- Hampi was declared a World Heritage site by **UNESCO** .
- Hampi is the **14th century** (around 1500 AD) capital of the Vijayanagar Empire, located in the **Tungabhadra basin in Bellary District ,Central Karnataka** .
- **In 1986, Hampi was declared a World Heritage site by UNESCO** .
- Temples of Hampi are noted for their large dimensions, florid ornamentation, bold and delicate carvings, and stately pillars which include subjects from the

Ramayana and the Mahabharata .

- The majority of these temples in Hampi were provided with **widespread bazaars flanked on either side by storied Mandapas** .

★ Additional Information

- **Hampi** is located on the banks of the **Tungabhadra River**. **Famous for its massive, beautifully carved temples**, Hampi tells the stories of its existing structures. Many a visitor climbs atop the Matangaparvata and gets a glimpse of Hampi and its environs.
- The **Archaeological Survey of India (ASI)** is about to install a wooden barricade around the stone chariot inside the Vittala Temple complex at the **UNESCO World Heritage site of Hampi to protect it from damage** .
- The **Vittala Temple** is among the most-visited and the **most photographed-protected monuments at Hampi** .
- The Mahanavami Dibba , a variety of ponds and tanks, and the row of pillared Mandapas are some of the important architectural remains of Hampi.

32. Answer: c

Explanation:

Given:

A always scores more than B.

$A > B$

G always scores more than A.

$G > A$

Condition 1 – Each time either C scores the highest and E scores the least.

$C > _ > _ > _ > _ > _ > E$

Condition 2: D scores the highest and F or B scores the least.

$D > _ > _ > _ > _ > _ > F/B$

Given:

D is ranked sixth and B is ranked fifth.

$_ > _ > _ > _ > B > D > _$

So, condition 2 is false

Then,

$C > _ > _ > _ > B > D > E.$

We know that,

G always scores more than A.

So, arranging the order of rank according to the given information

Arrangement 1: $C > G > F/A > F/A > B > D > E$

Arrangement 2: $C > F > G > A > B > D > E$

Now check the options

Option (1) G is ranked first or fourth → False

Because in both arrangements, G is not ranked first or fourth.

Option (2) E is ranked fourth or third → False

Because in both arrangements, E is not ranked fourth or third

Option (3) F is ranked third or fourth → True

Because in arrangements 1 F is ranked third or fourth.

Option (4) A is ranked second or seventh → False

Because in both arrangements, A is not ranked second or seventh

Hence, "F is ranked third or fourth" is the correct answer.

33. Answer: d

Explanation:

The correct answer is 48 h.

★ Key Points

- According to **India's Election Commission**, political parties cannot release their manifesto in a **pre-poll** silence period of **48 hours**.
 - The **Election Commission of India** is an autonomous body under the ownership of the **Ministry of Law and Justice, Government of India**.
 - It is established by the **Constitution of India** directly to ensure free and fair **elections in the country** and was formed on **25 January 1950**.
 - The **Indian Election Commission** jurisdiction comes under the **Government of India**.
 - The **Election commission's first executive** is **Sukuram Sen** and Election Commission headquarters is located in **Delhi**.
 - The Election Commissioner Amendment **Act, 1989** was adopted on **1 January 1990** which turned the commission into a **multi-member body**: a **3-member Commission** has been in **operation** since then and the decisions by the commission are made by a **majority vote**.
 - The **Chief Election Commissioner** and the **two Election Commissioners** who are usually **retired IAS officers** draw salaries and allowances at par with those of the **Judges of the Supreme Court of India**.
 - As per the **Chief Election Commissioner and other Election Commissioners (Conditions of Service) Rules, 1992**.

★ Key Points

- **The Chief Election Commissioner of India:**
 - can be **removed** from their office in a manner similar to the **removal of a judge** of the **Supreme Court** of India which requires a resolution passed by

- the Parliament of India a two-thirds majority in both the Lok Sabha and the Rajya Sabha on the grounds of proven misbehaviour or incapacity.
- Other **Election Commissioners** can be removed by the **President of India** on the recommendation of the **Chief Election Commissioner** .
 - A Chief Election Commissioner has never been impeached in **India**.

34. Answer: b

Explanation:

The codes have been assigned as follows,

FMOPRA →

F	M	O	P	R	A
8	3	4	2	0	7

KQMATL →

K	Q	M	A	T	L
9	5	3	7	6	1

Similarly,

QTMPRL →

Q	T	M	P	R	L
5	6	3	2	0	1

Hence, QTMPRL is coded as **563201**.

35. Answer: d

Explanation:

The correct answer is Gateway of India.

- The **Gateway of India** monument is built with some influence of **Gujarati style** to welcome **King George V** and **Queen Mary** to India.
 - The **Gateway of India** is an arch monument built during the **20th century** in **Bombay, India**.
 - The monument was erected to commemorate the landing of **King George V** and **Queen Mary** at **Apollo Bunder** on their visit to **India** in **1911**.
 - The **structure** is an arch made of basalt, **26 meters** (85 feet) high. The final design of **George Wittet** was sanctioned in **1914** and the construction of the monument was completed in **1924**.

★ Key Points

- Facts about Gateway of India are:
 - The foundation stone was laid on **March 31, 1911**, by the then- **Governor of Mumbai, Sir George Sydenham Clarke**.
 - During the rule of the **British government**, this was used as the **arrival point** for the **visitors** from the **west**.
 - The monument is surrounded by another of **Mumbai's major tourist attractions**, the **Marine Drive**, facing the vast **Arabian Sea**.

- The last **British ships** set to **sail** in **1947** to leave the country from the **Gateway** of India made it a legend.

★ Additional Information

Monument Name	Details
India Gate	<ul style="list-style-type: none"> • The India Gate is a war memorial located astride the Rajpath, on the eastern edge of the ceremonial axis of New Delhi, formerly called Kingsway. • The Imperial War Graves Commission (now called Commonwealth War Graves Commission) was established in 1917 as an organization responsible for burying and commemorating First World War dead and missing soldiers
Sun Temple	<ul style="list-style-type: none"> • Konark Sun Temple is a 13th-century CE Sun Temple at Konark. • The temple is attributed to king Narasimhadeva I of the Eastern Ganga dynasty about 1250 CE. • The name Konarka is derived from the Sanskrit word Kona (meaning angle) and the word Arka (meaning sun) in reference to the temple which was dedicated to the Sun god Surya.
Jallianwala Bagh	<ul style="list-style-type: none"> • Jallianwala Bagh is a historic garden and 'memorial of national importance' close to the Golden Temple complex in Amritsar, Punjab. • It is preserved in the memory of those wounded and killed in the Jallianwala Bagh Massacre that occurred on the site on the festival of Baisakhi, 13 April 1919.

36. Answer: a

Explanation:

Given:

Six students – P, Q, R, S, T, and U

i) Q and R are lighter than U but taller than P.

Weight – $U > Q$ and R

Height – Q and $R > P$

ii) S is taller than Q and heavier than R.

Weight – $S > R$

Height – $S > Q$

iii) T is lighter than S but heavier than U.

Weight – $S > T$; $T > U$

iv) U is taller than S.

Height – $U > S$

v) P is lighter than T but heavier than U.

Weight – $T > P$; $P > U$

vi) P is taller than T.

Height – $P > T$

Arranging the information in sequence –

Weight – $S > T > P > U > Q$ and R

Height – $U > S > Q$ and $R > P > T$

Hence, “T” is the shortest among the students.

37. Answer: b

Explanation:

The correct answer is 1784.

★ Key Points

- In 1784, **Sir William Jones** founded the Asiatic Society.
- Asiatic Society of Bengal, the scholarly society founded on **Jan. 15, 1784**, by **Sir William Jones**, a British lawyer, and Orientalist, to encourage Oriental studies. At its founding, Jones delivered the first of a famous series of discourses.
- At the time of its foundation, this Society was named as "**Asiatick Society**". In 1825, the society was renamed "**The Asiatic Society**". In 1832 the name was changed to "**The Asiatic Society of Bengal**" and again in 1936 it was renamed "**The Royal Asiatic Society of Bengal**".
- Finally, on 1 July 1951, the name of the society was changed to its present one.
- The Society is housed in a building at **Park Street in Kolkata (Calcutta)**. The Society moved into this building in **1808**.
- In **1823**, the **Medical and Physical Society of Calcutta** was formed and all the meetings of this society were held in the **Asiatic Society**.

★ Additional Information

- The Asiatic Society had the support and encouragement of **Warren Hastings**, the governor-general (1772–85) of Bengal, though he declined its presidency.
- Until **Jones's death (1794)** it was the vehicle for his ideas about the **importance of Hindu culture and learning and about the vital role of Sanskrit in the Aryan languages**.
- The **museum of the Society was founded in 1814** under the superintendence of **Nathaniel Wallich**. The rapid growth of its collection is evident from its first catalogue, published in **1849**. By 1849, the Society had its own museum consisting of inscriptions in **stone and metal, icons, old coins, and Sanskrit manuscripts, etc.**
- The society owns an art collection that includes paintings by **Peter Paul Rubens and Joshua Reynolds**. The society's library contains some **100,000 general**

volumes , and its Sanskrit section has more than 27,000 books ,manuscripts, prints, coins, and engravings .

38. Answer: a

Explanation:

The correct answer is 1739.

- In **1739 Nadir Shah** invaded India and sacked **Delhi**.
 - The **Battle of Karnal**, was a decisive victory for **Nader Shah** , the founder of the **Afsharid dynasty** of **Iran** , during his **invasion of India**.
 - **Nadir Shah** advanced towards **India** in **1738** . He captured the **western frontiers** of the **Mughal Empire** such as **Kabul, Ghazni, Lahore** in **1739**.
 - The **two forces** of **Nadir Shah** and **Muhammad Shah** met at **Karnal**. At the battle of **Karnal** on **13 February 1739** , Nadir Shah easily outnumbered the **Mughal forces**.
 - The battle lasted for less than three hours and the **Mughal emperor, Muhammad Shah** surrendered. Both the rulers now entered **Delhi** on **12 March 1739** and **Delhi** was handed over to **Nadir Shah** , along with all its **treasures** .
 - In **1739, Nadir Shah**, the emperor of Iran, conquered and enslaved the city of Delhi and took away immense **quantities of money** .
 - Shah's army had easily defeated the **Mughals** in the battle of **Karnal** and in the aftermath of the battle, would eventually capture the **Mughal Capital**.

Key Points

- The whole city of **Delhi was destroyed, looted, plundered**, and ruined by the **army of Nadir Shah**.
- Nadir Shah took with him the **Peacock throne** built by **Shah Jahan**. He also took the legendary **Koh-i-Noor** diamond.
- Besides this, he plundered gold worth **10 million rupees**, **600 million rupees** worth of **jewellery**, and **coins** worth **6 million rupees**.

- Historians said that his overall collection after invading India, was **700 million rupees worth, including 7000 craftsmen, 200 carpenters, 100 stone-cutters,** and thousands of **elephants, horses, and camels,** which he took with him to **Persia**.

★ Additional Information

- **Nader Shah Afshar** was the founder of the **Afsharid dynasty** of **Iran** and one of the most **powerful Iranian rulers** in Iranian history.
- He was born on **22 November 1688** in **Dargaz, Safavid Iran**.
- In the spring of 1730, Nader attacked Iran's archrival the **Ottomans** and regained most of the territory lost during the recent chaos. At the same time, the Abdali Afghans rebelled and besieged Mashhad, forcing Nader to suspend his campaign and save his brother, Ebrahim.

39. Answer: d

Explanation:

Given:

Average age of A, B and C = 22 years

Average age of B and C = 25 years

Calculation:

Total age of A, B and C = $22 \times 3 = 66$ years

Total age of B and C = $25 \times 2 = 50$ years

A's present age = $66 - 50 = 16$ years

\therefore A's age after 9 years = $16 + 9 = 25$ years

40. Answer: d

Explanation:

The correct answer is ISRO.

★ Key Points

- **ISRO** has launched Samwad with students (SwS) as a part of its program on New Year Day, 2019.
- As part of the enhanced outreach program of the **Indian Space Research Organisation (ISRO)**, a new platform named Samwad with Students (SwS) was launched in Bengaluru on 01, January 2019.
- SwS is the newly-launched outreach initiative of **ISRO** to propel scientific temper among youngsters. The first edition was held in **Bengaluru on 01, January 2019**, the second one at Kochi on 20, January 2019, and the third at Sriharikota on 24, January 2019.
- Through the SwS initiative, ISRO aims to constantly **engage youngsters across India to capture their scientific temperament**. The new conversation mission will inspire students cutting across schools and colleges.
- Dr K Sivan explained the importance of the Indian space program and its benefits to society at large. **He wanted the students to take up science and Mathematics with the seriousness which will enable them to take up challenging careers.**

★ Additional Information

- The first SwS event saw 40 wards and 10 teachers from select schools interact with ISRO Chairman Dr K Sivan at the Anthariksh Bhavan. During the three-hour stay at ISRO HQ, the students were first briefed about the Indian space program and its benefits to the common man.
- ISRO Chairman Dr K Sivan held the third SwS event, **over 300 students from schools in and around Sriharikota** had an opportunity to interact with him.
- **"Concentrate on the present with full sincerity. Dilemmas will disappear. A good student is not afraid of failure. Failures are important for learning as they open up new avenues,"** Dr Sivan told the SwS participants.

41. Answer: d

Explanation:

The correct answer is Anu Bandyopadhyaya.

★ Key Points

- **Anu Bandyopadhyaya** wrote the novel '**Bahuroopi Gandhi**' .
- The first edition of the book was published in **April 1964** .
- The book "Bahuroopi Gandhi" vividly narrates how Gandhiji functioned in a variety of ways quite apart from politics and the public scene.
- For this amazing devotion to, and capacity for different ways of work, he won the title **KARAMVIR** from his South African colleagues.
- The book describes how multifaceted their personality he was as a barrister, author, Kisan, weaver, nurse, journalist, Mason, shoemaker, carpenter, blacksmith, and barber .

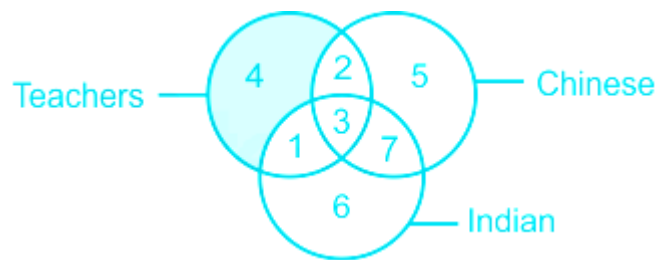
★ Additional Information

Person	Literary Works
Jawaharlal Nehru	The Discovery of India, Glimpses of World History, Letters for a Nation, A Bunch of Old Letters, Words of Freedom: Ideas of A Nation, Letters from a Father to his Daughter, etc.
Chakravarti Rajagopalachari	Ramayana (1957), Mahabharata (1951), Hinduism, Doctrine, and Way of Life, Stories for the Innocent, etc.
Amrita Pritam	The Skeleton and that Man, Rasidi Ticket, Kagaz te Canvas, etc.

42. Answer: d

Explanation:

The shaded part represents is the number of teachers who are not Indian and not Chinese.



The number of teachers who are not Indian and not Chinese = 4

Hence, ' 4 ' number of teachers who are not Indian and not Chinese.

43. Answer: d

Explanation:

The correct answer is disinvestment.

★ Key Points

- Privatisation of the public sector enterprises by selling off part of the equity of PSEs to the public is known as **disinvestment** .
- **Privatisation** means the transfer of ownership, management, and control of the public sector enterprises to the private sector .
- **Objectives** of Privatisation:
 - Providing strong momentum for the inflow of FDI ,
 - Privatisation aims at providing a strong base for the inflow of FDI, The increased inflow of FDI improves the financial strength of the economy.
- Government companies are transformed into private companies in two ways:
 1. By the withdrawal of the government from the ownership and management of public sector companies. and By the outright sale of public sector companies.
 2. Privatisation of the public sector undertakings by selling off parts of the equity of PSUs to the private sector is known as **disinvestment** . The purpose of the sale is mainly to improve financial discipline and facilitate modernisation.

★ Additional Information

- **Disinvesting** is a strategy by which an investor offloads or disposes of an asset or a partial stake in the asset. Disinvesting is an exit strategy that means taking out an existing investment.
- **Disinvestment policies are commonly followed by governments to allocate resources more efficiently .**
- For example, the Indian government recently announced that they will carry out **disinvestment in BPCL, a government oil and gas subsidiary .**
- Some other examples of disinvestment are– **INDIAN RAILWAY CATERING AND TOURISM CORPN. LTD., IRCON INTERNATIONAL LTD., GAIL (INDIA) LTD., TATA COMMUNICATIONS LTD., STEEL AUTHORITY OF INDIA LTD., etc.**

44. Answer: d

Explanation:

Given:

35% failed in one subject

42% failed in other subjects

Calculation:

% failed in only one subject = 35% of 2500

⇒ 875

% failed in only other subject = 42% of 2500

⇒ 1050

% failed in both subject

⇒ 30% of 2500

$\Rightarrow 750$

Passed in one subject = $(875 - 750) + (1050 - 750)$

$\Rightarrow 425$

\therefore Number of students passed only in one subject = $125 + 300 = 425$

★ Alternate Method

Given:

35% failed in one subject

42% failed in other subjects

Calculation:

% failed in only one subject = $35\% - 30\% = 5\%$

% failed in only other subject = $42\% - 30\% = 12\%$

If someone fails in one subject, it means that he/she passed in the other one.

Thus, % of students who passed in only one subject = $5\% + 12\% = 17\%$

\therefore Number of students who passed only one subject = $17/100 \times 2500 = 425$

★ Confusion Points

You may think that the question should ask about the students who failed.

But the information asked in the question is apt.

If a student fails in only one subject, it also means that he is passed in one subject and failed in one. (as there are only 2 subjects)

Thus, the no. of students who fail in only one subject will be equal to the no. of students who passed in only one subject.

Therefore, the correct answer is **425**.

45. Answer: b

Explanation:

The correct answer is Storage and Dispersal.

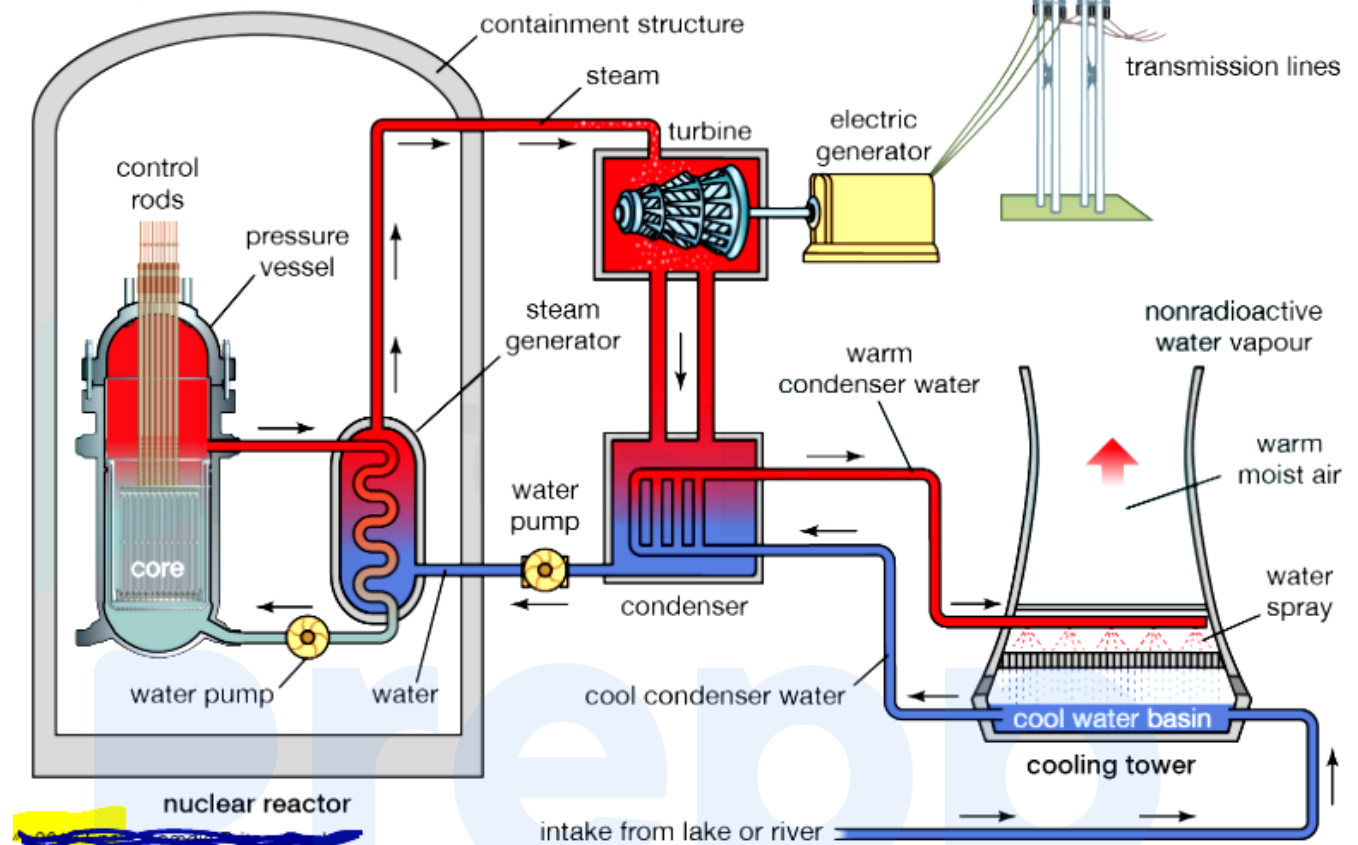
- Major hazards of nuclear power generation:
 - Storage and disposal of spent or used fuels: This is because the uranium used decays into harmful subatomic particles radiations which are harmful to health. Further, there is a risk of accidental leakage of nuclear radiation.
 - Environmental contamination: improper nuclear-waste storage and disposal result in environmental contamination.
 - High cost of installation: nuclear power plants require a lot of money for their setup. moreover, the limited availability of uranium adds to the disadvantage of not making it an economic fuel.

★ Key Points

- Nuclear Power plant:

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Nuclear power plant



46. Answer: c

Explanation:

The correct answer is Bhagat Singh.

★ Key Points

- Freedom fighter **Bhagat Singh** was not involved in the **Kakori Train Robbery** .
- The **Kakori Train Action** was a **train robbery** that took place at **Kakori**, a village near **Lucknow** , on **9 August 1925** during the **Indian Independence Movement** against the **British Raj**.
- The **Kakori train action** was organized by **Hindustan Republican Association**.
- The trial on the **Kakori Conspiracy Case** started on **21 May 1926** against **28 active members** of the **Hindustan Republican Association**.

The objectives of the Kakori Kand/Conspiracy were to:

- Gain funds for the HRA by taking money from the British Administration through force.
- Create a positive image of the HRA among Indians by attacking a high-profile British government target with minimum collateral damage.

★ Key Points

Bhagat Singh:

- Bhagat Singh was born in a **Sikh family** in Banga village of **Faisalabad district** (previously called Lyallpur), now in **Pakistan's Punjab province**, on **27 September 1907**.
- In 1926, Bhagat Singh established the **Naujawan Bharat Sabha** (Youth Society of India) and joined the **Hindustan Republican Association** (later known as the Hindustan Socialist Republican Association).
- In **December 1928**, **Bhagat Singh**, along with **Sukhdev** and **Rajguru**, planned to avenge the death of Indian nationalist leader **Lala Lajpat Rai** and plotted to assassinate the Superintendent of Police **James Scott** in **Lahore**.
- In **April 1929**, **Singh** and **Batukeshwar Dutt** bombed the **Central Assembly Hall** in **Delhi**, and shouted the slogan of **Inquilab Zindabad!**.
- **Bhagat Singh** was an Indian revolutionary freedom fighter who was **hanged to death** by British colonisers at the age of **23 years**.

47. Answer: b

Explanation:

Calculation:

After 5! = One zero at the end of the number

After 10! = two Zeros at end of number

After 15! = three zeroes at end of number →

then,

19! we get minimum three zeros

\therefore The digit of hundred's place value of $19! = 0$

48. Answer: a

Explanation:

Given:

$$\text{LCM} = 1920$$

$$\text{HCF} = 16$$

Formula:

$$\text{LCM} \times \text{HCF} = \text{product of numbers}$$

Calculation:

$$\text{Other number} = (1920 \times 16) / 240 = 128$$

\therefore Other number is 128

49. Answer: a

Explanation:

The correct answer is 1995.

★ Key Points

- WTO (World Trade Organization) was established in **1995**.
- **The World Trade Organization (WTO)** is the only global international organization dealing with the rules of trade between nations.

- It acts as a forum for negotiating trade agreements, it settles trade disputes between its members and it supports the needs of developing countries.
- The WTO has over **160 members** representing 98 per cent of world trade. Over 20 countries are seeking to join the WTO.
- **Ngozi Okonjo-Iweala** is the seventh Director-General of the WTO. She took office on **1 March 2021**, becoming the first woman and the first African to serve as **Director-General**.

★ Additional Information

- The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations.
- At its heart are the WTO agreements, negotiated and signed by the bulk of the world's trading nations and ratified in their parliaments. The goal is to help producers of goods and services, exporters, and importers conduct their business.
- Over the past 20 years, WTO members have agreed with major updates to the WTO rulebook to improve the flow of global trade. The WTO's membership has expanded to **164 members**, representing over **98%** of international trade. In **2015**.
- The WTO reached a significant milestone with the receipt of its **500th trade dispute for settlement**.

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50. Answer: b

Explanation:

The correct answer is Sri Lanka.

- **Sri Lanka** is separated from **India** by a **narrow channel** of **sea** formed by the **Palk Strait** and the **Gulf of Mannar**.
 - The Indian **peninsula** is **separated** from **mainland** Asia by the **Himalayas**. The Country is surrounded by the **Bay of Bengal** in the **east**, the **Arabian Sea** in the **west**, and the **Indian Ocean** to the **south**.

- The Palk Strait is the Strait between Indian (Tamil Nadu) to Sri Lanka (Jaffna). The Gulf of Mannar is situated near Mannar Island, Sri Lanka.
- **Palk Strait** is a Strait that is part of the **Indian Ocean** and it acts as a **bridge between two landmasses**. It is located in the **Laccadive Sea Bay of Bengal** and has a maximum width of **82 km** and a minimum width of **53 km**.
- The **Palk Strait** and **Gulf of Mannar** are connected with the **Adam Bridge** (Ram Setu) which length is **50 kilometres**.

★ Key Points

Strait	Countries
Strait of Malacca	Indonesia and Malaysia
Bali Strait	Java and Bali
Palk Strait	India and Sri Lanka
Bering Strait	Russia and USA

51. Answer: a

Explanation:

The correct answer is Pratibha Singh Patil.

- **Pratibha Singh Patil** received **Mexico's highest civilian honour** for **foreigners** in **2019**.
 - The Ambassador of Mexico to India, **Melba Priá**, conferred the award on Patil – who created history as this country's **first woman President** (2007–2012), at a special ceremony held in the **MCCIA Bhavan, Pune**.
 - **Patil** becomes only the **second Indian** head of state to get the **award**. Earlier, the late President **S. Radhakrishna** had been conferred this honour.
 - It was created by decree on **December 29, 1933**, by President **Abelardo L. Rodríguez** as a reward for the services given to **Mexico** or humankind by **foreigners**.

★ Key Points

- Pratibha Patil:
 - **Pratibha Patil** was born on **19 December 1934, Nadgaon**.
 - In **1962**, at the age of 27, she was elected to the **Maharashtra Legislative Assembly** for the **Jalgaon constituency**.
 - **Pratibha Devisingh Patil** is an **Indian politician** and **lawyer** who served as the **12th president of India** from **2007 to 2012**.
 - A member of the **Indian National Congress**, Patil is the only woman to have held the office. She had previously served as the **Governor of Rajasthan** from **2004 to 2007**.

★ Additional Information

Person Name	Details
Narendra Modi	<p>Narendra Damodardas Modi is an Indian politician serving as the 14th and current prime minister of India since 2014.</p> <p>Modi was the chief minister of Gujarat from 2001 to 2014 and is a Member of Parliament from Varanasi.</p> <p>He is a member of the Bharatiya Janata Party and its National Democratic Alliance.</p>
Amitabh Bacchan	<p>Amitabh Bachchan is an Indian film actor, film producer, television host, occasional playback singer and former politician known for his work in Hindi cinema.</p> <p>He is regarded as one of the most influential actors in the history of Indian cinema.</p>
Pranab Mukherji	<p>Pranab Kumar Mukherjee was born on 11 December 1935 was an Indian statesman who served as the 13th president of India from 2012 until 2017.</p>

52. Answer: b

Explanation:

Given:

$$? = (-20)^3 + (13)^3 + (7)^3$$

Formula:

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

Calculation:

Where, $a = -20$, $b = 13$, $c = 7$

$$-20 + 13 + 7 = 0$$

Then,

$$\Rightarrow (-20)^3 + (13)^3 + (7)^3 = 3 \times (-20) \times 13 \times 7 = -5460$$

\therefore The value of $(-20)^3 + (13)^3 + (7)^3$ is -5460 .

53. Answer: b

Explanation:

The correct answer is Marsilea.

★ Key Points

- **Marsilea** plants have hidden reproductive organs.
- In the **Pteridophyta group**, the plant body is differentiated into roots, stem, and leaves and has specialized tissue for the conduction of water and other

substances from one part of the plant body to another. Some examples are **Marsilea, ferns, and horsetails**.

- The **thallophytes, the bryophytes, and the pteridophytes** have naked embryos that are called spores. **The reproductive organs of plants in all these three groups are very inconspicuous, and they are therefore called cryptogame, or those with hidden reproductive organs.**
- **Marsilea** is a genus of approximately 65 species of aquatic ferns of the family **Marsileaceae**.
- The name honours Italian naturalist **Luigi Ferdinando Marsili (1656–1730)**.

★ Additional Information

Plants	Description
Ipomoea	<ul style="list-style-type: none"> • Ipomoea batatas or sweet potato Using its flowers, which contain both male and female reproductive organs, the sweet potato plant undergoes sexual reproduction. • Sexual reproduction occurs when genetic material from both male and female individuals comes together to create a new individual.
Pinus	<ul style="list-style-type: none"> • Pinus reproduces sexually. Pinus is monoecious, but the male and the female cones are produced on separate branches of the same plant. • The male cones develop on the lower branches, while the female cones are formed on the upper branches.
Deodar	<ul style="list-style-type: none"> • Deodar Cedar or Deodar tree (Family- Pinaceae) is a monoecious species – that means it has male and female flowers (cones or strobili) on the same tree. • Male cones are mainly bearing on the lower branches, while the female cones are at the ends of the highest.

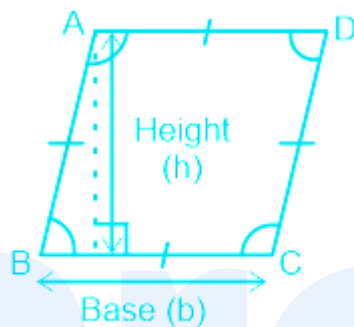
54. Answer: b

Explanation:

Given:

Perimeter of rhombus = 120 m

Calculation:



Length of each side of rhombus = $120/4 = 30$ m

Height of rhombus = 15m

Area of rhombus = base of length \times height

= 30×15

= 450 sq.m

\therefore Area of rhombus is 450 m^2

55. Answer: d

Explanation:

The correct answer is Fermentation.

★ Key Points

- The process of converting sugar into alcohol is called **Fermentation**.
- The mechanism by which sugar is converted into alcohol is called **fermentation**.
- Ethanol Fermentation is a biological process that converts sugars such as glucose, fructose, and sucrose into cellular energy, producing ethanol and carbon dioxide as a side effect, **also called alcoholic fermentation**.
- To make sugar into alcohol, we need to put grains, fruits or vegetables through a process called fermentation, **when yeast or bacteria react with the sugars in food – the by-products are ethanol and carbon dioxide**.
- The Alcoholic fermentation converts one mole of glucose into two moles of ethanol and two moles of carbon dioxide, producing two moles of ATP in the process:
- The overall chemical formula for alcoholic fermentation is: $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 2 \text{C}_2\text{H}_5\text{OH} + 2 \text{CO}_2$

★ Additional Information

- **Fermentation** is an anaerobic process where even though oxygen is not available, **energy can be released from glucose**. Fermentation occurs in yeast cells and bacteria and also in the muscles of animals. It is an anaerobic pathway in which glucose is broken down.
- In 1857, Louis Pasteur was the scientist who discovered the fermentation process.
- **Alcoholic fermentation** is the process of using yeast to convert **sugars into alcohol**. Distillation is a process used to higher-ABV beverages from already-fermented base products. **For example, the distillation of beer wort creates whiskey, while the distillation of wine produces brandy.**
- Some more examples of fermentation are **alcoholic beverages, bread, yoghurt, sauerkraut, apple cider vinegar, and kombucha**.

56. Answer: a

Explanation:

The correct answer is 2015-16.

★ Key Points

- During the financial year **2015–16**, the **Jal Kranti Abhiyan** was launched by the Government of India.
- **Union Minister for Water Resources, River Development, and Ganga Rejuvenation Sushri Uma Bharti** launched **Jal Kranti Abhiyan** on **June 05, 2015**.
- The aim of the scheme was to consolidate water conservation and management in the country through a holistic and integrated approach involving all stakeholders making it a mass movement.
- One of the main objectives of the Jal Kranti Abhiyan is **“strengthening grass-root involvement of all stakeholders including Panchayati Raj institutions and local bodies for Participatory Irrigation Management.”**
- There are four important components of Jal Kranti Abhiyan; **Jal Gram Yojana, Development of Model Command Area, Pollution Abatement, and Mass Awareness Programme.**

★ Additional Information

- Union Minister of Water Resources, River Development, and Ganga Rejuvenation Sushri Uma Bharti and her ministry **identified those villages in the country which have done exemplary work in water conservation .**
- Under Jal Gram Yojana **two water-stressed villages in each district of the country** are selected and a comprehensive water security plan is formulated to achieve water security for these villages.
- Participating in the conference representatives from water user associations, **NGOs, and other agencies gave useful suggestions to make Jal Kranti Abhiyan a success .**

57. Answer: a

Explanation:

Given:

$$16 \sec^2 \theta - 40 \sec \theta + 25 = 0$$

Calculation:

$$\Rightarrow 16 \sec^2 \theta - 40 \sec \theta + 25 = 0$$

$$\Rightarrow 16 \sec^2 \theta - 2 \times 4 \times 5 \sec \theta + 25 = 0$$

$$\Rightarrow (4 \sec \theta - 5)^2 = 0$$

$$\Rightarrow 4 \sec \theta = 5$$

$$\Rightarrow \sec \theta = 5/4$$

Then,

$$\Rightarrow 1 + \tan^2 \theta = \sec^2 \theta$$

$$\Rightarrow \tan^2 \theta = 25/16 - 1 = 9/16$$

$$\therefore \tan \theta = 3/4$$

58. Answer: c

Explanation:

Given:

Discount = 20%

Calculation:

Marked price = Rs.1200

Single equivalent discount = $(20 + 20) - (20 \times 20)/100 = 36\%$

Selling price = purchasing price = $1200 \times (100 - 36)/100 = \text{Rs.}768$

\therefore The purchasing price is Rs.768

59. Answer: a

Explanation:

The correct answer is Gene revolution.

★ Key Points

- The **gene revolution** is the application of biotechnology in food production.
- It is of great potential to farmers as it provides them with disease-free planting material and develops crops that resist pests and diseases, reducing use of chemicals that harm the environment and human health.
- It can provide help control devastating animal diseases.

★ Additional Information

- **Genetic engineering** involves the techniques to alter the chemistry of genetic material (DNA and RNA) and thus change the phenotype of the host organism.
- It is the **artificial manipulation, modification, and recombination of DNA or other nucleic acid** molecules to modify an organism or population of organisms.
- It is a term that was first introduced into our languages in the **1970s** to explain the emerging field of recombinant DNA technology and some other things that were going on.
- With the help of **genetic engineering**, scientists are able to move desirable genes from one plant or animal to another or from a plant to an animal or vice versa.
- The process of Genetic engineering consists of splicing an area of a chromosome, gene, that controls a particular characteristic of the body.

60. Answer: c

Explanation:

The correct answer is Arundhati Roy.

★ Key Points

- The first Indian woman to win the Booker Prize is **Arundhati Roy**.
- **Suzanna Arundhati Roy was born on 24 November 1961**, She is an Indian author best known for her novel **The God of Small Things**.
- **Arundhati Roy** won the prestigious Booker Prize in **1997 for her first novel The God of Small Things**.
- **Arundhati Roy** began writing her first novel, *The God of Small Things*, in 1992, completing it in 1996.
- The book is semi-autobiographical and a major part captures her childhood experiences in **Aymanam**. The publication of *The God of Small Things* catapulted Roy to international fame.
- **It received the 1997 Booker Prize** for Fiction and was listed as one of **The New York Times** Notable Books of the Year.
- Arundhati Roy won the Man Booker Prize for Fiction in 1997 and became the best-selling book by a non-expatriate Indian author.

★ Additional Information

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Name	Description
Anita Desai	<ul style="list-style-type: none"> • Anita Desai (born 24 June 1937) is an Indian novelist, As a writer, she has been shortlisted for the Booker Prize three times . • She received a Sahitya Akademi Award in 1978 for her novel "Fire on the Mountain", from the Sahitya Akademi, India's National Academy of Letters. • She won the British Guardian Prize for The Village by the Sea.
Amrita Pritam	<ul style="list-style-type: none"> • Amrita Pritam (31 August 1919 – 31 October 2005) was an Indian novelist, essayist, and poet, who wrote in Punjabi and Hindi. • She became the first woman to win the Sahitya Akademi Award for her "magnum opus", a long poem, "Sunehade", later she received the Bharatiya Jnanpith, one of India's highest literary awards, in 1982 for Kagaz Te Canvas ("The Paper and the Canvas").
Sarojini Naidu	<ul style="list-style-type: none"> • Sarojini Naidu (13 February 1879 – 2 March 1949) was an Indian political activist and poet. Her first book of poems was published in London in 1905, titled The "Golden Threshold". • She is also known as the 'Nightingale of India'.

61. Answer: b

Explanation:

The correct answer is It is a set of programs that controls the way a computer works and runs other programs.

★ Key Points

- "A set of programs that controls the way a computer works and runs other programs" is known as an **Operating system**.
- The principal system software is the **operating system**. It manages the hardware, data and program files, and other system resources and provides means for the user to control the computer, generally via a graphical user interface (GUI).
- An **operating system** is a software program required to manage and operate a computing device like **smartphones, tablets, computers, supercomputers, web servers, cars, network towers, smartwatches, etc**.
- It is the operating system that eliminates the need to know **coding language** to interact with computing devices. It is a layer of graphical user interface (GUI), which acts as a platform between the user and the computer hardware.

★ Additional Information

- Computer software falls into two broad classes, **system software, and application software**.
- **The principal system software is the operating system**. Application software is a program designed to handle specific tasks for users.
- The operating system is always present when a computer is running. It coordinates the operation of the other hardware and software components of the computer system. The operating system is responsible for starting up application programs, running them, and managing the resources that they need.
- Examples of Operating Systems are: **Windows Linux BOSS etc**.

62. Answer: d

Explanation:

Given:

Six cars – Swift, Santro, Creta, Audi, I10 and Magna.

1) Atleast four cars were sold after the car Santro. The car Magna was sold on Tuesday.

Days	Cars
Monday	Santro
Tuesday	Megna
Wednesday	
Thursday	
Friday	
Saturday	

2) The car Audi was sold immediately after the car Creta and car Creta was sold atleast before three cars.

Days	Cars
Monday	Santro
Tuesday	Megna
Wednesday	Creata
Thursday	Audi
Friday	
Saturday	

3) Both the cars Santro and I10 were sold atleast before one car.

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Days	Cars
Monday	Santro
Tuesday	Megna
Wednesday	Creata
Thursday	Audi
Friday	I10
Saturday	Swift

Hence, "Saturday" was Swift car sold.

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63. Answer: a

Explanation:

The correct answer is Dengue.

- U.S. FDA approved **Dengvaxia** as the first vaccine for Dengue disease in 2019 . .
 - In May 2019, **Dengvaxia** was approved in the **United States** as the **first vaccine** approved for the prevention of **dengue disease** caused by **all dengue virus serotypes**.
 - The vaccine was determined to be approximately **76 per cent effective** in preventing **symptomatic, laboratory-confirmed** dengue disease in

individuals **9th through 16 years of age** who previously had laboratory-confirmed **dengue disease**.

★ Key Points

- **Dengue** is a **mosquito-borne viral infection**, found in tropical and sub-tropical climates **worldwide**, mostly in **urban** and **semi-urban areas**.
 - The **virus** responsible for causing dengue is called **dengue virus (DENV)**. There are four **DENV serotypes**, meaning that it is possible to be **infected four times**.
 - Symptoms of Dengue: **Bleeding; Pain behind the eyes**.
 - Severe dengue was first recognized in the **1950s** during dengue epidemics in the **Philippines** and **Thailand**.

★ Additional Information

Prepp

Your Personal Exams Guide

Disease Name	Details
Cholera	<p>Cholera is an acute, diarrheal illness caused by infection of the intestine with the toxigenic bacterium <i>Vibrio cholerae</i> serogroup O1 or O139.</p> <p>An estimated 2.9 million cases and 95,000 deaths occur each year around the world. The infection is often mild or without symptoms, but can be severe.</p>
Swine flu	<p>Swine influenza virus (SIV) or swine-origin influenza virus (S-OIV) is any strain of the influenza family of viruses that is endemic in pigs.</p> <p>As of 2009, the known SIV strains include influenza C and the subtypes of influenza A known as H1N1, H1N2, H2N1, H3N1, H3N2, and H2N3.</p>
Chikungunya	<p>A viral infection is transmitted by mosquitoes.</p> <p>Chikungunya is found worldwide, particularly in Africa, Asia, and India. Symptoms usually appear within a week of infection. Fever and joint pain come on suddenly. Muscle pain, headache, fatigue, and rash may also occur.</p> <p>Treatment is aimed at relieving symptoms. Most people feel better within a week or so after the virus runs its course.</p>

64. Answer: c

Explanation:

Given:

$$394 \times 394 + 2 \times 394 \times 106 + 106 \times 106$$

Formula:

$$(A + B)^2 = A^2 + 2AB + B^2$$

Calculation:

$$\Rightarrow 394 \times 394 + 2 \times 394 \times 106 + 106 \times 106 = (394 + 106)^2$$

$$\therefore 394 \times 394 + 2 \times 394 \times 106 + 106 \times 106 = 250000$$

65. Answer: a

Explanation:

Given:

$$\angle RPO = 39^\circ$$

Calculation:

$$\angle RPO = \angle RPQ = 39^\circ$$

Due to point R, triangle PRQ formed in semicircle.

$$\angle PRQ = 90^\circ \text{ ---- (angle in semicircle)}$$

In $\triangle PRQ$,

$$\angle PRQ + \angle RPQ + \angle RQP = 180^\circ$$

$$\therefore \angle RQP = 51^\circ$$

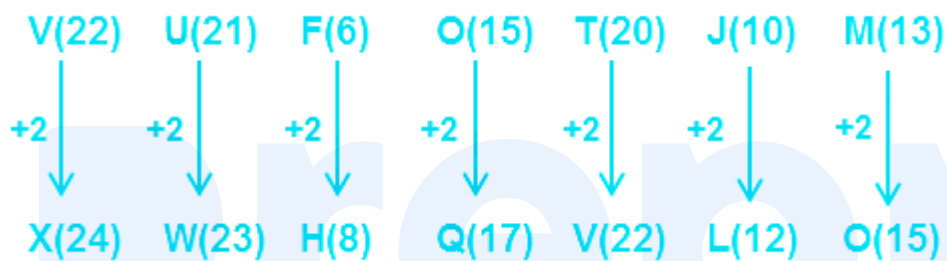
66. Answer: d

Explanation:

Table show alphabet serial number –

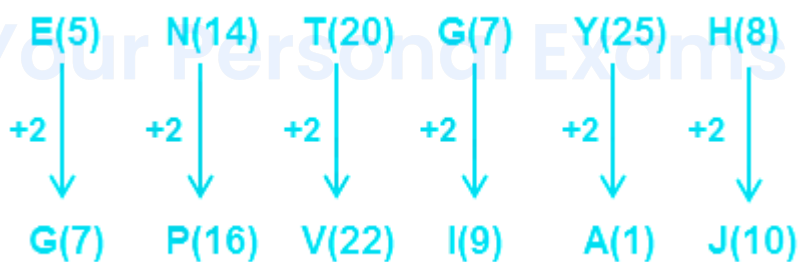
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern for the code is as follows,



So, HSBTQ is written as CNWOL

Similarly,



Hence, ENTGYH is coded as GPVIAJ .

67. Answer: c

Explanation:

Calculation:

From options:

- 1) $5970 - 9 = 5961$ is not perfect square
 - 2) $5970 - 25 = 5945$ is not perfect square
 - 3) $5970 - 41 = 5929 = \sqrt{5929} = 77$ is a perfect square
 - 4) $5970 - 16 = 5954$ is not perfect square
- $\therefore 41$ is the smallest positive number.

68. Answer: b

Explanation:

Given:

Students participated in function = 30

Calculation:

Number of students not participated in function = $45 - 30 = 15$

Arithmetic progression for number of hands shake = 1, 2,, 29

Number of terms in this AP =

$$\Rightarrow 29 = 1 + (n - 1)1$$

$$\Rightarrow n = 29$$

$$\text{Sum of all terms in AP} = \frac{29}{2} \times [2 \times 1 + (29 - 1) \times 1] = 435$$

\therefore Number of handshakes = 435

★ Shortcut Trick

Direct formula used:

$$\Rightarrow n(n - 1)/2$$

$$\Rightarrow 30(30 - 1)/2$$

$$\Rightarrow 435$$

\therefore Number of handshakes = 435

69. Answer: b

Explanation:

The correct answer is 1921.

- In **1921** Moplah revolt (Malabar Rebellion) took place in **Kerala**.
 - The **Malabar Rebellion** happened from **August 20, 1921**, to **1922** in the **Malabar region** of **Kerala**. It was also known as the **Moplah massacre**, **Moplah riots**, and **Mappila riots**.
 - This was a **peasant movement** led by the **Moplah community** in **Kerala**. These people attacked their **landlords** and **British premieres**. It can also be called the **first national movement** in **South India**.
 - The movement ended in **1921** and was crushed by the **Britishers**. They raised a **special battalion** called the **Malabar Special Force** for this riot.

★ Key Points

- The span of the Movement are:
 - The **movement started** as the resistance against **British colonial rule** and the course also changed when the peasants rose against the **prevailing feudal system** controlled by elite **landlords** who were basically **Hindus**.
 - The **riots** led to the **deaths of hundreds of people** in the **Malabar region** as the movement was very unorganized and the **farmers** there used to generally attack the **government buildings**, or places controlled by **British** and the **elite landlords**.

- The rebels also attacked many **institutions** of the **colonial state** , such as **telegraph lines, train stations, courts, and post offices.**
- Keeping in mind a few **historical accounts** , it was found that this uprising led to a loss of **10,000 lives** which included **2339 rebels** .

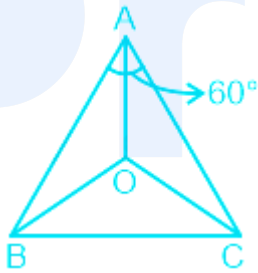
70. Answer: d

Explanation:

Given:

$$\angle BAC = 60^\circ$$

Calculation:



$$\angle OBC = 2\angle OBA$$

$$\angle OCB = 2\angle OCA$$

In $\triangle ABC$,

$$\angle ABC + \angle ACB + \angle BAC = 180^\circ$$

$$\angle ABC + \angle ACB = 120^\circ$$

$$\angle OBA + \angle OBC + \angle OCA + \angle OCB = 120^\circ$$

$$\angle OBC/2 + \angle OBC + \angle OCB/2 + \angle OCB = 120^\circ$$

$$\angle OBC + \angle OCB = 80^\circ$$

In $\triangle OBC$,

$$\angle OBC + \angle OCB + \angle BOC = 180^\circ$$

$$\therefore \angle BOC = 180^\circ - 80^\circ = 100^\circ$$

71. Answer: d

Explanation:

The correct answer is Odisha.

★ Key Points

- The famous **Sun Temple** is situated in **Odisha**.
- **Sun Temple is a 13th-century CE, at Konark** about 35 kilometers (22 mi) northeast from **Puri** and 65 kilometers (40 mi) southeast of **Bhubaneswar** on the Bay of Bengal coastline in the Indian state of **Odisha, India**.
- **Sun Temple** was built in **1250 CE** during the reign of the Eastern Ganga King **Narsimhadeva-I** from stone in the form of a giant ornamented chariot dedicated to the **Sun god, Surya** and, conceived as a giant stone chariot with 12 wheels. In **Hindu Vedic iconography** Surya is represented as rising in the east and traveling rapidly across the sky in a chariot drawn by **seven horses**.
- This temple is dedicated to the sun god, Surya, **the first rays of the sun fall on the entrance of the temple**. Much of the temple has fallen into rack and ruin but what remains still holds enough charm to captivate.
- It is the most famous of the few sun temples built in India. The temple in its present state was declared by **UNESCO a World Heritage Site in 1984 CE**.

★ Additional Information

- The temple follows the **Kalinga or Orissa style of architecture**, which is a subset of the **nagara style of Hindu temple architecture**.
- Three kinds of stone were used in the temple's construction – **chlorite, laterite, and Khondalite**. Khondalite (though of poor quality) was used throughout the monument while **chlorite** was restricted to doorframes and to a few sculptures,

while **laterite** was used in the foundation, the (invisible) core of the platform, and in the staircases.

- **Today, this site is not only popular with tourists and pilgrims** but also serves as a venue for cultural festivals, classical Indian dance performances, etc. Thus, even today the Sun Temple continues to play its role in preserving and furthering India's immense cultural heritage.

72. Answer: c

Explanation:

The correct answer is World Wide Web Consortium.

★ Key Points

- In the field of computers and the Internet, W3C stands for **World Wide Web Consortium**.
- The **World Wide Web Consortium (W3C)** is an international community where Member organizations, a full-time staff, and the public work together to **develop Web standards**.
- Founded in 1994 and currently led by Web inventor and **Director Tim Berners-Lee** and **CEO Jeffrey Jaffe**, W3C's mission is to lead the Web to its full potential.
- The W3C is an industry consortium that seeks to **promote standards for the evolution of the Web and interoperability between WWW products by producing specifications and reference software**. Although W3C is funded by industrial members, it is vendor-neutral, and its products are freely available to all.
- The organization is guided by its open standards principles. It calls them OpenStand, which it refers to as **"The Modern Paradigm for Standards"**.

★ Additional Information

- The World Wide Web Consortium (W3C) was founded in 1994 by Tim Berners-Lee after he left the European Organization for Nuclear Research (CERN) in **October 1994**.

- It was founded at the **Massachusetts Institute of Technology Laboratory for Computer Science (MIT/LCS)** with support from the European Commission, the Defense Advanced Research Projects Agency (DARPA), which had pioneered the ARPANET, one of the predecessors to the Internet.
- W3C also engages in education and outreach, develops software, and serves as an open forum for discussion about the Web.

73. Answer: d

Explanation:

Formula:

Let P = Principal, R = rate of interest and N = time

$$\text{Compound interest} = P(1 + R/100)^N - P$$

Calculation:

Let P = Rs.100 and A = Rs.200

$$\Rightarrow 200 = 100(1 + R/100)^8$$

$$\Rightarrow 2 = (1 + R/100)^8$$

Squaring both sides,

$$\Rightarrow 4 = (1 + R/100)^{16}$$

\therefore In 16 years, it will become four times.

74. Answer: b

Explanation:

Calculation:

Let fraction be a/b .

New numerator = $150a/100$

New denominator = $180b/100$

New fraction = $5a/6b$

Then,

$5a/6b = a/b \times ?$

\therefore Required value = $5/6$

75. Answer: c

Explanation:

Given :

Range of number = 6000 to 7000

Calculation:

LCM of 12, 21, 32 and 18 = 2016

$6048 = 2016 \times 3$

\therefore From options, 6048 is multiple of 2016, so it will be divisible by 12, 21, 32 and 18.

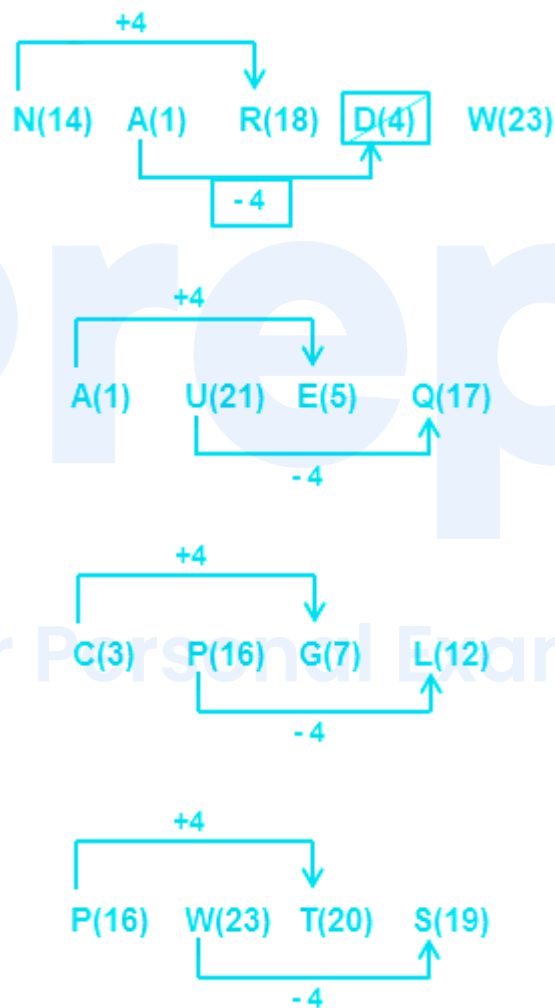
76. Answer: a

Explanation:

Table show alphabet serial number –

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

The pattern followed is,



All follow the same pattern, except ' NARD '.

Hence, **"NARD"** is the odd one.

77. Answer: b

Explanation:

Given:

Time = 30h

Calculation:

Let distance between Delhi to Kanyakumari be a km.

Speed = $\frac{a}{30}$ kmph

New speed = $\frac{a}{30} \times (1 - \frac{1}{15}) = \frac{14a}{450}$ kmph

New distance = $a - 10$

Then,

$$\Rightarrow \frac{14a}{450} = \frac{a-10}{30}$$

$$\Rightarrow 14a = 15a - 150$$

$$\Rightarrow a = 150 \text{ km}$$

$$\therefore \text{His original speed} = 150/30 = 5 \text{ kmph}$$

78. Answer: c

Explanation:

The logic followed here is:

Patient : Doctor → **Doctor** treats **Patient**.

Similarly,

Student : Teacher → **Teacher** teach to **Student** .

Hence, '**Teacher**' is the correct answer.

79. Answer: d

Explanation:

The logic followed here is:

Option (1) Bitter → Type of taste.

Option (2) Salty → Type of taste.

Option (3) Sour → Type of taste.

Option (4) Delicious → Not type of taste.

Hence, "**Delicious**" is an odd one.

★ Key Points

The seven most common flavors in food that are directly detected by the tongue are: **sweet, bitter, sour, salty, meaty (umami), cool, and hot.**

We have receptors for five kinds of tastes:

- Sweet.
 - Sour.
 - Salty.
 - Bitter.
 - Savory.
-

80. Answer: c

Explanation:

The correct answer villi.

- Intestinal villi are small, finger-like projections that extend into the lumen of the small intestine.
 - The inner lining of the small intestine has many finger-like projections called villi.
 - The villi increase the surface area for absorption.
 - Each villus is covered by a layer of epithelium and contains blood vessels and lymphatic vessels.
 - Food spreads through the epithelium into the blood vessels.

★ Additional Information

- **Enzymes** are proteins that help speed up metabolism, or chemical reactions, in our bodies. They build up some substances and break down others. All living things have enzymes. Our body naturally produces enzymes. But enzymes are also in manufactured products and food.
- **Tissue** can be defined as a group of cells with similar shapes and functions are termed as tissues.
- **Cells** are the basic building blocks of all living things. The human body is composed of trillions of cells.

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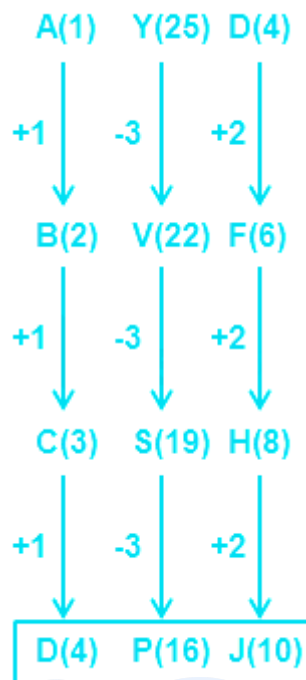
81. Answer: d

Explanation:

Table show alphabet serial number –

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 is shown below –



Hence, "DPJ" is the term that completes the series.

82. Answer: d

Explanation:

The correct answer is 1976.

★ Key Points

- The National Informatics Centre (NIC) was established in **1976** under the Planning Commission by the Indian Government .
- Additional Secretary late Dr. N Shesagiri was the first to introduce a network system in India called NICNET .
- National Informatics Centre (NIC) under the **Ministry of Electronics and Information Technology (MeitY)** is the technology partner of the **Government of India** .
- The objective of NIC was to provide technology-driven solutions to Central and State Governments in various aspects of development.

- NIC has been instrumental in adopting and providing Information and Communication Technology (ICT) and **eGovernance support to Central Government** .
- Its state-of-art IT infrastructure includes Multi-Gigabit PAN India Network NICNET, National Knowledge Network, National Data Centres, National Cloud, Video Conferencing, Email and Messaging Services, Command and Control Centre, Multi-layered GIS-based Platform, Domain Registration and Webcast.

★ Additional Information

- In 2018, NIC opened its fourth data centre in Bhubaneshwar to complement its existing data centers in New Delhi, Hyderabad and Pune .
- In addition to the national data centres, there are NIC **State Centres in 367 states or Union territories** . This is supplemented by **736 district offices** .
- **Dr. Neeta Verma** is the Director-General of the National Informatics Centre, a premier Technology organization of the Government of India.
- Under her guidance, NIC has also worked closely with various national institutions such as the **Indian Council of Medical Research (ICMR)**, the **Ministry of Health and Family Welfare (MoHFW)**, **National Centre for Disease Control (NCDC)** to extend necessary technical advice and support during the COVID-19 pandemic .

83. Answer: a

Explanation:

Given:

$$\text{Polynomial} = x^2 - 5x + m$$

Calculation:

$$\Rightarrow \alpha + \beta = -b/a = -(-5/1) = 5$$

$$\Rightarrow \alpha - \beta = 1$$

Solving,

$$\alpha = 3 \text{ and } \beta = 2$$

Then,

$$\Rightarrow \alpha\beta = c/\alpha = m/1$$

$$\Rightarrow 3 \times 2 = m$$

$$\Rightarrow m = 6$$

$$\therefore m = 6$$

84. Answer: d

Explanation:

The correct answer is 1620 km.

- According to National Waterways 1 (NW1) in India, The length (stretch) of Allahabad (Prayagraj) – Haldia is 1620 km.
- **National Waterway 1:**
 - **Ganga-Bhagirathi-Hooghly** river system from **Allahabad** to **Haldia** was declared as **National Waterway No.1** via **National Waterway** (Allahabad-Haldia stretch of the Ganga Bhagirathi- Hooghly river) **Act 1982** (49 of 1982).
 - It became operative from **27th Oct 1986** after the formation of the **IWAI**.
 - The **Hooghly river** portion of the waterway from **Haldia** to **Nabadwip** is tidal .
 - Seagoing vessels navigate up to **Calcutta** (140 km) and the fairway up to **Calcutta** is maintained by the **Calcutta Port Trust** . From Calcutta up to Tribeni, there are no navigation restrictions by inland vessels of a loaded depth up to 4m.
 - From **Nabadwip** to **Jangipur** the waterway is formed by the **Bhagirathi river** . Bhagirathi River is a regulated river because of the **Barrages** at **Farakka** and **Jangipur**.

- With the controlled discharge from the **Farakka Barrage** and **limited river conservancy work**, a navigable depth of 2m is maintained in this route throughout the year.

★ Key Points

- Kollam – Kottapuram waterway:
 - The West Coast Canal from **Kottapuram** to **Kollam** was declared **National Waterway No.3** via National Waterway (Kollam-Kottapuram stretch of West Coast Canal and Champakara) Udyogmandal Canals) **Act 1992** (33-F of 1992) and notified on **1st Feb. 1993**.
 - From **Kottapuram** to **Kollam** including **Champakara** and **Udyogmandal canals** has a navigable length of **205 km**. This waterway comprises natural **lakes, back-waters, river sections, and man-made canal sections**.
 - The **Champakara** and **Udyogmandal canals** link industrial centres of **Ambalamugal** and **Udyogmandal** with the **Kochi port**.
 - On the main West Coast Canal between Kollam and Kottapuram, the Kochi Edapallikota (120 km) stretch was opened for cargo movement during November 1994 consequent to improvement works carried out by IWAI.

85. Answer: a

Explanation:

Calculation:

Greatest four digit number = 9999

$$\Rightarrow 9999 = 307 \times 32 + 175$$

$$\Rightarrow 307 - 175 = 132$$

\therefore 132 is the number.

86. Answer: a

Explanation:

Calculation:

From above,

C and B has less % expenses but C has more sales than B so,

\therefore C is most profitable company.

87. Answer: a

Explanation:

Calculation:

E has more expenses but it has no share in the sales.

\therefore E has more % loss.

88. Answer: b

Explanation:

Calculation:

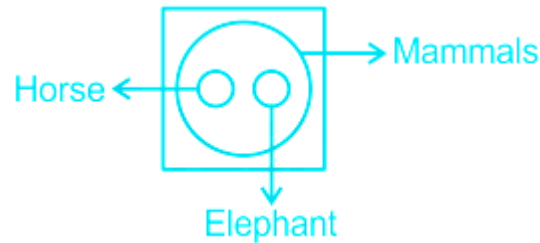
D has same % sales and expenses so,

\therefore D has reported no profit/loss.

89. Answer: d

Explanation:

The Venn diagrams best represent the relationship between – Mammals, Horse, Elephant figures are shown below:



Horses and Elephants both are mammal's animals.

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

90. Answer: d

Explanation:

The logic followed here is:

Option (1) Ranchi → Ranchi is the capital of Jharkhand state.

Option (2) Patna → Patna is the capital of Bihar state.

Option (3) Bhopal → Bhopal is the capital of Madhya Pradesh state.

Option (4) Punjab → Punjab is the state of India.

Hence, "**Punjab**" is an odd one

91. Answer: b

Explanation:

Given:

Statements:

(i) All children are cats.

(ii) All pots are children.

The least possible diagram for the given statements is as follows



Conclusions:

Option (1) Some children are pots → True (Because All pots are children so some children will be also pots)

Option (2) No pot is a cat → False (Because All pots are children and All children are cats so definitely all pots are cats)





Option (3) Some cats are pots → True (Because All pots are children and All children are cats so definitely Some cats will be also pots)

Option (4) All pots are cats → True (All pots are children and All children are cats so definitely all pots are cats)

Hence, " **Option (2)** " does **NOT follow** from the statements .



Additional Information

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

92. Answer: c

Explanation:

Table show alphabet serial number –

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

The pattern for the code is as follows,

HSBTQ is written as CNWOL



Similarly,

DSBOF be written as:



Hence, **DSBOF** is coded as **YNWJA**.

93. Answer: d

Explanation:

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

Decoding the information,

Sing	÷	–	×	+
Means	+	×	–	÷

Given:

$$40 \div 20 \times 10 + 10 - 5$$

After replacing the signs from left to right and using the BODMAS rule,

$$40 + 20 - 10 \div 10 \times 5$$

$$= 40 + 20 - 1 \times 5$$

$$= 40 + 20 - 5$$

$$= 60 - 5$$

$$= 55$$

Hence, "55" is the correct answer.

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94. Answer: a

Explanation:

Given Series:-

$$9 \text{ B } Q = 5 \text{ R } \$ \text{ J } @ \text{ 4 } * \text{ P } \& \text{ 9 M X } \# \text{ G}$$

Exactly midway between B and X,

$$9 \underline{\text{B}} \text{ Q} = 5 \text{ R } \$ \text{ J } \underline{@} \text{ 4 } * \text{ P } \& \text{ 9 M } \underline{\text{X}} \# \text{ G}$$

Hence, the correct answer is '@'.

95. Answer: b

Explanation:

Given:

7 members – A, B, C, D, E, F and G

1) E reached the office just after A and G reached the office just after E.

$A > E > G$

2) At least 3 members reached the office after G.

$A > E > G > _ > _ > _$

3) C reached the office in the end

$A > E > G > _ > _ > C$

4) F reached the office just before A but didn't reached the office after D.

$F > A > E > G > D/B > D/B > C$

Hence, "F" among them reached the office first.

96. Answer: b

Explanation:

The logic followed here is:

'Cow' is related to 'Animal' → Because Cow is an animal

Similarly,

'Sparrow' is related to 'bird' → Because Sparrow is a bird.

Hence, 'Bird' is the correct answer.

★ Additional Information

1. Insects are small animals with six legs and a hard outer shell called an exoskeleton. Most have wings and antennae.
2. **Classification – Insects Orders Illustrated (3–6th).**

- Beetle Order – Coleoptera.
- Mantid & Cockroach Order – Dictyoptera.
- True Fly Order – Diptera.
- Mayfly Order – Ephemeroptera.
- Butterfly & Moth Order – Lepidoptera.
- Ant, Bee, & Wasp Order – Hymenoptera.
- Dragonfly Order – Odonata.

97. Answer: c

Explanation:

Given information;

1) K is second tallest.

K – Second tallest

2) P is taller than M.

$P > M$

3) R is taller than M.

$R > M$

4) N is taller than P.

$N > P$

Now check the options :

Option (1) : $R > K > N > P > M$

Given information;

1) K – Second tallest \rightarrow True \rightarrow Follow by the option

2) $P > M \rightarrow$ True \rightarrow Follow by the option

3) $R > M \rightarrow$ True \rightarrow Follow by the option

4) $N > P \rightarrow$ True \rightarrow Follow by the option

Option (2) : $N > K > R > P > M$

1) K – Second tallest \rightarrow True \rightarrow Follow by the option

2) $P > M \rightarrow$ True \rightarrow Follow by the option

3) $R > M \rightarrow$ True \rightarrow Follow by the option

4) $N > P \rightarrow$ True \rightarrow Follow by the option

Option (3) : $R > K > P > N > M$

1) K – Second tallest \rightarrow True \rightarrow Follow by the option

2) $P > M \rightarrow$ True \rightarrow Follow by the option

3) $R > M \rightarrow$ True \rightarrow Follow by the option

4) $N > P \rightarrow$ True \rightarrow **Not follow by the option**

Option (4) : $N > K > P > R > M$

1) K – Second tallest \rightarrow True \rightarrow Follow by the option

2) $P > M \rightarrow$ True \rightarrow Follow by the option

3) $R > M \rightarrow$ True \rightarrow Follow by the option

4) $N > P \rightarrow \text{True} \rightarrow$ Follow by the option

Hence, "Option (3)" sequence about their height is **not possible**.

98. Answer: b

Explanation:

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

Decoding the information,

Sign	×	+	-	÷
Means	+	÷	×	-

Given:

$$16 \times 15 + 5 - 2 \div 4$$

After replacing the signs from left to right and using the BODMAS rule,

$$16 + 15 \div 5 \times 2 - 4$$

$$= 16 + 3 \times 2 - 4$$

$$= 16 + 6 - 4$$

$$= 22 - 4$$

$$= 18$$

Hence, "18" is the correct answer.

99. Answer: d

Explanation:

Given words:

Sports → Spoil → Spouse → Spit → Sparrow

According to the sequence in the dictionary:

The correct order of the given words is:

Sparrow

Spit

Spoil

Sports

Spouse

Hence, 'Spoil' will come in the middle.

100. Answer: a

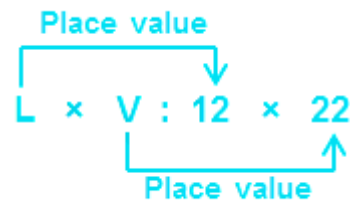
Explanation:

Table show alphabet serial number –

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

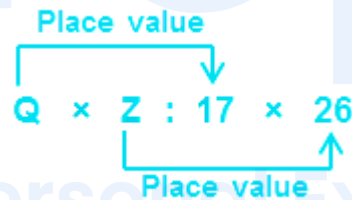
The pattern for the code is as follows,

$$L \times V : 12 \times 22$$



Similarly,

$$Q \times Z : 17 \times 26$$



Hence, KHWS is coded as "17 × 26".