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Your Personal Exams Guide

- NDA
- CDS
- SSC CGL
- CBSE UGC NET
- IAS
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- IBPS PO
- UP POLICE
- SSC MTS
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- IBPS RRB
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- RRB NTPC
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RRB NTPC 2020 (CBT 1) Previous Year Paper (30 Dec 2020) 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.

Test

1. Find the length of the longest pole that can be placed in a room of dimensions 30 m × 15 m × 10 m. **(+1, -0.33)**

   a. 31 m

   b. 33 m

   c. 35 m

   d. 18 m

---

2. A cuboid having the surface area of 3 adjacent faces as a, b, c has the volume: **(+1, -0.33)**

   a. $(abc)^{\frac{1}{3}}$

   b. abc

   c. $(abc)^{\frac{1}{2}}$

   d. $a^3b^3c^3$

---

3. Which state is the largest producer of gold in India? **(+1, -0.33)**

   a. Chhattisgarh

   b. Telangana

   c. Karnataka

   d. Jharkhand

---

4. A sum of money amounts to Rs.1600 in two years and Rs. 1700 in three years, at compounded interest, compounded annually. What is the rate of interest? (+1, -0.33)

a. 6.5%

b. 6.25%

c. 6%

d. 7%

---

5. Where is the 'Zojila Tunnel Project' located? (+1, -0.33)

a. Sikkim

b. Uttar Pradesh

c. Odisha

d. Jammu & Kashmir

---

6. In the context of computers, tracker balls is a/an _ _ _ _ _ _ _ device. (+1, -0.33)

a. output

b. input

c. storage

d. processing

---

7. Solve the following. (+1, -0.33)

6202.5 + 620.25 + 62.025 + 6.2025 + 0.62025 = ?

a. 6891.59675

b. 6791.59775

c. 5892.59775

d. 6891.59775

---

8. In a certain code language, VIARAIL is written as XKCTCKN. How will STRATEGY be written as in that language? **(+1, -0.33)**

a. UVTCVGIZ

b. UWTCVGIA

c. UVTCVFIA

d. UVTCVGIA

---

9. In the following expression which number should be added so that it becomes a complete square? **(+1, -0.33)**

1 + 3 + 7 + 9 + 11 + 13

a. 5

b. 7

c. 3

d. 1

---

10. What is the full form of DHCP in networking system? (+1, -0.33)

a. Dynamic Host Configuration Protocol

b. Dynamic Host Control Point

c. Data Host Control Panel

d. Display House Control Protocol

---

11. Which of the following is NOT related to Centre-State relations in India? (+1, -0.33)

a. Punchhi Commission

b. Kothari Commission

c. Rajamannar Commission

d. Sarkaria Commission

---

12. Find the number of all prime numbers less than 55. (+1, -0.33)

a. 15

b. 17

c. 18

d. 16

---

13. The down fold in a rock is known as a/an: (+1, -0.33)

a. syncline

b. backline

c. crestline

d. anticline

---

14. 'Garden' is related to 'Gardner' in the same way as 'Museum' is related to '_ _ _ _ _ _ _'. **(+1, -0.33)**

a. Artist

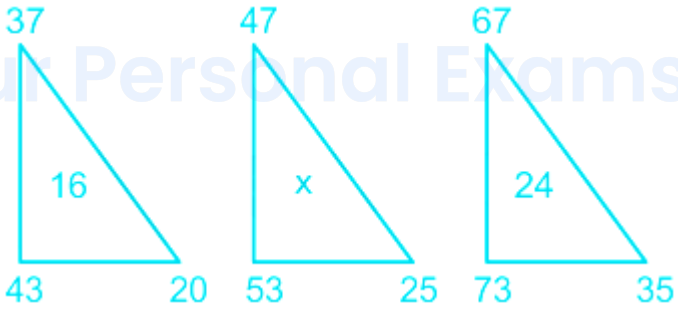
b. Guide

c. Curator

d. Museology

---

15. Study the given pattern carefully and select the number from among the given options that can replace x. **(+1, -0.33)**



a. 18

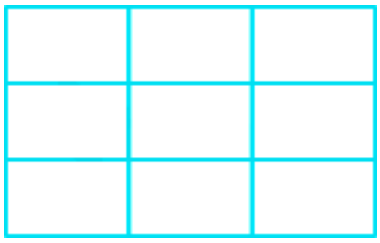
b. 14

c. 12

d. 20

---

16. How many rectangles are there in the given figure? (+1, -0.33)



a. 28

b. 36

c. 32

d. 42

---

17. One kilobyte is equal to _ _ _ _ _ _ _ bytes. (+1, -0.33)

a. 2048

b. 1024

c. 256

d. 512

---

18. India's scientific mission to observe and study the solar corona is called: (+1, -0.33)

a. Astrostat

b. Chandrayaan

c. Satnav

d. Aditya-L1

---

19. The 2022 Commonwealth Games are scheduled to be held in: (+1, -0.33)

a. Edinburg

b. Delhi

c. Perth

d. Birmingham

---

20. If the difference between a number and its 25% is 24, then the number is: (+1, -0.33)

a. 32

b. 34

c. 40

d. 28

---

21. Which eminent person is associated with Bardoli? (+1, -0.33)

a. Mahavir

b. Sardar Vallabhbhai Patel

c. Guru Nanak

d. Aurobindo Ghosh

---

22. If mean is 40 and standard deviation is 5 then C.V (Coefficient of variation) is: (+1, -0.33)

a. 20%

b. 12.5%

c. 100%

d. 5%

---

23. Which of the following is a metalloid? **(+1, -0.33)**

a. Silicon

b. Bromine

c. Lead

d. Gold

---

24. Who was the Viceroy when the Royal Commission on Civil Services was formed in 1912? **(+1, -0.33)**

a. Lord Irwin

b. Lord Dufferin

c. Lord Curzon

d. Lord Hardinge

---

25. A metallic part of a machine is made from a mixture of copper, zinc and lead mixed in the ratio of 13 : 6 : 1. If the weight of zinc in this part is 90 kg, then the total weight of the part will be: **(+1, -0.33)**

a. 285 kg

b. 210 kg

c. 195 kg

d. 300 kg

---

26. Which of the following is used in plastics? **(+1, -0.33)**

a. Krypton

b. Ammonia

c. Butane

d. Ethylene

---

27. Who wrote the great literary work 'Mricchakatika'? **(+1, -0.33)**

a. Kalidasa

b. Shudraka

c. Harsha

d. Bhaasa

---

28. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster. **(+1, -0.33)**

ABCD : ZYXW :: GHIJ : ?

a. PQRS

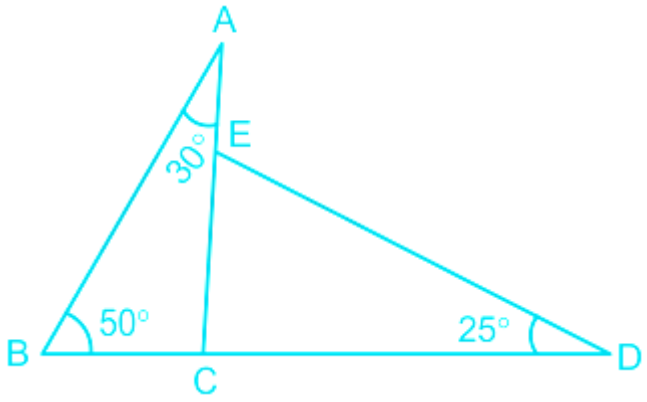
b. TSRQ

c. LMNO

d. MLKJ

---

29. In the given diagram, if ∠BAC = 30°, ∠ABC = 50° and ∠CDE = 25°, then ∠AED is equal to: **(+1, -0.33)**



a. 115°

b. 105°

c. 75°

d. 95°

---

30. Which of the following is composed of nerve fibres that mediate reflex actions and that transmit impulses to and from the brain? **(+1, -0.33)**

a. Spinal cord

b. Heart

c. Rib cage

d. Muscles

---

31. Avinash, Bhuvnesh and Chaman can complete a piece of work in 20, 30 and **(+1, -0.33)**

60 days respectively. In how many days can Avinash complete the work if he is assisted by Bhuvnesh and Chaman on every third day?

a. 15

b. 18

c. 16

d. 12

---

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

$(4 + 2 - 16 \div 4 + 3) + \{(1 + 8 \times 7) \div 19\} \times [(3 + 5 - 4) + (17 - 9 \times 4)] = ?$

a. -40

b. -225

c. 335

d. 40

---

33. Which is the 29^{th} state of India created in 2014? **(+1, -0.33)**

a. Telangana

b. Uttarakhand

c. Jharkhand

d. Sikkim

---

34. As of October 2020, who is the Chairman of the Fifteenth Finance **(+1, -0.33)**

Commission of India?

a. N. K. Singh

b. Shaktikanta Das

c. A. M. Khusro

d. Vijay L. Kelkar

---

35. In a game Rajesh lost $\frac{1}{3}$ of his money in the first round of the game, in the second round he losses $\frac{3}{5}$ of his remaining money and in the third round he lost $\frac{4}{7}$ of the rest. He is left with what part of original sum of monely? **(+1, -0.33)**

a. $\frac{4}{15}$

b. $\frac{4}{45}$

c. $\frac{4}{35}$

d. $\frac{2}{5}$

---

36. $(x - y)^3 + (y - z)^3 + (z - x)^3 = ?$ **(+1, -0.33)**

a. 3xyz

b. $3(x - y)(y - z)(z - x)$

c. $(x + y + z)(x^2 + y^2 + z^2)$

d. $(x - y)(y - z)(z - x)$

---

37. Which of the following is situated in Jammu and Kashmir? **(+1, -0.33)**

a. Pakhal Wildlife Sanctuary

b. Dachigam National Park

c. Jaldapara National Park

d. Balpakram National Park

---

38. The Big Bang theory was propounded by: **(+1, -0.33)**

a. Thomas Gold

b. Al-Biruni

c. Dr. Allen Sundes

d. George Lamaitre

---

39. In which year did the disinvestment process in Public Sector Enterprises in India start? **(+1, -0.33)**

a. 2018

b. 2000

c. 1990

d. 1991

---

40. If 3 men or 6 boys can complete a task in 20 days, how many days will 6 men and 8 boys take to do the same task? **(+1, -0.33)**

a. 15

b. 16

c. 10

d. 6

---

41. Number 0.232323 can be written in rational form as: **(+1, -0.33)**

a. $\frac{23}{999}$

b. $\frac{23}{99}$

c. $\frac{23}{990}$

d. $\frac{23}{9}$

---

42. The given table shows the number of formal learners, informal learners and illiterates, on the basis of gender, in the age group of 18-30 years in village X near Delhi. Determine the ratio among the formal learners, informal learners and illiterates. **(+1, -0.33)**

Formal Learners	Boys	39
	Girls	52
Informal Learners	Boys	65
	Girls	78
Illiterates	Boys	143
	Girls	169

a. 7 : 11 : 24

b. 7 : 24 : 11

c. 11 : 24 : 7

d. 11 : 7 : 24

---

43. India's longest road-cum-rail bridge, connecting Assam and Arunachal Pradesh, is called the: (+1, -0.33)

a. Pamban Bridge

b. Bogibeel Bridge

c. Howrah Bridge

d. Godavari Bridge

---

44. The 'SATH-E' project is associated with which of the following fields? (+1, -0.33)

a. Education

b. Agriculture

c. Transportation

d. Communication

---

45. Select the number from among the given options that can replace the question mark (?) in the following series. (+1, -0.33)

2, 6, 12, 20, 30, 42, ?

a. 50

b. 52

c. 60

d. 56

---

46. Which of the following welfare schemes' achievements have been recongnised by the Guiness World Records? **(+1, -0.33)**

a. Pradhan Mantri Kaushal Vikas Yojana

b. Pradhan Mantri Jan Dhan Yojana

c. Pradhan Mantri Suraksha Bima Yojana

d. Pradhan Mantri Krishi Sinchai Yojana

---

47. Who founded the 'Slave Dynasty'? **(+1, -0.33)**

a. Nasir-ud-din Mahmud

b. Razia Sultan

c. Qutb-ud-din Aibak

d. Ghiyas-ud-din Balban

---

48. Which state does NOT have a Vidhan Parishad (Legislative Council)? **(+1, -0.33)**

a. Karnataka

b. Maharashtra

c. Kerala

d. Telangana

49. Which of the following is a satellite based augmentation system of India? **(+1, -0.33)**

a. GAGAN SHAKTI

b. NAG

c. GAGAN

d. JATAN

50. 'Obey' is related to 'Disobey' in the same way as 'Appoint' is related to '_ _ _ _ _ _ _'. **(+1, -0.33)**

a. Dissent

b. Eliminate

c. Disappear

d. Dismiss

51. Value of cos 1° cos 2° cos 3° .....cos 179° is: **(+1, -0.33)**

a. 0

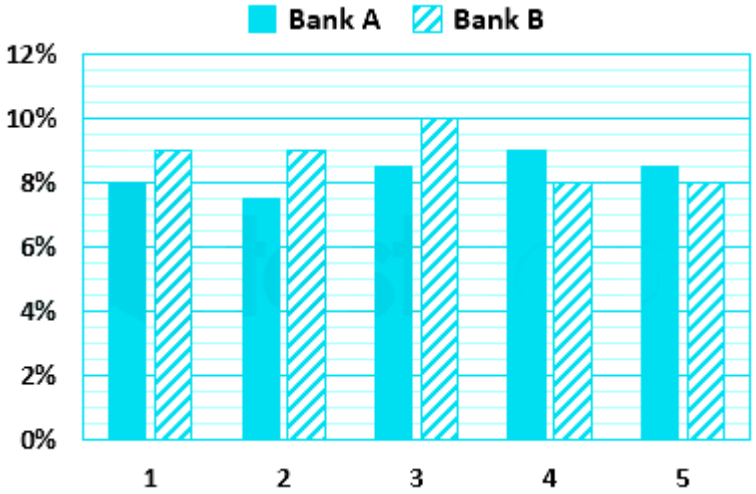
b. 1

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

d. -1

52. The given chart gives interest rates offered on deposits by two banks A **(+1, -0.33)**

and B for a period of 5 years (1-5). What would be the difference in interest amount earned in year 3, if a person had deposited Rs. 23 lakhs at the begining of the year in bank B instead of in bank A?



a. Rs. 34,500

b. Rs. 28,800

c. Rs. 37,600

d. Rs. 41,200

---

53. The Bering Strait connects the: **(+1, -0.33)**

a. Atlantic Ocean and Gulf of Hudson

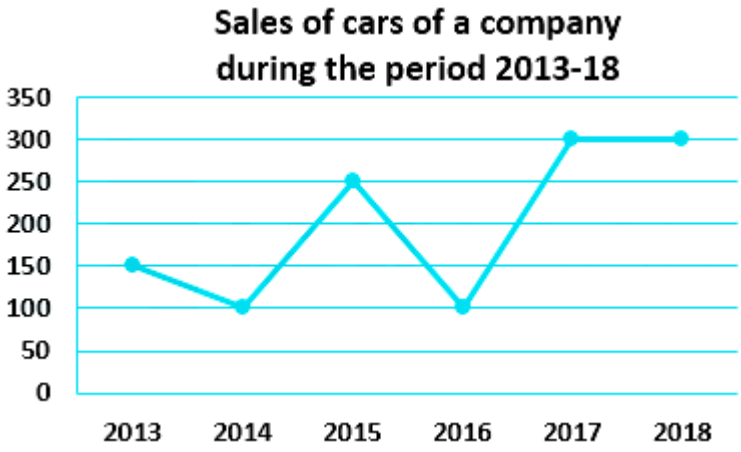
b. Indian Ocean and Java Sea

c. Mediterranean Sea and Atlantic Ocean

d. Arctic ocean and Pacific Ocean

---

54. From the given diagram, determine the difference between the total number of cars sold in the first three years and in the last three years. **(+1, -0.33)**



a. 1200

b. 150

c. 200

d. 700

---

55. On the first day 84500 people visited a trade fair. On the 4 th day number reduced to 16900. By what percentage people reduced on the 4 th day? **(+1, -0.33)**

a. 0%

b. 75%

c. 80%

d. 20%

---

56. Five boys A, B, C, D and E and five girls P, Q, R, S and T are sitting in two rows opposite each other such that the boys are in one row and the girls are in one row. C is sitting in the center and A is sitting on his left. D is sitting between B and C. T who is to the immediate left of S is sitting opposite B **(+1, -0.33)**

who is three seats away from E. P is sitting between Q and R. Who is sitting opposite E?

a. R

b. Q

c. S

d. P

---

57. Lord Mahavira's original name is _ _ _ _ _ _ _ _ _. **(+1, -0.33)**

a. Ananda

b. Siddhartha

c. Sariputta

d. Vardhamana

---

58. The value of cos 12° + cos 84° + cos 168° + cos 96° is: **(+1, -0.33)**

a. 0.5

b. 1

c. 0

d. -1

---

59. Value of the square root of $\frac{36.1}{102.4}$ is: **(+1, -0.33)**

a. $\frac{61}{340}$

b. $\frac{19}{34}$

c. $\frac{19}{32}$

d. $\frac{19}{31}$

---

60. Invertebrates do NOT include: **(+1, -0.33)**

a. molluscs

b. reptiles

c. arachnids

d. insects

---

61. The Nipah virus outbreak in 2018 took place in: **(+1, -0.33)**

a. Kerala

b. Uttar Pradesh

c. Karnataka

d. Tamil Nadu

---

62. A shopkeeper sold two toys for Rs. 990 each. On the first toy he gained 10% and on the second he lost 10%. Find the total percentage gain or loss. **(+1, -0.33)**

a. 10% Loss

b. 10% Gain

c. 1% Loss

d. 1% Gain

---

63. The base of an isosceles triangle in 8 cm and one of its equal sides is 5 cm. The height of the vertex opposite to the base from the base is: **(+1, -0.33)**

a. 3 cm

b. 4 cm

c. 2 cm

d. 5 cm

---

64. Sunila had $9\frac{1}{4}$ kg of flour to make bread with. If the recipe says that she needs $1\frac{1}{8}$ kg to make one loaf of bread, how many loafs can she make? Estimate to the nearest whole number. **(+1, -0.33)**

a. 7

b. 10

c. 9

d. 8

---

65. Who is the author of the book 'Republic'? **(+1, -0.33)**

a. Leo Tolstoy

b. John Ruskin

c. Plato

d. TS Eliot

66. Which of the following is an ancient Buddhist text? (+1, -0.33)

a. Vishnu Purana

b. Raghuvamsam

c. Ritusamhara

d. Abhidharma kosha

67. If '+' is replaced by '−', '×' is replaced by '+' and '−' by '×'. then $28 + (5 \times 7) - \frac{9}{6}$ will be equal to: (+1, -0.33)

a. 15

b. 10

c. 20

d. 8

68. What is the smallest number which when increased by 3 is divisible by 27, 35, 25 and 21? (+1, -0.33)

a. 4722

b. 317

c. 4725

d. 4728

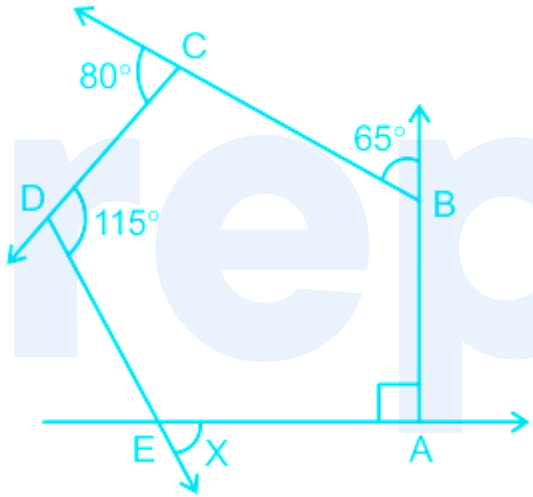
69. The sum of two numbers is 20 and their difference is 2.5. Ratio of these numbers will be: **(+1, -0.33)**

a. 7 : 9

b. 9 : 7

c. 3 : 5

d. 2 : 7



70. **(+1, -0.33)**

In the given figure, value of x is:

a. 70°

b. 60°

c. 55°

d. 65°

---

71. If A is the brother of B, B is the father of C and D is the wife of A, then how is D related to C? **(+1, -0.33)**

a. Niece

b. Aunt

c. Uncle

d. Nephew

---

72. Four natural resources are listed, out of which three are alike in some manner and one is different. Select the odd one. (+1, -0.33)

a. Water

b. Coal

c. Solar

d. Wind

---

73. Which of the following is NOT an abiotic component? (+1, -0.33)

a. Water

b. Green plant

c. Sunlight

d. Soil

---

74. Parshotam and Anjilka moving in the opposite directions from the same place at a speed of 30 km/h and 3.5 km/h respectively. How far will they be from each other after 2.5 h? (+1, -0.33)

a. 8.75 km

b. 66.25 km

c. 83.75 km

d. 75 km

---

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

$$\left[\frac{\left(1+4-\frac{42}{14}+65\right)+\left\{\frac{(2+7\times9)}{13}\right\}\times[(65+7-19)]+(19-39\times5)}{369}\right]=?$$

a. -52/123

b. -25/123

c. 52/123

d. 224

---

76. Which is India's first ever Innovative advanced Earth Observation Satellite launched in 2018? **(+1, -0.33)**

a. HysIS

b. GSAT-2

c. APPLE

d. GSAT-7

---

77. Two dice are thrown simultaneously and the sum of the numbers appearing on them is noted. What is the probability that the sum is 12? **(+1, -0.33)**

a. $\frac{1}{36}$

b. 3

c. 36

d. $\frac{12}{36}$

---

78. Who was the founder of the Vishishtadvaita philosophy? (+1, -0.33)

a. Vishnu Swami

b. Madhvacharya

c. Ramanujacharya

d. Nimbarka

---

79. 'Operation Greens' is a government scheme for: (+1, -0.33)

a. development of bamboo crops

b. Supply stabilisation of TOP crops (Tomato Onion Potato)

c. research and investment in crop education

d. general price levels of crops

---

80. Which of the following is the assumption for the claim that 'Pleasure is desirable'? (+1, -0.33)

a. Everyone desires pleasure.

b. Some persons desire pleasure.

c. Everyone desires something.

d. Pleasure is essential.

---

81. Which is the first nuclear reactor made in India? **(+1, -0.33)**

a. KAMINI

b. CIRUS

c. Apsara

d. Dhruva

---

82. Which of the following is the administrative capital of South Africa? **(+1, -0.33)**

a. Durban

b. Cape Town

c. Pretoria

d. Bloemfontein

---

83. Where are the headquarters of the OECD is located? **(+1, -0.33)**

a. Rome

b. Paris

c. New York

d. Geneva

---

84. Which of the following is NOT classified under Kingdom Animalia? **(+1, -0.33)**

a. Metazoa

b. Protozoa

c. Choanozoa

d. Pipiens

---

85. By selling an article for Rs.138, a shopkeeper losses 8%. At what price should the article be sold to get a gain of 4%? (+1, -0.33)

a. Rs. 90

b. Rs. 210

c. Rs. 144

d. Rs. 156

---

86. The conclusion that follows from the premises 'All voters are citizens' and 'All citizens are loyalists' is: (+1, -0.33)

a. All voters are loyalists.

b. All citizens are voters.

c. All loyalists are citizens.

d. All loyalists are voters.

---

87. 'Little knowledge is a dangerous thing' is a decision based on: (+1, -0.33)

a. Ignorance is bliss.

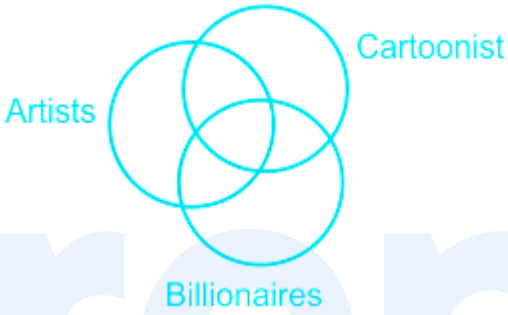
b. Informal learning is not satisfactory.

c. Little things are dangerous.

d. Incomplete information may cause harm.

---

88. In the given Venn diagram, assuming that the shaded areas do not exist, determine which conclusion can be validity drawn? **(+1, -0.33)**



a. All cartoonists are artists.

b. No artists are billionaires.

c. All artists are cartoonists.

d. Some billionaires are cartoonists.

---

89. Which of the following is a mirror image of the word ENCOURAGEMENT? **(+1, -0.33)**

a. TИƎMƎGAЯUOCИƎ

b. TИƎMƎGƎAЯUOCИƎ

c. TИƎMƎAGЯUOCИƎ

d. TИƎMƎAGAUЯOCИƎ

90. In a certain code language, PENINSULA is written as 111. How will DICHOTOMY be written as in that language? **(+1, -0.33)**

a. 212

b. 121

c. 112

d. 222

91. Select the number from among the given options that can replace the question mark (?) in the following series. **(+1, -0.33)**

1, 9, 25, 49, 81, ?

a. 91

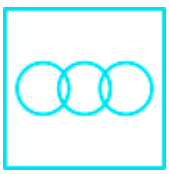
b. 111

c. 121

d. 94

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

Crockery, Plate, Bowl

a. 

b. 

c. 

d. 

---

93. Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster. **(+1, -0.33)**

AEJ : ZVQ :: BFK : ?

a. YUP

b. CGK

c. LPT

d. TPL

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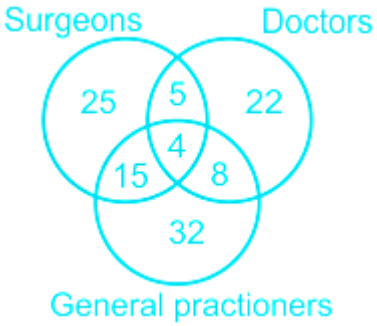
94. From the given Venn diagram, find the number of doctors who are surgeons but not general practitioners. **(+1, -0.33)**



a. 8

b. 9

c. 4

d. 5

---

95. Select the number from among the given options that can replace the question mark (?) in the following series. **(+1, -0.33)**

13, 23, 43, 53, 73, 83, 103, 113, 133, 143, ?

a. 183

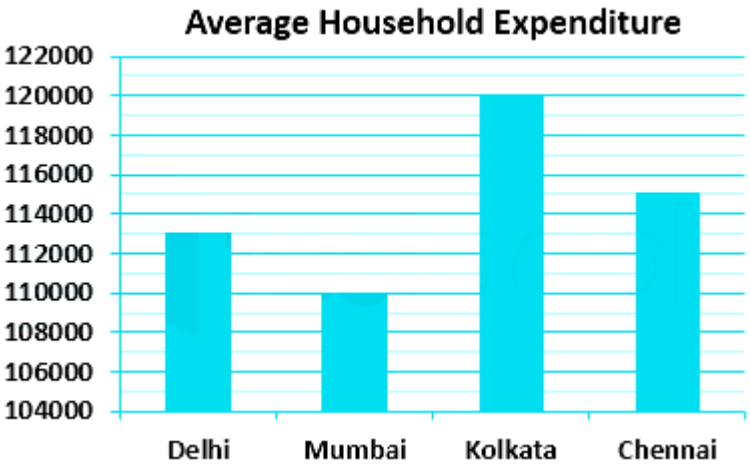
b. 163

c. 153

d. 173

---

96. The average household expenditure in four metros Delhi, Mumbai, Kolkata and Chennai is given in the graph. What is the ratio of the highest average household expenditure to the lowest average household expenditure? **(+1, -0.33)**



a. 12 : 11

b. 23 : 11

c. 11 : 12

d. 11 : 23

---

97. The conclusion that follows from the premises 'All horses are mammals' and No mammals are amphibians' is: **(+1, -0.33)**

a. Some horses are amphibians.

b. All horses are amphibians.

c. Every amphibian is a horse.

d. No amphibians are horses.

---

98. Four equipment are listed, out of which three are alike in some manner and one is different. Select the odd one. **(+1, -0.33)**

a. Compass

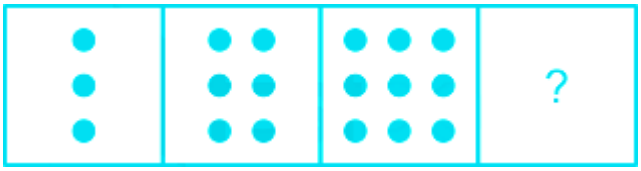
b. Beaker

c. Test Tube

d. Dropper

---

99. Study the given pattern carefully and select the image from among the given options that can replace the question mark (?). (+1, -0.33)



a. 

b. 

c. 

d. 

---

100. Select the number from among the given options that can replace the question mark in the following matrix. (+1, -0.33)

14	12	10	8
10	8	2	4
8	14	6	16
12	18	14	?

a. 18

b. 10

c. 16

d. 20

Answers

1. **Answer: c**

Explanation:

Given:

Dimensions of the room = 30 m × 15 m × 10 m

Formula used:

Diagonal of a cuboid = $\sqrt{l^2 + b^2 + h^2}$

Calculation:

The longest pole that can be placed in a cuboidal room is the diagonal.

Diagonal of cuboid = $\sqrt{30^2 + 15^2 + 10^2} = \sqrt{900 + 225 + 100}$

$\Rightarrow \sqrt{1225} = 35$ m

∴ The longest pole that can be placed in the cuboidal room = 35 m

---

2. **Answer: c**

Explanation:

Given:

The Areas of 3 adjacent faces of cuboid = a, b & c

Formula used:

The volume of cuboid = Length × Breadth × Height

Calculation:

Let the sides of the cuboid be L, B & H

So, a = L × B; b = B × H; c = H × L

abc = (L × B) × (B × H) × (H × L)

⇒ abc = $L^2 \times B^2 \times H^2$

⇒ L × B × H = √abc

∴ The volume of cuboid = √abc

---

3. **Answer: c**

Explanation:

The correct answer is **Karnataka.**

⭐ **Key Points**

- **Karnataka** is the largest producer of gold in India.
- Karnataka was the leading producer of **primary gold** accounting for 99% of the total production.
    - The remaining production was reported from **Jharkhand.**
- **Kolar gold fields and Hutti goldfields** are the two major goldfields located in Karnataka.
- Karnataka has the only operational gold mine in India.
- Hutti Gold Mines is the only producer of primary gold in the country.
    - Hutti Gold Mines has the capacity to produce 5,50,000 tonnes per annum.
    - Hutti Gold Mine is one of the most ancient metal mines in the world.
- Kolar gold fields closed on 28 February 2001 due to a fall in gold prices.

⭐ **Additional Information**

- **Jharkhand** accounts for more than 40% of the mineral resources of India.
- **Chhattisgarh** is known as the 'rice bowl of central India'.
- **Ramagundam in Telangana** is called the "energy city of India".

4. **Answer: b**

Explanation:

Given:

Amount in 2 years = Rs.1600

Amount in 3 years = Rs.1700

Formula used:

Amount = Principal × $(1 + R/100)^n$

Calculation:

Let the principal be = P

$1600 = P(1 + R/100)^2$ (1)

$1700 = P(1 + R/100)^3$ (2)

By (2) ÷ (1)

$\Rightarrow 1700 \div 1600 = P(1 + R/100)\ 3 \div P(1 + R/100)^2$

$\Rightarrow 17/16 = (100 + R)^3 \div (100 + R)^2$

$\Rightarrow 17/16 = (100 + R)/100$

$\Rightarrow 1700 = 1600 + 16R$

$\Rightarrow R = 100/16 = 6.25$

∴ The rate of interest is 6.25%

⭐ Alternate Method

The difference between 3rd year interest and 2nd year interest = 1700 - 1600 = 100100 is the interest on the principal Rs.16001600 × R/100 = 100⇒ **R = 100/16 = 6.25%**

---

5. Answer: d

Explanation:

The correct answer is **Jammu & Kashmir.**

⭐ **Key Points**

- **Zojila tunnel** is one of the longest tunnels in Asia.
  - Zojila Tunnel Project' located in **Jammu & Kashmir.**
  - It is a **14.2 km** long road tunnel under Zoji La pass in the Himalayas.
  - The tunnel will provide all-year connectivity between **Srinagar valley and Leh.**
  - The construction period of the Zojila tunnel was five years due to its unique terrain.
  - The Zoji La tunnel project was approved by the Government of India in January **2018.**
  - Zoji La tunnel project's construction work was inaugurated by Prime Minister Narendra Modi in May 2018.
- India re-captured Zoji La from Pakistani raiders under **Operation Bison** during 1947-1948.

⭐ **Additional Information**

- **Theng Tunnel** is a road tunnel located in Sikkim.
- **Atal Tunnel** is located in Himachal Pradesh.
- **The Pir Panjal Railway Tunnel** is located in Jammu and Kashmir.
- **Kuthiran Tunnel** is located in Kerala.

---

6. Answer: b

Explanation:

The correct answer is **Input.**

⭐ Key Points

- A device that receives data for processing is called an **input device.**
- In the context of computers, **tracker balls** is an input device.
  - A trackball is a **pointing device.**
  - The trackball was invented by **Ralph Benjamin** .
- An input device converts input information into suitable binary code from acceptable to a computer.
- Major **input devices:**
  - Keyboard.
  - Lightpen.
  - Mouse.
  - Joystick.
  - Scanner.
  - Microphone.
  - Optical mark reader.
  - Bar code reader.
  - Graphics tablet.
  - Touch screen.

⭐ Additional Information

- Major **output devices** :
  - Monitor.
  - Printer.
  - Speaker.
  - Projector.
  - Sound card.
  - Headphone.
  - Plotter.
  - Video card.

7. **Answer: d**

Explanation:

Calculation:

6202.5 + 620.25 + 62.025 + 6.2025 + 0.62025

⇒ 6822.75 + 68.84775

⇒ 6891.59775

∴ **The required result = 6891.59775**

---

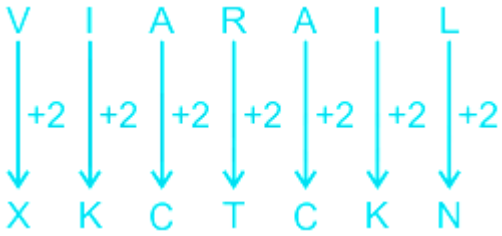
8. **Answer: d**

Explanation:

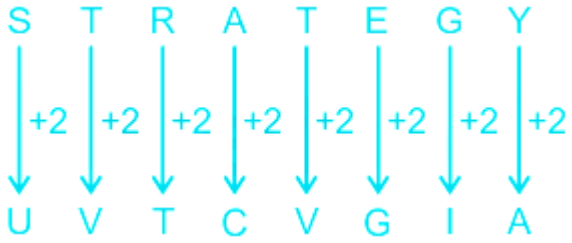
The pattern followed here is:

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

According to the alphabetical positions of the letters,



Similarly,



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

---

9. **Answer: a**

Explanation:

Given:

1 + 3 + 7 + 9 + 11 + 13

Concept:

The sum of consecutive odd numbers is a perfect square.

Calculation:

Here, in this series, we need to add 5 in order to make it a consecutive odd numbers series.

Hence, 1 + 3 + 7 + 9 + 11 + 13 = 44

∵ 44 + 5 = 49; 49 is the square of 7

∴ The required no to be added is 5.

---

10. **Answer: a**

Explanation:

The correct answer is Dynamic Host Configuration Protocol.

⭐ Key Points

- DHCP is the acronym of **Dynamic Host Configuration Protocol.**
- A Dynamic Host Configuration Protocol is a network **server that automatically provides and assigns IP addresses** , default gateways and other network parameters to client devices.
- It will help to **prevent duplication** of addresses and also help the administrator keep good records.
- DHCP is designed to improve the efficiency of allocating IP addresses.
- DHCP services exist for networks running both **Internet Protocol version 4 (IPv4) and Internet Protocol version 6 (IPv6).**
- The IPv6 version of the DHCP protocol is commonly called DHCPv6.

⭐ Additional Information

- Other common network protocols examples:
  - Address Resolution Protocol (ARP)
  - File Transfer Protocol(FTP)
  - HyperText Transfer Protocol(HTTP)
  - Post Office Protocol (POP3)
  - Simple Mail Transfer Protocol (SMTP)
  - Secure Shell Protocol (SSH)

---

11. Answer: b

Explanation:

Kothari Commission is NOT correct.

- Among the options, only **Kothari Commission** is NOT related to Centre-State relations in India.

⭐ Key Points

- **Kothari Commission** is related to the educational sector in India.
  - It was appointed to evolve a national system of education in India.

- Kothari Commission is also called **National Education Commission (1964-1966).**
- The new pattern named " **10+2+3 education system** " was put forward by Kothari Commission.
- The standardization of the educational system on the 10+2+3 pattern was one of the main recommendations of the commission.
- Kothari Commission was formed on **14 July 1964** under the chairmanship of **Daulat Singh Kothari.**
- The commission was dissolved on**29 June 1966** after submitting its final report.
- Kothari Commission was the **sixth commission in independent India** and the first commission with comprehensive terms of reference on education.

⭐ Additional Information

- The **Punchhi Commission** was constituted by the Government of India as a Commission on Centre-State relations.
  - It was constituted in **2007** under the chairmanship of **Justice Madan Mohan Punchhi.**
- The **Rajamannar Committee** was constituted by the Tamil Nadu Government to redistribute powers between the Centre and the states.
  - It was constituted in **1971** under the chairmanship of **Justice P.V. Rajamannar.**
- The **Sarkaria Commission** was constituted by the Central Government as a Commission on Centre-State relations.
  - It was constituted in **1983** under the chairmanship of **Ranjit Singh Sarkaria.**

---

12. **Answer: d**

Explanation:

Calculation:

Prime numbers less than 55 = 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53

∴ The required no of prime numbers is 16

13. **Answer: a**

Explanation:

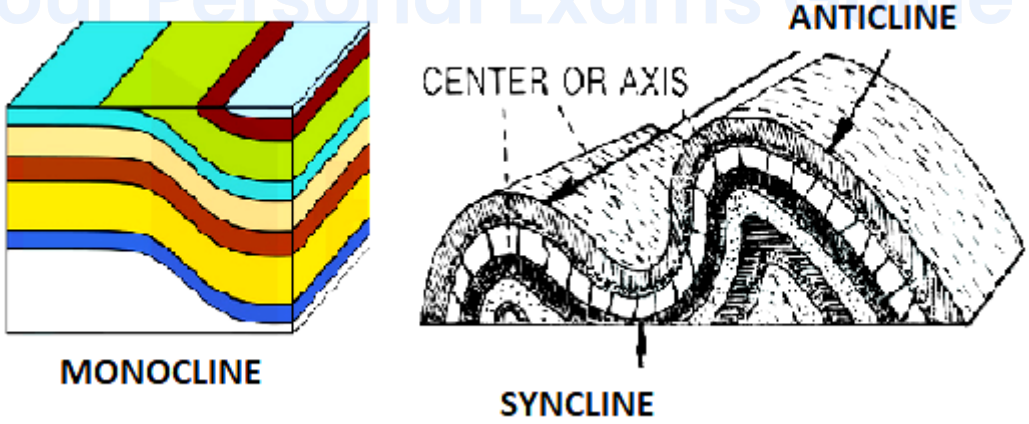
The correct answer is **syncline.**

⭐ Important Points

- Rocks deforming plastically under compressive stresses crumple into folds and do not return to their original shape.
  - If the rocks experience more stress, it may lead to folding or even fracture.
  - There are three major types of rock folding namely **monoclines, synclines, and anticlines.**

⭐ Key Points

- The downfold in a rock is known as a**syncline.**
  - A syncline is a fold with younger layers closer to the centre of the structure.
  - Syncline causes the youngest rocks are to be at the centre and the oldest on the outside.



⭐ Additional Information

- The downfold in a rock is known as a syncline an **anticline.**

- A **monocline** is a simple bend in the rock layers so that they are no longer horizontal.
- If there is no movement on either side of a fracture, the fracture is called a **joint.**

---

14. Answer: c

Explanation:

The logic is:

A Gardener is a person who maintains and looks after a Garden.

Similarly,

Curator is a keeper or custodian of a museum or other collection.

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

---

15. Answer: d

Explanation:

The logic follow here is:

[(top number + bottom number) ÷ right bottom number] × 4 = middle number

Figure (1) → (37 + 43) ÷ 20 = 80 ÷ 20 = 4

4 × 4 = 16

[(top number + bottom number) ÷ right bottom number] × 5 = middle number

Figure (2) → (47 + 53) ÷ 25 = 100 ÷ 25 = 4

4 × 5 = 20

[(top number + bottom number) ÷ right bottom number] × 6 = middle number

Figure (3) → (67 +73) ÷ 35 = 140 ÷ 35 = 4

4 × 6 = 24

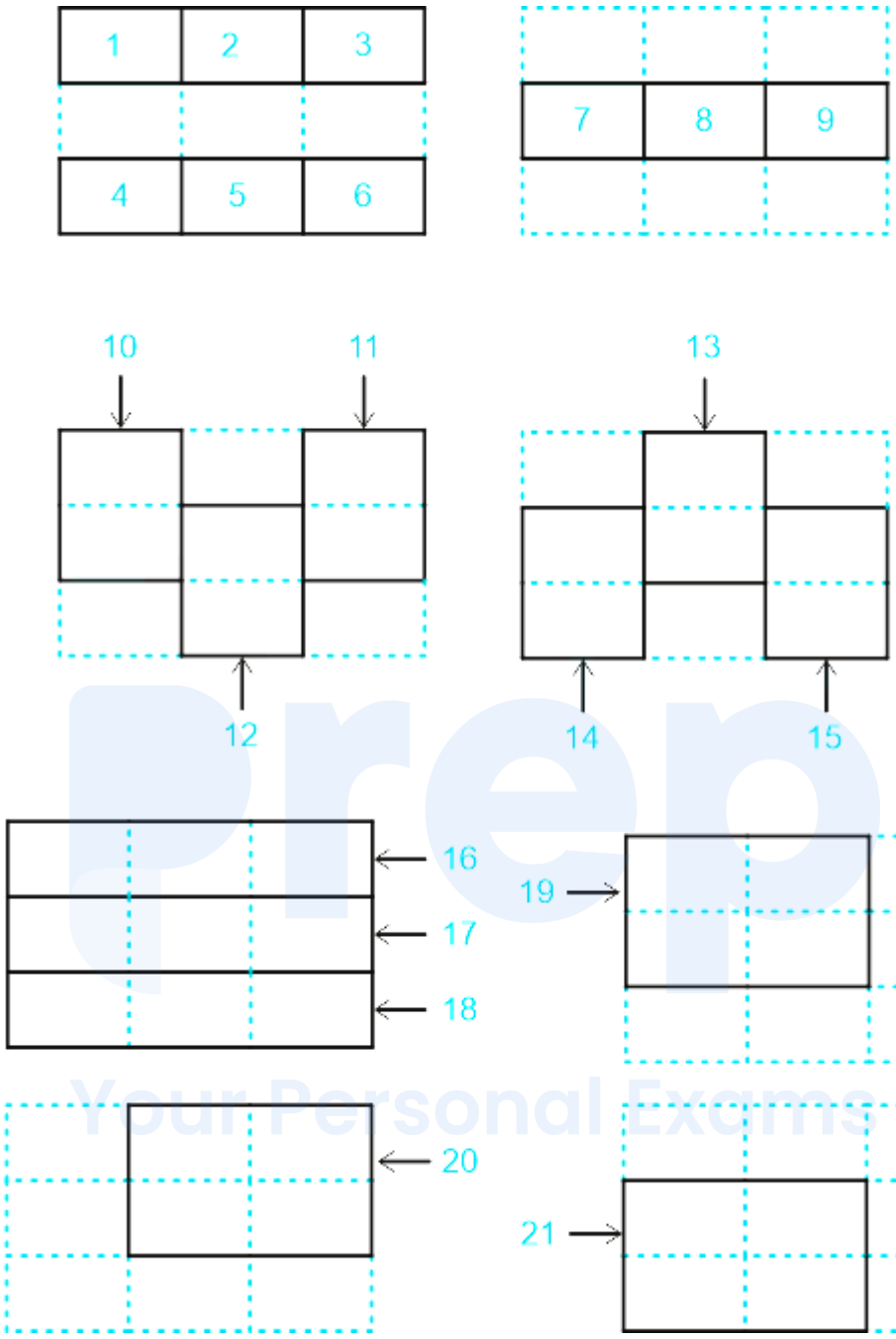
Hence, **20** is the correct answer.

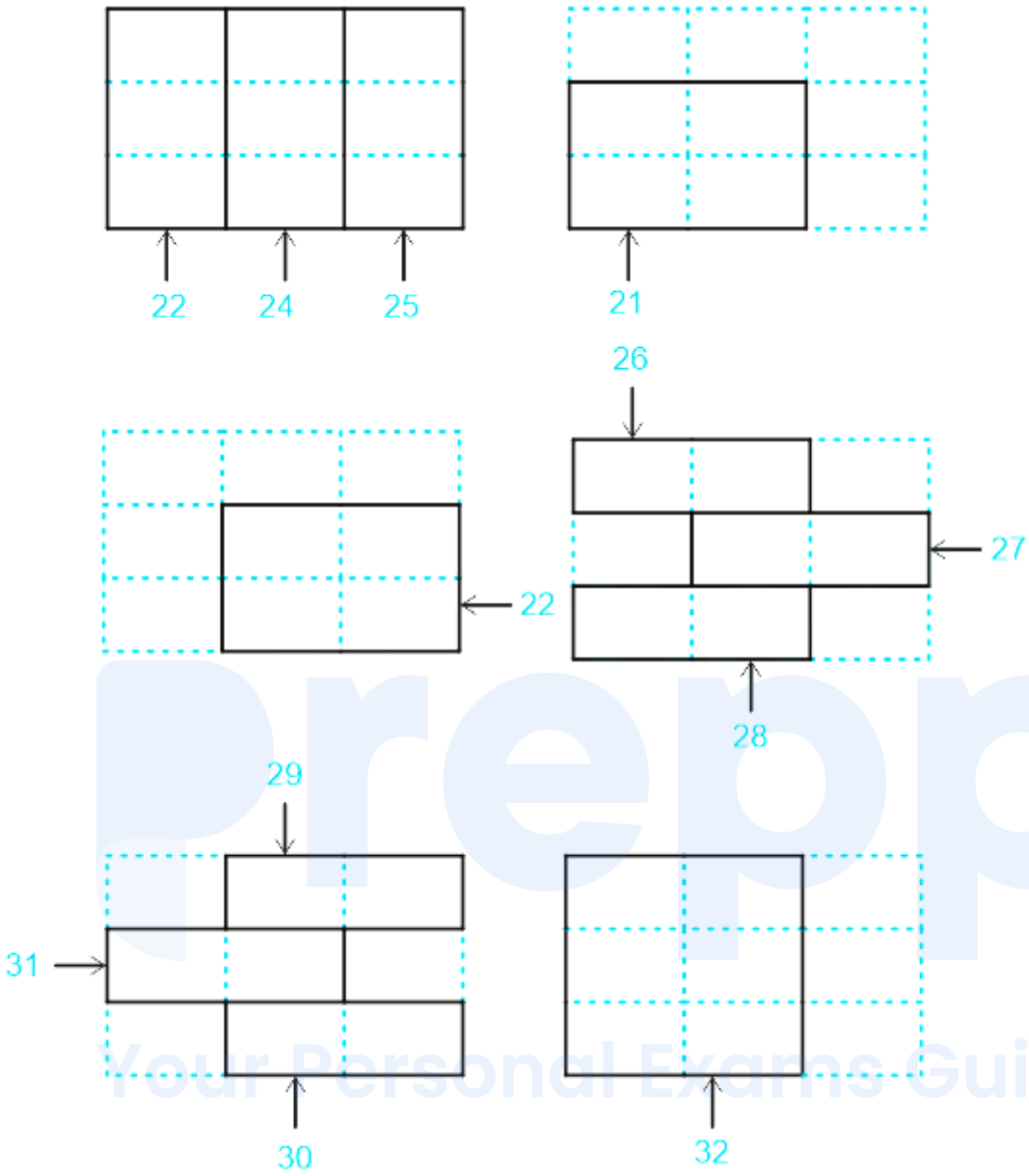
---

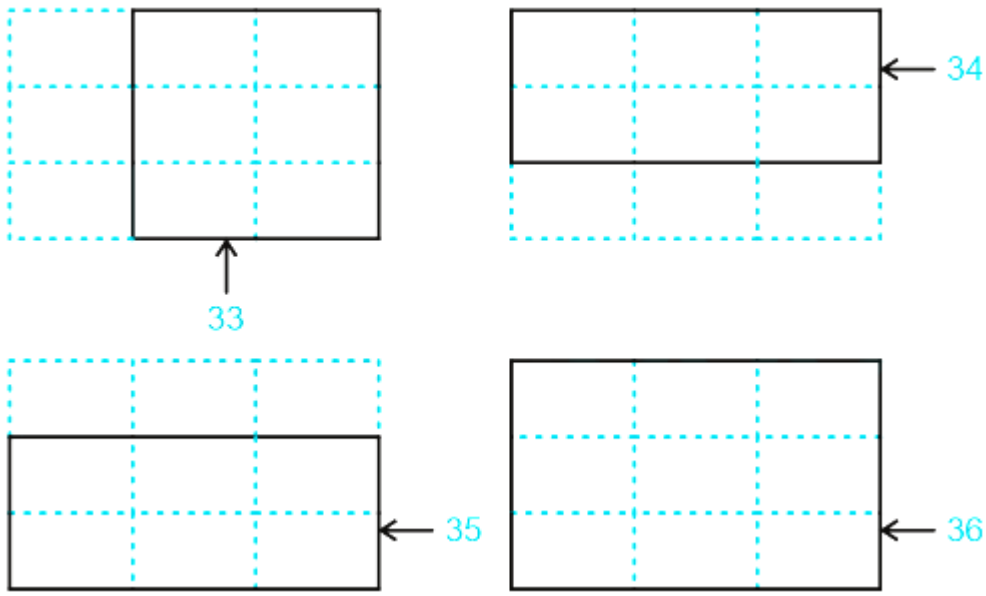
16. **Answer: b**

Explanation:

The number of rectangles in the given figure is shown below:







Hence, ' 36 ' is the correct answer.

Shortcut Trick

The number of rectangles in the given figure is shown below:

1	2	3
2		
3		

Number of rectangles in the given figure = (1 + 2 + 3) × (1 + 2 + 3)

= 6 × 6

= 36

Hence, ' **36** ' is the correct answer.

---

17. **Answer: b**

Explanation:

The correct answer is**1024**.

⭐ Key Points

- The memory of a computer is usually measured in **Bytes.**
  - The memory of a computer is similar to the **human brain.**
  - It is used to store data and instructions.
  - One kilobyte is equal to**1024 bytes**.
  - The half byte is known as a nibble.
  - The smallest unit of memory is called a **bit.**
  - Bit stands for binary digit.
  - The storage capacity of a hard disk is measured in **Megabytes, Gigabytes, and Terabytes.**

⭐ Additional Information

Memory Measurements

1 Nibble	4 bits.
1 Byte	8 bits.
1 Kilobyte	1024 bytes.
1 Megabyte	1024 Kilobytes.
1 Gigabyte	1024 Megabytes.
1 Terabyte	1024 Gigabytes
1 Petabyte	1024 Terabytes.
1 Exabyte	1024 Petabytes.
1 Zettabyte	1024 Exabytes.
1 Yottabyte	1024 Zettabytes.

18. Answer: d

Explanation:

The correct answer is **Aditya-L1.**

⭐ **Key Points**

- **Aditya-L1** is a spacecraft mission to study the solar corona.
- Aditya-L1 is India's **first solar mission.**
- It has been designed and will be built under the guidance of the **Indian Space Research Organisation.**
- Aditya is planned to be launched on th **e PSLV-C56 by January 2022.**
- The mission was conceived as a 400kg class satellite carrying one payload, the Visible Emission Line Coronagraph (VELC) and was planned to launch in an 800 km low earth orbit.
- Sun-Earth system has the major advantage of continuously viewing the Sun without any occultation/ eclipses.

⭐ **Additional Information**

- **AstroSat** is the first dedicated Indian astronomy mission aimed at studying celestial sources in X-ray, optical and UV spectral bands simultaneously.
- **Chandrayaan I** is India's first mission to the Moon using the Polar Satellite Launch Vehicle (PSLV-C11).
- Satellite Navigation Policy 2021 (**SATNAV** Policy 2021) is a comprehensive and substantive policy for satellite-based navigation in order to achieve the goal of self-reliance in India's satellite-based navigation and augmentation services sector.

---

19. Answer: d

Explanation:

The correct answer is**Birmingham.**

⭐ Key Points

- The 2022 Commonwealth Games (officially known as the XXII Commonwealth Games) will be held in**Birmingham, England.**
- The 2022 Commonwealth Games is the third Commonwealth Games to be hosted in England following **London 1934 and Manchester 2002.**
- The motto of the 2022 Commonwealth Games is " **Games for Everyone** ".
- Birmingham was announced as the host by the Commonwealth Games Federation in 2017.
- **72 Commonwealth nations** are expected to participate in the 2022 Commonwealth Games.

⭐ Additional Information

- **Australia** hosted the Commonwealth Games the most (5) times.
- 2018 Commonwealth Games were held at **Gold Coast, Australia.**
  - India won 26 Gold medals and a total of 66 medals and finished 3rd for the tournament.
- **Delhi** in India hosted the Commonwealth Games in 2010.
- **Edinburg** in Scotand hosted the Commonwealth Games twice in 1970 and 1986.
- **Perth**in Australia hosted the Commonwealth Games in 1962.

---

20. Answer: a

Explanation:

Calculation:

Let the number be = y

So, y - 25/100 × y = 24

⇒ y - y/4 = 24

⇒ 3y/4 = 24

⇒ y = 24 × 4 ÷ 3 = 32

∴ The required no = 32

---

21. Answer: b

Explanation:

The correct answer is **Sardar Vallabhbhai Patel.**

⭐ **Key Points**

- **Sardar Vallabhbhai Patel** was the first Deputy Prime Minister of India.
  - He was often called **Sardar.**
  - He was also called an **Indian Bismarck.**
  - Sardar Vallabhbhai Patel is associated with **Bardoli.**
    - He organised peasants from Bardoli in Gujarat in non-violent civil disobedience against the British Raj.
    - The Bardoli Satyagraha took place on **12 June 1928.**
  - Served as the **first Home Minister of India.**
  - He played a key role in India's integration into a united, independent nation.
  - He was appointed as the President of the Indian National Congress during the **Karachi session** in 1931.
  - He was honoured with the **Bharat Ratna in 1991(posthumously).**

⭐ **Additional Information**

- **Guru Nanak** was the founder of Sikhism and is the first of the ten Sikh Gurus.
- **Lord Mahavir** was the twenty-fourth and the last Tirthankara of the Jain religion.
- **Aurobindo Ghosh** is the founder of Sri Aurobindo Ashram located in Pondicherry.

---

22. Answer: b

Explanation:

Given:

Mean = 40

Standard deviation = 5

Formula used:

C.V (Coefficient of variation) = Standard deviation/ Mean × 100

Calculation:

C.V = 5/40 × 100 = 12.5%

∴ C.V = 12.5%

---

23. Answer: a

Explanation:

The correct answer is **Silicon.**

⭐ **Key Points**

- The elements that show properties that are intermediate between metals and non-metals are called **metalloids.**
- Metalloid lies at the borderline between metals and non-metals
- Metalloids have **nonmetallic chemical** properties in general.
- Metalloids are usually too brittle to have any structural uses
- Examples of metalloids are.
    - Boron.
    - Silicon.
    - Germanium.
    - Arsenic.
    - Antimony.
    - Tellurium.
    - Polonium.

⭐ Important Points

- Siliconis a chemical element atomic number 14.
  - Silicon is mainly used in computer chips as it is a semiconductor.
  - Silicon in silicones can be used as a waterproof sealant on roofs, around water pipes.
  - It was iscovery by **Jons Jacob Berzelius in 1823.**
  - Silicon was named by **Thomas Thomson in 1817.**

⭐ Additional Information

- **Bromine** is a chemical element atomic number 35.
  - Bromine is a nonmetal in group 17.
- **Lead** is a chemical element atomic number 82.
  - Lead is a metal in Group 14
- **Gold** is a chemical element atomic number 79.
  - Gold is a transition metal and a group 11 element.

---

24. Answer: d

Explanation:

The correct answer is **Lord Hardinge.**

⭐ Key Points

- Lord Hardingeserved as Viceroy of India from 1910 to 1916.
- Lord Hardinge was the Viceroy when the **Royal Commission on Civil Services** was formed in 1912.
  - The Royal Commission on Public Services in India is also known as the Islington Commission.
  - It was created under the Chairmanship of **Lord Islington.**
- He shifted India's capital from **Calcutta to Delhi in 1911.**
- **Bengal partition was cancelled** by Lord Hardinge in 1911.
- **'Defence of India Act'** was passed by Lord Hardinge in 1915.

- **George V and Queen Mary** visited India during the period of Lord Hardinge.

⭐ Additional Information

- **Lord Curzon** served as viceroy of India from 1899 to 1905.
  - Bengal was partitioned by the British viceroy Lord Curzon.
  - Lord Curzon announced the partition of Bengal on 20th July 1905.
  - The partition came into effect on 16th October 1905.
- **Lord Irwin** served as viceroy of India from 1926 to 1931.
  - He was the viceroy during the arrival of the Simon Commission.
  - He is popularly known as the "Christian viceroy"
- **Lord Dufferin** served as viceroy of India from 1884 to 1888.
  - He was the viceroy during the formation of the Indian National Congress.

---

25. **Answer: d**

Explanation:

Given:

Copper : Zinc : Lead = 13 : 6 : 1

Quantity of zinc = 90 kg

Calculation:

Let the part of copper, zinc and lead are 13y, 6y, y

13y + 6y + y = 20y (Total)

⇒ 6y = 90kg

∴ Total weight of the machine part = 20y = 90kg/6y × 20y

⇒ 300 kg

---

26. Answer: d

Explanation:

The correct answer is **Ethylene.**

⭐ **Key Points**

- **Ethylene** is an industrial organic chemical.
- The formula of Ethylene is C_2H_4 .
- Ethylene is the **simplest alkene.**
- **Ethylene is used in plastics.**
  - More than 60% of the raw material produced being used in the plastics industry.
  - Polyethylene is the world's most widely used plastic.
- Ethylene is used in agriculture to force the ripening of fruits.
- The hydrates of ethylene are ethanol.

⭐ **Additional Information**

- **Krypton** is a chemical element with atomic number 36.
  - Krypton is used in some photographic flashes for high-speed photography.
- **Butane** is an alkane discovered by Edward Frankland in 1849.
  - Butane can be used for gasoline blending, as a fuel gas, and fragrance extraction solvent.
- **Ammonia** is a compound with the formula NH_3.
  - Ammonia is used in many commercial cleaning products.

---

27. Answer: b

Explanation:

The correct answer is **Shudraka.**

⭐ **Key Points**

- **Mṛcchakatika** is a Sanskrit drama written by **Shudraka.**
- Mṛcchakatika is written in Sanskrit in the **2nd century BCE.**
- It is is a love story of a worthy **Brahmana Charudatta and a courtesan Vasantasena.**
- No historical records mention a king by the name Shudraka.
- Other notable works of Shudraka are:
    - Vinavasavadatta.
    - Bhana.
    - Padmaprabhritaka.

⭐ **Additional Information**

- **Kalidasa** was a Classical Sanskrit author who was most known for his works Kumarasambhavam, Abhijnanasakuntalam, Raghuvaṃsa, Meghaduta etc.
- **Harshavardhana** was an Indian emperor who ruled from 606 to 647 CE.
    - His biography Harshacharita was written by Sanskrit poet **Banabhatta.**
- **Bhaasa** is one of the earliest Indian playwrights in Sanskrit known for his works Swapnavasavadattam.

---

28. Answer: b

Explanation:

The pattern followed here is:

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

Letters of the word are coded according to the equivalent opposite letter of a particular letter of the word.

A	B	C	D
Z	Y	X	W

Similarly,

G	H	I	J
T	S	R	Q

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

---

29. Answer: b

Explanation:

Given:

∠BAC = 30°, ∠ABC = 50° and ∠CDE = 25°

Concept:

Exterior Angle Property = An exterior angle of a triangle is equal to the sum of its two opposite non-adjacent interior angles.

Calculation:

∠ACD = ∠BAC + ∠ABC [Exterior Angle Property]

∠ACD = 30° + 50° = 80°

∠AED = ∠ACD + ∠EDC [Exterior Angle Property]

⇒ 80° + 25° = 105°

∴ ∠AED = 105°

---

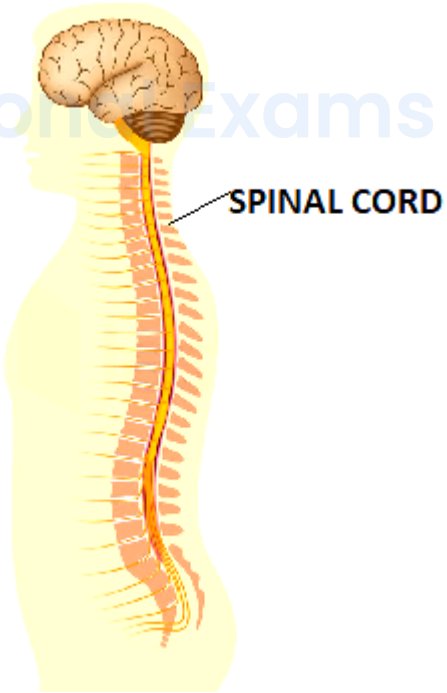
30. **Answer: a**

Explanation:

The correct answer is **Spinal cord.**

⭐ **Key Points**

- The **spinal cord** is a part of the central nervous system in the human body.
- Human central neural system includes the brain and the spinal cord and is the site of **information processing and control.**
- The **medulla of the brain** is connected to the spinal cord.
- Spinal cord is composed of nerve fibres that mediate reflex actions and that transmit impulses to and from the brain.
- **Myelinated nerve fibres** are found in spinal and cranial nerves.



- The spinal cord functions as a center for coordinating many reflexes and contains reflex arcs that can independently control reflexes.

⭐ Additional Information

- **Heart** is the busiest organ of the body.
  - Heart pumps oxygenated blood to the body and deoxygenated blood to the lungs.
- The **rib cage** forms the thorax (chest) portion of the body.
  - The rib cage and the sternum are together known as the thoracic cage.
- The **muscular** system of the human body helps for movement.

---

31. **Answer: a**

Explanation:

Given:

No of days Avinash takes = 20

No of days Bhuvnesh takes = 30

No of days Chaman takes = 60

Calculation:

Let the total work be the LCM of 20, 30 and 60 as being the common multiple.

LCM (20, 30, 60) = 60

Formula used:

Total work = No of days × Efficiency

Calculation:

Days	Total work	Efficiency

Avinash (20)		3
Bhuvnesh (30)	60 units	2
Chaman (60)		1

On first day Avinash will work alone and on third day Avinash will work with Bhuvnesh and Chaman.

Day 1 = Avinash = 3 units

Day 2 = Avinash = 3 units

Day 3 = Avinash + Bhuvnesh + Chaman = 3 + 2 + 1 = 6 units

Hence, Work done in 3 days = 3 + 3 + 6 = 12 units

⇒ 3 days × 5 = 12 units × 5

⇒ 15 days = 60 units

∴ The required no of days required = 15 days

---

32. Answer: a

Explanation:

Calculation:

$(4 + 2 - 16 \div 4 + 3) + \{(1 + 8 \times 7) \div 19\} \times [(3 + 5 - 4) + (17 - 9 \times 4)]$

$\Rightarrow (6 - 4 + 3) + \{(57) \div 19\} \times [4 - 19]$

$\Rightarrow 5 + 3 \times (-15)$

$\Rightarrow 5 - 45 = -40$

∴ The required result = - 40

33. Answer: a

Explanation:

The correct answer is **Telangana.**

⭐ **Key Points**

- **Telangana** became the 29th state of India formed in 2014.
- Telangana was formed after reorganizing **Andhra Pradesh state.**
- **Hyderabad** is the capital of Telangana.
- Telangana is bordered by the states of:
  - Maharashtra to the north.
  - Chhattisgarh and Odisha to the northeast.
  - Andhra Pradesh to the southeast and south.
  - Karnataka to the west.

⭐ **Important Points**

- **Srikrishna Committee** headed by former chief justice B. N. Srikrishna was set up by the centre to look into the need for a separate state of Telangana from Andhra Pradesh, and which had accorded the highest priority to a non-separation of the state.
- Lok Sabha passed the Telangana bill on **18th February 2014.**
- Rajya Sabha passed the Telangana bill on **20th February 2014.**
- Telangana bill received the President's assent on **1st March 2014.**
- Telangana was formed as the 29th state of India on **2nd June 2014.**

⭐ **Additional Information**

- **Sikkim** was created as the 22nd state of the Republic of India on 16 May 1975
- **Uttarakhand** was created as the 27th state of the Republic of India on 9 November 2000.
- **Jharkhand** was created as the 28th state of the Republic of India on 15 November 2000.

34. **Answer: a**

Explanation:

The correct answer is **N. K. Singh.**

⭐ **Key Points**

- **Finance Commission** is constituted under Article 280 of the Indian constitution.
- The First Commission was established in **1951.**
- The finance commission is a **constitutional body.**
- It was appointed by the President of India every **5 years.**
- The finance commission consists of a **Chairman and four other members.**
- **KC Neogy** was the Chairman of the first finance commission.

⭐ **Important Points**

- As of October 2020,**NK Singh**is the Chairman of the Fifteenth Finance Commission of India.
  - He was appointed on 27 November 2017 by the Modi government.
  - **'The New Bihar'** is a book written by N K Singh.
  - He was conferred with the 2nd class **Gold and Silver of the Order of the Rising Sun** by the Japanese Government in 2016.

⭐ **Additional Information**

- **Shaktikanta Das** is the 25th governor of the Reserve Bank of India (RBI).
- **A. M. Khusro** was the Chairman of the Eleventh Finance Commission of India.
- **Vijay L. Kelkar** was the Chairman of the Thirteenth Finance Commission of India.

---

35. **Answer: c**

Explanation:

Given:

Lost of money in the round 1 = 1/3

Lost of money in the round 2 = 3/5 of remaining money

Lost of money in the round 3 = 4/5 of the rest money

Calculation:

Let the total money Rajesh has, be the LCM of 3, 5 and 7 just for the convenience of the calculation.

LCM (3, 5, 7) = 105

Hence, let the total money Rajesh has = 105

Money he lost in round 1 = 105 × 1/3 = 35

⇒ Remaining money after round 1 = 105 - 35 = 70

Money he lost in round 2 = 70 × 3/5 = 42

⇒ Remaining money after round 2 = 70 - 42 = 28

Money he lost in round 3 = 28 × 4/7 = 16

Now, rest of the money Rajesh has = 28 - 16 = 12

∴ The fraction of money he is left with to the original money = 12/105 = 4/35

---

36. Answer: b

Explanation:

Concept:

If $a + b + c = 0$, then $a^3 + b^3 + c^3 - 3abc = 0$

Calculation:

Let (x - y) = a; (y - z) = b; (z - x) = c

∵ a + b + c = x - y + y - z + z - x = 0

∴ (x - y) 3 + (y - z) 3 + (z - x) 3 = 3(x - y)(y - z)(z - x)

---

37. **Answer: b**

Explanation:

The correct answer is **Dachigam National Park.**

⭐ **Key Points**

- **Dachigam National Park** is located in Srinagar,**Jammu and Kashmir.**
- The name Dachigam stands for " **ten villages** " in memory of the ten villages that were relocated for the formation of this National Park.
- The park has been a protected area since **1910.**
- It was upgraded and declared a National Park in the year **1981.**
- The park is best known as the home of the hangul, or **Kashmir stag.**
- Kashmir stags are rare and critically endangered animals.
- Dachigam national park is also known for its scenic locales.

⭐ **Additional Information**

- The **Pakhal Wildlife Sanctuary** is a manmade lake located in Telangana.
- **Jaldapara National Park** is a national park situated in West Bengal.
- **Balpakram National Park** is a national park situated in Meghalaya.

---

38. **Answer: d**

Explanation:

The correct answer is **George Lamaitre.**

⭐ Key Points

- **Big Bang Theory** is the most widely accepted theory regarding the origin of the universe.
- Big Bang Theory is also called **expanding universe hypothesis.**
- The Big Bang theory was propounded by **George Lamaitre.**
- According to Big Bang Theory, the universe originated from a tiny hot body with a giant explosion and it expanded rapidly.
- This rapid expansion caused the universe to cool and resulted in its present stage.
- Within 300,000 years from the Big Bang, the temperature dropped to 4,500K and gave rise to atomic matter.
- The big band occurred approximately **13,75 billion years ago.**
- **Edwin Hubble** in 1920 provided evidence that the universe is expanding.

⭐ Additional Information

- **Thomas Gold** was an Austrian-born American astrophysicist who was known steady-state model (alternative to the Big Bang theory).
- **Al-Biruni** was the First Muslim Scholar to study Indian tradition.
- **Dr. Allen Sundes** is the propounded of "Pulsating Universe Theory".

39. Answer: d

Explanation:

The correct answer is **1991.**

⭐ Key Points

- The disinvestment process in Public Sector Enterprises means the dilution of the stakes of the Government in a public enterprise.
- Privatisation of the public sector enterprises by **selling off part of the equity of Public Sector Enterprises to the public** is known as disinvestment.
- The disinvestment process in Public Sector Enterprises in India started in**1991.**

- The main objective of disinvestment is to improve financial discipline and facilitate modernisation.
- The disinvestment process can be done in two ways:
    - When the Government sells a part of its equity of a public enterprise less than 50% of its total stock.
    - When disinvestment by the Government exceeds 50% so that the majority ownership and therefore control and management of the enterprise is transferred to private enterprise.
- Every year, the government fixes a target for the disinvestment of Public Sector Enterprises.
- In 1991-92, it was targeted to mobilise **Rs 2500 crore** through disinvestment.

---

40. **Answer: d**

Explanation:

Given:

3 men = 6 boys

6 boys can complete the task in 20 days

Formula used:

Total work = No of people × No of days

Calculation:

1 men = 6/3 boys = 2 boys

⇒ 6 men = 2 × 6 boys = 12 boys

Now, total boys will be (12) + 8 = 20

6 boys can finish a work in 20 days.

∴ 20 boys can complete the work in (20 × 6) ÷ 20 = 6 days

41. **Answer: b**

Explanation:

Given:

0.232323

Calculation:

Let y = 0.232323 (1)

By multiplying y by 100

100y = 23.232323 (2)

(2) - (1)

⇒ 100y - y = 23.232323 - 0.232323

⇒ 99y = 23

⇒ y = 23/99

∴ 0.232323 = 23/99

---

42. **Answer: a**

Explanation:

Calculation:

No of formal learners = 39 + 52 = 91

No of informal learners = 65 + 78 = 143

No of illiterates = 143 + 169 = 312

∴ The required ratio = 91 : 143 : 312

⇒ 7 : 11 : 24

---

43. Answer: b

Explanation:

The correct answer is**Bogibeel Bridge.**

⭐ Key Points

- Bogibeel bridgeis the fifth-longest bridge in India.
  - Bogibeel bridge connects **Dibrugarh in Assam to Pasighat in Arunachal Pradesh.**
  - It is **4.94 km** in length.
  - The Bogibeel bridge was built over the **Brahmaputra river.**
  - It is a rail-cum-road type bridge.
  - Bogibeel bridge is the longest rail-cum-road bridge in India.
  - It is the second-longest rail-cum-road bridge in Asia.
  - The bridge was constructed by the **Hindustan Construction Company.**
  - It is the second-longest bridge in Assam over the Brahmaputra, after Bhupen Hazarika Setu.
  - The bridge was inaugurated by prime minister Narendra Modi on 25th December 2018.

⭐ Additional Information

- **Pamban bridge** is India's first sea bridge.
  - It is located in Tamil Nadu.
- The **Howrah Bridge** is a balanced cantilever bridge situated in West Bengal.
  - The bridge was built over the Hooghly River.
- The **Godavari Bridge** is India's third longest road-cum-rail bridge crossing a water body.

- The road-cum-rail bridge is built across the Godavari River.

---

44. Answer: a

Explanation:

The correct answer is **Education.**

⭐ **Key Points**

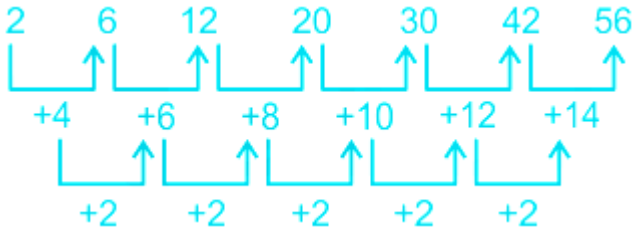
- Project **SATH-E** is the acronym of 'Sustainable Action for Transforming Human Capital-Education'.
- Project SATH-E is associated with**education.**
- It was launched in 2017 to identify and build three 'role model' States for the school education sector.
- The project was implemented by **NITI Aayog.**
- In May 2017, the NITI Aayog wrote to all States offering assistance for improving their health and education sectors.
- The SATH-E initiative is based on formal agreements with the States and will be funded through a cost-sharing mechanism between NITI Aayog and the participating states.
- **Jharkhand, Odisha and Madhya Pradesh** were chosen as 'role model' States.
- The first phase of SATH-E was completed in **March 2020.**
- The second phase of the project **SATH-E 2.0** was commenced by NITI Aayog for a 2-year term from October 2020.

---

45. Answer: d

Explanation:

The logic is:



Hence, ' **56** ' is the correct answer.

---

46. Answer: b

Explanation:

The correct answer is **Pradhan Mantri Jan Dhan Yojana.**

⭐ **Key Points**

- **Pradhan Mantri Jan Dhan Yojana** is a National Mission on Financial Inclusion encompassing an integrated approach to bring about comprehensive financial inclusion of all the households in the country.
- It was launched by the Prime Minister of India Narendra Modi on **28 August 2014.**
- The scheme was implemented with the aim to **open a bank account for all citizens in India.**
- **Pradhan Mantri Jan Dhan Yojana entered into the Guinness Book of World Records in 2015**.
    - Banks have opened **11.50 crore accounts** under the Pradhan Mantri Jan-Dhan Yojana.
    - The Guinness Book said: "Most bank accounts opened in one week as part of the Financial Inclusion Campaign is 18,096,130 and was achieved by the Government of India from August 23 to 29, 2014."
- **Kerala and Goa** became the first states in India to achieve 100% financial inclusion under the Pradhan Mantri Jan Dhan Yojana.
- There is no requirement to maintain any minimum balance in PMJDY accounts.

⭐ **Additional Information**

- **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** is the flagship scheme of the Ministry of Skill Development & Entrepreneurship (MSDE) to enable a large number of Indian youth to take up industry-relevant skill training that will help them in securing a better livelihood.
- **Pradhan Mantri Suraksha Bima Yojana** is an accident insurance scheme in India launched by Prime Minister Narendra Modi in 2015.
- **Pradhan Mantri Krishi Sinchai Yojana** is a national mission launched to improve farm productivity and ensure better utilization of the resources in the country.

---

47. Answer: c

Explanation:

The correct answer is **Qutb-ud-din Aibak.**

⭐ **Key Points**

- The **Slave dynasty** was the first dynasty in Delhi Sultanate.
- The Slave dynasty is also known as the **Mamluk dynasty.**
- The Slave dynasty ruled between **1206 and 1290.**

⭐ **Important Points**

- The Slave dynasty was founded by**Qutb al-Dīn Aibak.**
- Qutb al-Din Aibak was a general of the **Muhammad Ghori.**
- He ruled the Slave Dynasty between **1206 and 1210.**
- He was the real founder of **Turkish rule in India.**
- The UNESCO World Heritage Site **Qutb Minar** was built around 1192 by Qutb-ud-din Aibak.

⭐ **Additional Information**

- **Razia Sultan** was the first female Muslim ruler of the subcontinent and the only female Muslim ruler of Delhi.
- **Nasir-ud-din Mahmud** was the eighth sultan of the Mamluk Sultanate in Delhi.
- **Ghiyas-ud-din Balban** was the ninth sultan of the Mamluk dynasty of Delhi.

48. **Answer: c**

Explanation:

Kerala is NOT correct.

- Among the options, **Kerala** does NOT have a Vidhan Parishad.

⭐ Key Points

- **Kerala** is a unicameral legislature state.
- The unicameral state legislature has only one house to make a law called 'legislative assemblies(**Vidhan Sabha**)'.
- The bicameral state legislature has two houses to make a law namely legislative assemblies and legislative councils(**Vidhan Parishad**).
- At present only **Six States of India** have a Legislative Council.
  1. Andhra Pradesh.
  2. Bihar.
  3. **Karnataka.**
  4. **Maharashtra.**
  5. **Telangana.**
  6. Uttar Pradesh.

⭐ Important Points

- **Vidhan Parishads** are also known as Legislative councils.
- Vidhan Parishads are the upper houses of the provincial legislature in the different states of India.
- Vidhan Parishad is analogous to **Rajya Sabha.**
- Members of the Vidhan Parishad are **indirectly elected and nominated.**
- The maximum strength of the Vidhan Parishad is fixed at **one-third of the total strength of the assembly.**

49. **Answer: c**

Explanation:

The correct answer is **GAGAN.**

⭐ **Key Points**

- **GAGAN**is the acronym of **GPS Aided Geo Augmented Navigation.**
- GAGAN is a satellite-based augmentation system in India.
- It was developed to provide the best possible navigational services over Indian FIR (Flight Information Region) with the capability of expanding to neighbouring FIRs.
- GAGAN was jointly developed by the **Indian Space Research Organisation and Airports Authority of India.**
- GAGAN is a system of satellites and ground stations that provide GPS signal corrections, giving you better position accuracy.
- GAGAN Payload is already operational through **GSAT-8 and GSAT-10 satellites.**
- GAGAN project is launched with an aim to study the ionospheric behaviour over the Indian region.

⭐ **Additional Information**

- **Gagan Shakti** is a military exercise undertaken by India to showcase its air dominance over the entire extended area of the Indian Ocean Region (IOR).
- **NAG** is an Indian third-generation, all-weather, fire-and-forget, lock-on after launch, anti-tank guided missile.
- **JATAN** is a virtual museum builder software, that enables the creation of a digital collection management system for Indian museums.

---

50. **Answer: d**

Explanation:

The logic is:

Obey is the antonym of Disobey.

Similarly,

Appoint is the antonym of Dismiss.

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

---

51. Answer: a

Explanation:

Calculation:

cos 1° cos 2° cos 3° .....cos 179°

∵ cos 90° = 0

⇒ cos 1° cos 2° cos 3° .....cos 179°

⇒ cos 1° cos 2° cos 3° .....cos 90° cos 179°

⇒ cos 1° cos 2° cos 3° ..... 0 × cos 179° = 0

∴ cos 1° cos 2° cos 3° .....cos 179° = 0

---

52. Answer: a

Explanation:

Given:

Investment = Rs.23 lakhs

Interest rate for year 3 in bank A = 8.5%

Interest rate for year 3 in bank B = 10%

Calculation:

Difference of rate interest in bank B and A = 10% - 8.5% = 1.5%

∴ Required interest = 2300000 × 1.5% = Rs.34500

---

53. Answer: d

Explanation:

The correct answer is **Arctic ocean and Pacific Ocean.**

⭐ **Key Points**

- The **Bering Strait** is a strait that connects the**Pacific and Arctic oceans.**
- Bering Strait also separates the continents of **Asia and North America** at their closest point.
- The strait averages **98 to 164 feet (30 to 50 metres) in depth.**
- Bering Strait's **narrowest is about 53 miles** (85 km) wide.
- **Diomede Islands and St. Lawrence Island** are located in Bering Strait.
- The **U.S-Russian boundary** extends through the Bering Strait.

⭐ **Additional Information**

- Sunda Strait is a strait that connects the **Java Sea and the Indian Ocean.**
- The Strait of Gibraltar is a strait that connects the **Atlantic Ocean and the Mediterranean Sea.**
- Florida Strait is a strait that connects the **Gulf of Mexico and the Atlantic Ocean.**
- Hudson Strait is a strait that connects the **Hudson Bay and the Labrador Sea.**

---

54. Answer: c

Explanation:

Calculation:

Sum of the total no of cars sold in the first 3 years = 150 + 100 + 250 = 500

Sum of the total no of cars sold in the last 3 years = 100 + 300 + 300 = 700

∴ The required difference = 700 - 500 = 200

---

55. Answer: c

Explanation:

Given:

No of visitors on day 1 = 84500

No of visitors on day 4 = 16900

Calculation:

Reduce in number of visitors = 84500 - 16900 = 67600

∴ The required reduce percentage = 67600 ÷ 84500 × 100 = 80%

---

56. Answer: d

Explanation:

Five boys - A, B, C, D and E

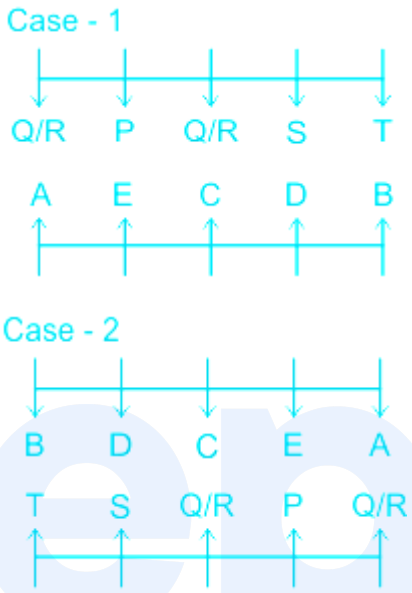
five girls - P, Q, R, S and T are sitting in two rows opposite each other such that the boys are in one row and the girls are in one row.

1. C is sitting in the center and A is sitting on his left.

2. D is sitting between B and C.

3. T who is to the immediate left of S is sitting opposite B who is three seats away from E.

4. P is sitting between Q and R.



Therefore, P sits opposite E.

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

---

57. Answer: d

Explanation:

The correct answer is **Vardhamana.**

⭐ **Key Points**

- **Mahavira** was the 24th Tirthankara of Jainism.
- **Vardhamana** is the original name of Lord Mahavira.
- He was born in **599 BCE in Kundagrama** near Vaishali in Bihar.
- Vardhamana was a **Kshatriya** prince of the Lichchhavis.

- He left home and went to live in a forest at the age of 30.
- Followers of Mahavira, who were known as **Jainas.**
- The language used by Mahavira and his followers was the **Prakrit language.**
- He died in 527 BCE at **Pawapuri.**

⭐ Additional Information

- **Siddhartha** is the birth name of the founder of Buddhism, Gautama Buddha.
- **Sariputta** was one of the top disciples of the Buddha.

---

58. **Answer: c**

Explanation:

Given:

cos 12° + cos 84° + cos 168° + cos 96°

Formulas used:

cos A + cos B = 2 cos (A + B)/2 . cos (A - B)/2

Cos A + cos (180° - A) = 0

Calculation:

(cos 12° + cos 96°) + (cos 84° + cos 168°)

⇒ 2 cos 54°. cos 42° + 2 cos 126°. cos 42°

⇒ 2 cos 42°(cos 54° + cos 126°)

⇒ 2 cos 42° × 0

⇒ 0

∴ The required result is 0

---

59. **Answer: c**

Explanation:

Given:

$\frac{36.1}{102.4}$

Calculation:

√36.1/102.4 = √361/1024

⇒ $\sqrt{19^2/32^2}$

⇒ 19/32

∴ **√36.1/102.4 = 19/32**

---

60. **Answer: b**

Explanation:

Reptilesis NOT correct.

⭐ Key Points

- Among the options, only **reptiles**do NOT include Invertebrates.
- An invertebrate is a cold-blooded animal **without a backbone.**
- They can live both on **land and water.**
- More than 90% of all living animal species are invertebrates.
- Important examples of invertebrates are:
  - Arthropods (**insects** ,**arachnids** , crustaceans, and myriapods).
  - **Molluscs** (chitons, snail, bivalves, squids, and octopuses).
  - Annelid (earthworms and leeches).
  - Cnidarians (hydras, jellyfishes, sea anemones, and corals).

- Crustaceans (such as crabs and lobsters), Molluscs (such as squids and clams), and coral are examples of marine invertebrates.

⭐ Important Points

- Reptilesare vertebrates.
  - Snakes, turtles, lizards, and crocodilians are examples of Reptiles.
  - Asian saltwater crocodile is the largest reptile in the world.
  - Lizard is the smallest lizard in the world

---

61. Answer: a

Explanation:

The correct answer is Kerala.

⭐ Key Points

- Nipah virus disease (NiV) outbreak was reported from Kozhikode district of Kerala on 19 May 2018.
- It was the first Nipah virus outbreak in South India.
- Kozhikode and Malapuram were the two Nipah affected districts in Kerala.
- It was the third of Nipah Virus Outbreaks in India after the outbreaks in 2001 and 2007, both in West Bengal.
- The outbreak was successfully managed by the state government and central government agencies.
- Nipah virus can be transmitted to humans from animals such as bats.
- Fruit bats of the Pteropodidae family are the natural host of the Nipah virus.
- Nipah virus was first reported in 1999 in Malaysia.
- Nipah virus was also recognized in Bangladesh in 2001.

⭐ Additional Information

- The central drug research institute is located in Lucknow, Uttar Pradesh.
- Karnataka is the first state in India to launch health Adalat.
- National Research Centre for Banana is located in Tamil Nadu.

62. **Answer: c**

Explanation:

Given:

Selling price of two toys = Rs.990 each

Increase/ Decrease % = 10%

Formula used:

Loss % = (CP - SP) × 100/CP

SP(selling price) = Cost Price(CP) × (100 + Profit%)/100

SP = CP(100 - loss%)/100

Calculation:

Total SP of both toy is = 990 + 990

⇒ Rs. 1980

CP of the first toy he gained 10%

⇒ 990 × 100/(100 + 10)

⇒ Rs. 900

CP of the second toy he loss 10%

⇒ 990 × (100)/(100 - 10)

⇒ Rs. 1100

Total CP = 900 + 1100

⇒ Rs. 2000

Loss = CP > SP

Loss% = (2000 - 1980)× 100/2000

⇒ 1%

∴ Loss percent = 1%

⭐ Shortcut Trick

Concept used:

+ for increase

for decrease

Change percent = x + y ± xy/100

Calculation:

Loss/gain percent = + 10% - 10% - 10 × 10/100

⇒ -1%

∴ Loss percent = 1%

---

63. **Answer: a**

Explanation:

Given:

Base of isosceles triangle = 8 cm

One of the equal sides = 5 cm

Formula used:

Area of triangle = 1/2 × base × Height

Area of triangle (Heron's Formula) = √ s(s - a)(s - b)(s - c)

s = (a + b + c) ÷ 2

Sides of the triangle = a, b, c

Calculation:

s = (8 + 5 + 5) ÷ 2 = 9

1/2 × 8 × Height = √ 9(9 - 8)(9 - 5)(9 - 5)

⇒ 4 × Height = 3 × 4

⇒ Height = 3 cm

∴ The height of the vertex oppsote to the base = 3 cm

---

64. Answer: d

Explanation:

Given:

Quantity of flour Sunila has = $9\frac{1}{4}$

Quantity of flour needed to make one loaf = $1\frac{1}{8}$

Calculation:

No of the loaves to be made = Quantity of flour available ÷ Quantity needed for one loaf

⇒ $9\frac{1}{4} \div 1\frac{1}{8}$ = 37/4 ÷ 9/8

⇒ 37/4 × 8/9

⇒ 8.2

∴ Required no of loaves (nearest to the whole no) = 8

---

65. **Answer: c**

Explanation:

The correct answer is **Plato.**

⭐ **Key Points**

- **Plato** was an ancient Greek philosopher.
- He was born in 428-7 B.C.E and died in 348-7 B.C.E.
- He was the student of **Socrates** and the teacher of **Aristotle.**
- Plato is known for his work " **the Republic** "
  - The book "the Republic" details a wise society run by a philosopher.
- Other Notable works of Plato are:
  - Apology.
  - Crito.
  - Euthyphro.
  - Meno.
  - Parmenides.
  - Phaedo.
  - Phaedrus.
  - Symposium.
  - Timaeus.
- **Leo Tolstoy** was a Russian writer who is regarded as one of the greatest authors of all time.
- Notable works of Leo Tolstoy are:

- The Kingdom of God Is Within You.
- Resurrection.
- War and Peace.
- Anna Karenina.
- The Death of Ivan Ilyich.

- **John Ruskin** was an English writer.
- Notable works of John Ruskin are:
  - Modern Painters.
  - The Seven Lamps of Architecture.
  - The Stones of Venice.
  - Unto This Last.
- **TS Eliot** was one of the 20th century's major poets in English-language Modernist poetry.
- Notable works of TS Eliot are:
  - The Waste Land.
  - Four Quartets.
  - Murder in the Cathedral.

---

66. **Answer: d**

Explanation:

The correct answer is **Abhidharma kosha.**

⭐ **Key Points**

- **Abhidharma kosha** is an ancient Buddhist text on Abhidharma from the 4th or 5th century CE.
- It was written in Sanskrit by the Indian Buddhist scholar **Vasubandhu.**
- Vasubandhu wrote this book before he converted to **Mahayana Buddhism.**
- The word meaning of the text "Abhidharma kosha" is the **storehouse** (Kosa) of Abhidharma.
- This text was widely used by schools of Buddhism in India, Tibet and East Asia to teach Buddism.
- It was the main source of **Abhidharma and Sravakayana** Buddhism for later Mahayana Buddhists.

⭐ **Additional Information**

- The **Vishnu Purana** is an ancient text of Hinduism.

- **Raghuvamsha** is a Sanskrit maha kavya written by Sanskrit poet Kalidasa.
- **Ritusamhara** is a mini-epic in Sanskrit written by Kalidasa.

---

67. **Answer: b**

Explanation:

Symbol	+	×	−
Meaning	−	+	×

$28 + (5 \times 7) - \frac{9}{6}$

After replacing the symbols by their meaning, we get:

28 - (5 + 7) × 9/6

= 28 - 12 × 9/6

= 28 - 18

= 10

Hence, ' **10** ' is the correct answer.

---

68. **Answer: a**

Explanation:

Calculation:

LCM of 27, 35, 25 and 21 = 4725

∴ The smallest no which when increased by 3 is 27, 35, 25 & 21 = 4725 - 3 = 4722

---

69. **Answer: b**

Explanation:

Given:

Sum of two numbers = 20

Difference of two numbers = 2.5

Concept:

C omponendo and dividendo: It states that if a/b = c/d, then a + b/a - b = c + d/c - d

Calculation:

Let the two numbers = a & b

a + b = 20 (1)

a - b = 2.5 (2)

By (1) ÷ (2)

(a + b) / (a - b) = 20/2.5 = 8/1

By c omponendo and dividendo:-

(a + b) + (a - b)/ (a + b) - (a - b) = 8 + 1/ 8 - 1

⇒ 2a/2b = 9/7

⇒ a/b = 9/7

∴ The required ratio = 9 : 7

---

70. **Answer: b**

Explanation:

Formula used:

The sum of the angle of a pentagon = (n - 2) × 180°

Calculation:

Sum of the angles of pentagon ABCDE = (5 - 2) × 180° = 540°

∠BCD = 180° - 80° = 100° (Linear pair)

∠CBA = 180° - 65° = 115°

∠BAE = 90° [Given]

∠DEA = 540° - 100° - 115° - 90° - 115° = 120°

∴ ∠x = 180° - 120° = 60° [Linear pair]

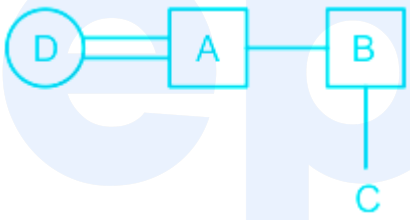
---

71. **Answer: b**

Explanation:

By using the symbols in the table given below, we can draw the following family tree:

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



Clearly, D is aunt of C.

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

---

72. Answer: b

Explanation:

The description is as follows:

Option		Description
1.	Water	Water is a renewable resource.
2.	Coal	Coal is a non-renewable resource.
3.	Solar	Solar energy is a renewable resource.
4.	Wind	Wind energy is a renewable resource.

Hence, ' **coal** ' is the odd one out.

---

73. **Answer: b**

Explanation:

Green plant is NOT correct.

- Among the options, Only **green plant** is NOT an abiotic component.

⭐ Key Points

- An ecosystem consists of both **biotic and abiotic components.**
- Abiotic factors refer to **non-living physical and chemical elements** in the ecosystem
- Abiotic components are inorganic materials like air, water and soil.
- Other examples of abiotic components are:
  - **Water.**
  - **Sun light.**
  - Radiation.

- Temperature.
- Humidity.
- Atmosphere.
- Acidity.
- **Soil.**

⭐ Additional Information

- Biotic components are producers, consumers and decomposers.
- The **green plant** is an example biotic component.
- **Producers** convert energy into food through the process of photosynthesis.
- **Consumers** depend upon producers for food.
- **Decomposers** break down chemicals from producers and consumers into a simpler form which can be reused.

---

74. Answer: c

Explanation:

Given:

Speed of Parshotam = 30 km/h

Speed of Anjika = 3.5 km/h

Formula used:

Distance = Speed × Time

Calculation:

While going in opposite directions;

Distance covered by Parshotam in 2.5 hours = 30 km/h × 2.5 hours = 75 km

Distance covered by Anjika in 2.5 hours = 3.5 km/h × 2.5 hours = 8.75 km

∴ Distance between Parshotam and Anjika after 2.5 hours = 75 km + 8.75 = 83.75 km

⭐ Alternate Method

When two people go in oppsite directions, their speeds get added.

Relative speed ofParshotam & Anjika = 30 km/h + 3.5 km/h = 33.5 km/h

∴ The distance between both of them after 2.5 hours = 33.5 km/h × 2.5 hours = 83.75 km

---

75. Answer: c

Explanation:

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

B	Brackets in order (), {}, []
O	of
D	Division (÷)
M	Multiplication (×)
A	Addition (+)
S	Subtraction (–)

Calculation:

$$\left[\frac{\left(1+4-\frac{42}{14}+65\right)+\left\{\frac{(2+7\times9)}{13}\right\}\times[(65+7-19)]+(19-39\times5)}{369}\right]$$

⇒ [(5 - 3 + 65) + {65 ÷ 13} × [(53)] + (- 176)] ÷ 369

⇒ [67 + 5 × 53 - 176] ÷ 369

⇒ [67 + 265 - 176] ÷ 369

⇒ [332 - 176] ÷ 369

⇒ 156 ÷ 369

⇒ 52/123

∴ The required result = 52/123

NOTE: The correct option of the above question was wrongly entered in the exam paper, which has been edited.

---

76. Answer: a

Explanation:

The correct answer is **HysIS.**

⭐ **Key Points**

- **HySIS** is the acronym of Hyper Spectral Imaging Spectrometer.
- HySIS is a small **earth observation satellite** to study the earth's surface.
- **HysIS is India's first-ever Innovative advanced Earth Observation Satellite.**
- The primary goal of HysIS is to study the earth's surface in the visible, near-infrared and shortwave infrared regions of the electromagnetic spectrum.
- It was launched on **29 November 2018.**
- HySIS is the primary satellite of the PSLV-C43 mission weighing about 380 kg.
- HysIS was placed in orbit from Sriharikota, in Andhra Pradesh.

⭐ **Additional Information**

- **GSAT-2** was an experimental communication satellite developed by the Indian Space Research Organisation.
  - It was the first spacecraft to use the I-2000 bus platform.

- It was launched in 2003.

- **APPLE** is the acronym of Ariane Passenger PayLoad Experiment.
  - APPLE is the first indigenously developed experimental communication satellite in India.
- **GSAT-7** is an advanced communication satellite developed by ISRO.
  - It was developed to provide a wide range of service spectrum from low bit rate voice to high bit rate data communication.

---

77. Answer: a

Explanation:

Given:

No of possible outcomes when two dice are thrown simultaneously: 6 × 6 = 36

(1,1), (1, 2), (1, 3), (1, 4), (1, 5), (1, 6)

(2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (2, 6)

(3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6)

(4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6)

(5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (5, 6)

(6, 1), (6, 2), (6, 3), (6, 4), (6, 5), (6, 6)

Formula used:

Probability = No of favorable outcome ÷ No of total outcomes

Calculation:

No of outcome with sum 12 (6, 6) = 1

∴ Required probability = 1/36

78. **Answer: c**

Explanation:

The correct answer is **Ramanujacharya.**

⭐ **Key Points**

- **Vishishtadvaita** is one of the principal branches of Vedanta, a system of Indian philosophy.
- The Visishtadvaita system is an ancient one.
- **Ramanujacharya** is considered the founder of the Vishishtadvaita philosophy.
- Ramanujacharya was one of the most important exponents of the Sri Vaishnavism tradition within Hinduism.
- The Visishtadvaita system was originally expounded by **Bodhayana in his Vritti**, written about 400 B.C.
- Ramanuja followed Bodhayana in his interpretation of the Brahma Sutras.
- Those who worship the personal God are called **Bhagavatas.**

⭐ **Additional Information**

- **Vishnuswami** was a Hindu religious leader who started the Rudra sampradaya.
- **Madhvacharya** was a Hindu philosopher and the chief proponent of the Dvaita school of Vedant.
- **Nimbarka** was a Hindu philosopher who founded Nimbarka Sampradaya.

---

79. **Answer: b**

Explanation:

The correct answer is **Supply stabilisation of TOP crops (Tomato Onion Potato).**

⭐ **Key Points**

- "Operation Greens" was launched on the line of "Operation Flood".

- It was a scheme formulated for the integrated**development of the Tomato, Onion and Potato (TOP) value chain.**
- Operation Greens is a price fixation scheme that aims to ensure farmers are given the right price for their produce.
- "Operation Greens" was launched during the **Union Budget 2018-19.**
- Union government approved guidelines for **Rs 500 crore** 'Operation Greens' program.
- It was first introduced by the former Finance Minister of India, **Arun Jaitley.**
- The scheme was extended during June 2020 to cover all fruits & vegetables (TOTAL) for a period of six months on a pilot basis as part of Aatmanirbhar Bharat Abhiyan.
- TOP(Tomato, Onion and Potato) crops are considered a regular food commodity across India,

⭐ Important Points

- The key objectives of operation greens are:
  - Enhancing value realisation of TOP farmers by targeted interventions to strengthen TOP production clusters and their FPOs.
  - Price stabilisation for producers and consumers by proper production planning.
  - Reduction in post-harvest losses by creation of farm gate infrastructure, development of suitable agro-logistics, creation of appropriate storage capacity linking consumption centres.
  - Increase in food processing capacities and value addition in TOP value chain with firm linkages with production clusters.

---

80. Answer: a

Explanation:

From option 1 - The best assumption for the claim that 'Pleasure is desirable' is everyone desires pleasure. So **it is correct assumption.**

From option 2 - The assumption some persons desire pleasure is not correct for the claim that 'Pleasure is desirable'. So it is not correct assumption.

From option 3 - The assumption everyone desires something is not correct for the claim that 'Pleasure is desirable'. So it is not correct assumption.

From option 4 - The assumption pleasure is essential is not correct for the claim that 'Pleasure is desirable'. So it is not correct assumption.

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

⭐ Additional Information

1. Read the statement with an approach that the assumptions would be true with regard to the statement.
2. Do not go too logical with the statements. Analyze the given information and the assumption must only be made based on the information in the statement. Do not over-complicate it.
3. Common assumptions can always be followed but other than that do not align the statement with General Knowledge or other facts
4. Use the elimination method if you are unable to apprehend the answer. Read the statement and then the assumptions given in the options, you shall notice that a few of them will most definitely not follow. Eliminate them and then choosing from lesser options may prove to be more convenient
5. One thing to make a note of is that the assumption is something that the author believes to be true so while choosing the correct option, keep this thought in mind as well. If any option contradicts the statement, then that assumption will not follow.

---

81. Answer: c

Explanation:

The correct answer is **Apsara.**

⭐ Key Points

- **Apsara** is the first nuclear reactor made in India.
- Apsara reactor was built in August **1956.**
- The Apsara reactor was named by the then Prime Minister of India, **Jawaharlal Nehru.**
- It was a highly versatile **swimming pool type of reactor.**
- It was created to conduct basic research in nuclear physics.
- Apsara is **Asia's oldest research reactor.**
- Apsara was shut down in 2009 for a revamp.
- **Apsara-Upgraded(Apsara-U)** is the new version of Apasara reactor.

⭐ **Additional Information**

- **KAMINI** is the world's only thorium-based experimental reactor.
  - KAMINI (Kalpakkam Mini reactor) research reactor is at Indira Gandhi Center for Atomic Research in Kalpakkam.
- **CIRUS** (Canada India Reactor Utility Services) was the second nuclear reactor to be built in India.
  - It is located in Trombay near Mumbai.
  - CIRUS was supplied by Canada in 1954, but used heavy water (deuterium oxide) supplied by the United States.
- The **Dhruva** reactor is the largest nuclear research reactor in India.

---

82. Answer: c

Explanation:

The correct answer is **Pretoria.**

⭐ **Key Points**

- **South Afric** a is the southernmost country on the African continent.
- South Africa has three capital cities namely, **Pretoria, Bloemfontein, Cape Town.**
- **Pretoria is the administrative capital of South Africa.**
  - Pretoria is host to **all foreign embassies to South Africa.**
  - Pretoria was founded in 1855 by **Marthinus Pretorius.**

- The city Pretoria is named after the Voortrekker leader **Andries Pretorius.**
- Pretoria is popularly called " **Jacaranda City** " due to the large number of jacaranda trees planted along its streets.

- South Africa became Republic on **31 May 1961.**

⭐ Additional Information

- **Durban** is a coastal city in South Africa known for its African, Indian and colonial influences.
- **Bloemfontein** is the judicial capital of South Africa.
- **Cape Town** is the legislative capital of South Africa.

---

83. Answer: b

Explanation:

The correct answer is **Paris.**

⭐ Key Points

- OECD is the acronym of **Organisation for Economic Co-operation and Development.**
- OECD is an international organisation that works to build better policies for better lives.
- OECD is an intergovernmental economic organisation with **38 member countries.**
- It was founded in **1961** to stimulate economic progress and world trade.
- The headquarters of the OECD is located in**Paris**in France.
- **India is not a member** of OECD but a key economic partner.
- **Colombia in 2020 and Costa Rica in 2021** were the most recent countries to join the OECD.

⭐ Additional Information

- **Rome** is the capital of the Food and Agriculture Organization.
- **Geneva** is the capital of the World Health Organization.

- **New York** is the capital of the United Nations Children's Fund (UNICEF).

---

84. Answer: b

Explanation:

Correct Answer: 2)

Concept:

- The living organisms are divided into five different kingdoms namely: **Monera (Unicellular, Prokaryotic), Protista (Unicellular, eukaryotes), Fungi (unicellular as well as multicellular, eukaryotes), Plantae (Multicellular, eukaryotic), and Animalia (Multicellular, eukaryotic).**
- Members of Protista are **Chrysophytes, Dinoflagellates, Euglenoids, Slime moulds, and Protozoans** under Protista.

Explanation:

Option 1:

- Protozoans are **unicellular, eukaryotic organisms.**
- They are believed to be primitive relatives of animals.
- Earlier, protozoans were regarded as **"one-celled animals",** because they often possess animal-like behaviors, such as motility and predation.
- In the classical system, they were placed in the kingdom Animalia but later Ernst Haeckel proposed a third kingdom of life, which he named Protista.
- **Ernst Haekel** included eukaryotes that are not animals, plants, or fungi and adopt a heterotrophic mode of nutrition.

Option 2

- **Metazoa** is classified under Kingdom Animalia.
- All multicellular animals besides sponges are **metazoans** .
- Metazoan animals are heterotrophic in nature.

Option 3:

- **Choanozoa** is classified under **Kingdom Animalia.**
- These are **funnel-shaped animals.**

Option 4

- **Pipiens** are classified under phylum Arthropoda, Kingdom Animalia.
- ***Culex pipiens***, commonly referred to as the common house mosquito, is a species of mosquito.

So, the correct answer is option 2.

---

85. **Answer: d**

Explanation:

Given:

Selling Price = Rs.138

Loss percent = 8%

Formula used:

Loss percent = (CP - SP) ÷ CP × 100

Selling Price = Cost Price × (100 + profit)%

Calculation:

Loss % = (CP - 138) ÷ CP × 100

⇒ 8 = (CP - 138) ÷ CP × 100

⇒ 2× CP = 25 × CP - 138 × 25

⇒ 23CP = 138 × 25

⇒ CP = 138 × 25 ÷ 23 = 150

At profit = 4%

⇒ Selling Price = 150 × 104/100 = 156

∴ The required selling price = Rs.156

⭐ **Alternate Method**

Profit or loss percent is calculated on cost price that is 100% of itself.

Selling price percent = (100 - 8)% = 92%

⇒ 92% = 138

⇒ Selling price at 4% profit = (100 + 4)% = 104%

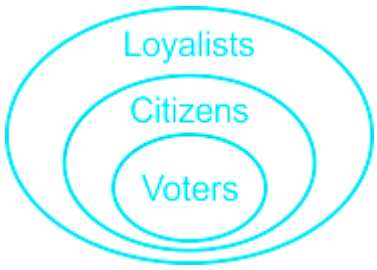
⇒ 104% (SP) = 138 ÷ 92% × 104% = Rs.156

---

86. Answer: a

Explanation:

The least possible Venn diagram is:



1. All voters are loyalists. → True (As, 'All voters are citizens' and 'All citizens are loyalists' → All voters are loyalists)

2. All citizens are voters. → False (As, 'All voters are citizens' and 'All citizens are loyalists' → Some citizens are voters)

3. All loyalists are citizens. → False (As, 'All voters are citizens' and 'All citizens are loyalists' → Some loyalists are citizens)

4. All loyalists are voters. → False (As, 'All voters are citizens' and 'All citizens are loyalists' → Some loyalists are voters)

Hence, ' **All voters are loyalists** ' is the correct answer.

---

87. Answer: d

Explanation:

The statement is 'Little knowledge is a dangerous thing' is a decision based on-

From option 1- Ignorance is bliss is not best decision of the sentence. So it is not follow.

From option 2 - Informal learning is not satisfactory is not best decision of the sentence. So it is not follow.

From option 3 - Little things are dangerous is not best decision of the sentence. So it is not follow.

From option 4 - Incomplete information may cause harm is the best decision of the sentence. So it is follow.

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

⭐ Additional Information

1. Read the statement with an approach that the assumptions would be true with regard to the statement.
2. Do not go too logical with the statements. Analyze the given information and the assumption must only be made based on the information in the statement. Do not over-complicate it.
3. Common assumptions can always be followed but other than that do not align the statement with General Knowledge or other facts

4. Use the elimination method if you are unable to apprehend the answer. Read the statement and then the assumptions given in the options, you shall notice that a few of them will most definitely not follow. Eliminate them and then choosing from lesser options may prove to be more convenient
5. One thing to make a note of is that the assumption is something that the author believes to be true so while choosing the correct option, keep this thought in mind as well. If any option contradicts the statement, then that assumption will not follow.

---

88. Answer: d

Explanation:

1. All cartoonists are artists. → Invalid (As, the entire region of Artists and Cartoonists do not intersect)

2. No artists are billionaires. → Invalid (As the intersection of artists and billionaires is not shaded, which implies some artists are billionaires)

3. All artists are cartoonists. → Invalid (As, the entire region of Artists and Cartoonists do not intersect)

4. Some billionaires are cartoonists. → Valid (As, the intersection region of billionaires and cartoonists is not shaded)

Hence, ' **Some billionaires are cartoonists** ' is the correct answer.

---

89. Answer: a

Explanation:

The mirror image of the word ENCOURAGEMENT is shown below:

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

---

90. Answer: c

Explanation:

The pattern followed here is:

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

According to the alphabetical positions of the letters,

PENINSULA → P (16) + E (5) + N (14) + I (9) + N (14) + S (19) + U (21) + L (12) + A (1) = 16 + 5 + 14 + 9 + 14 + 19 + 21 + 12 + 1 = 111

Similarly,

DICHOTOMY → D (4) + I (9) + C (3) + H (8) + O (15) + T (20) + O (15) + M (13) + Y (25) = 4 + 9 + 3 + 8 + 15 + 20 + 15 + 13 + 25 = 112

Hence, ' **112** ' is the correct answer.

---

91. Answer: c

Explanation:

The logic is:

$1^2 = 1$

$3^2 = 9$

$5^2 = 25$

$7^2 = 49$

$9^2 = 81$

$11^2 = 121$

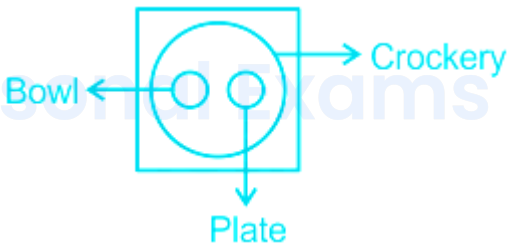
Hence, ' **121** ' is the correct answer.

---

92. Answer: c

Explanation:

The Venn diagram that best represents the relationship between Crockery, Plate, and Bowl is shown below:



Bowl and Plate are name of Crockery items.

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

---

93. Answer: a

Explanation:

According to the alphabetical positions of the letters

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

The pattern followed here is:

Letters are coded with equivalent opposite letters.

A	E	J
Z	V	Q

Similarly,

B	F	K
Y	U	P

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

⭐ **Shortcut Trick**

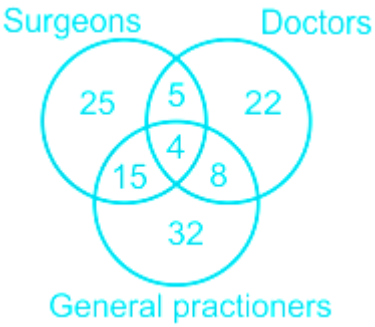
Shortcut to remember the reverse positional letters.

A ↔ Z	(**A**zad)
B ↔ Y	(**B**o**Y**)
C ↔ X	(**C**ra**X**)
D ↔ W	(**D**e**W**)
E ↔ V	(**EV**en)
F ↔ U	(**FU**ll)
G ↔ T	(**G T** road)
H ↔ S	(**H**igh **S**chool)
I ↔ R	(**I**ndian **R**ailway)
J ↔ Q	(**J**ungle **Q**ueen)
K ↔ P	(**K**an**P**ur)
L ↔ O	(**L**i**O**n)
M ↔ N	(**M**a**N**)

94. **Answer: d**

Explanation:

In the given Venn diagram, the number of doctors who are surgeons but not general practitioners is shown below:

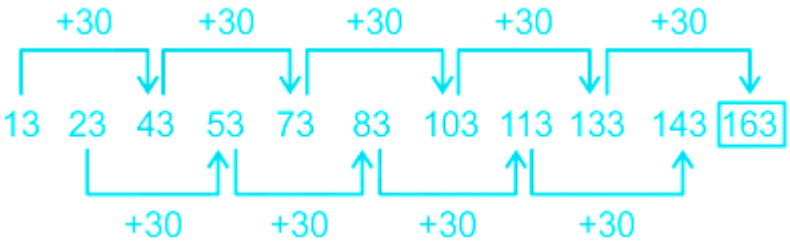


Hence, '**5**' is the correct answer.

95. **Answer: b**

Explanation:

The logic is as follows:



Hence, the missing term is **163.**

---

96. **Answer: a**

Explanation:

Given:

Highest average household expenditure (Kolkata) = 120000

Lowest average household expenditure (Mumbai) = 110000

Calculation:

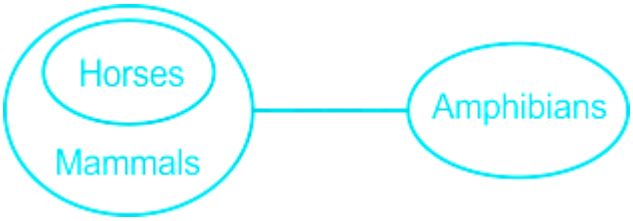
∴ The required ratio = 120000 : 110000 = 12 : 11

---

97. **Answer: d**

Explanation:

The least possible Venn diagram is:



Conclusions:

1. Some horses are amphibians. → False (As, All horses are mammals and No mammals are amphibians → No horses are amphibians)

2. All horses are amphibians. → False (As, All horses are mammals and No mammals are amphibians → No horses are amphibians)

3. Every amphibian is a horse. → False (As, All horses are mammals and No mammals are amphibians → No horses are amphibians)

4. No amphibians are horses. → True (As, All horses are mammals and No mammals are amphibians → No amphibians are horses)

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

---

98. Answer: a

Explanation:

The description is as follows:

Option		Description
1.	Compass	an instrument for drawing circles and arcs and measuring distances between points, consisting of two arms linked by a movable joint, one arm ending in a point and the other usually carrying a pencil or pen.
2.	Beaker	a lipped cylindrical glass container for laboratory use.
3.	Test Tube	a thin glass tube closed at one end, used to hold small amounts of material for laboratory testing or experiments.
4.	Dropper	a short glass tube with a rubber bulb at one end and a tiny hole at the other, for measuring out drops of medicine or other liquids for laboratory use.

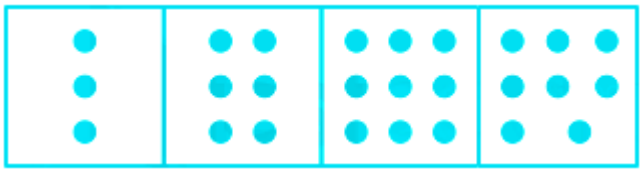
Hence, ' **Compass** ' is the odd one out.

---

99. Answer: a

Explanation:

The image from among the given options that can replace the question mark (?) is shown below:



Roman Numerals:

I → 1

II → 2

III → 3

IV → 4

So, option 1 will replace the question mark (?) in the given figure.

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

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100. Answer: d

Explanation:

The logic is:

Column 1 - Column 2 = Column 3 - Column 4

Column 1: 14 - 10 = 12 - 8

Column 2: 12 - 8 = 18 - 14

Column 3: 10 - 2 = 14 - 6

Similarly,

Let the missing number be x

Column 3: 8 - 4 = x - 16

⇒ 4 = x - 16

⇒ 4 + 16 = x

⇒ 20 = x

Therefore, the missing number is 20.

Hence, ' **20** ' is the correct answer.