Prepp.in

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Your Personal Exams Guide

- NDA
- CDS
- SSC CGL
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- BPSC
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- SSC GD
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RRB Group D 2018 Prev. Yr. Paper (5 Nov 2018) (Shift 1)

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

Instructions

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

1.) A total of 90 minutes is allotted for the examination.

2.) The server will set your clock for you. In the top right corner of your screen, a countdown timer will display the remaining time for you to complete the exam. Once the timer reaches zero, the examination will end automatically. The paper need not be submitted when your timer reaches zero.

3.) There will, however, be sectional timing for this exam. You will have to complete each section within the specified time limit. Before moving on to the next section, you must complete the current one within the time limits.

CBT

1. In the code language, FAIL is written as UZRO. What is the code for PASS? **(+1, -0.33)**

   a. KZHH

   b. KWHH

   c. LZHH

   d. KYHH

---

2. Rajya Sabha member Praful Manoharbhai Patel belongs to _____. **(+1, -0.33)**

   a. BJP

   b. INC

   c. Shiv Sena

   d. NCP

---

3. _____ Empire was founded by Hasan Gangu in 1347. **(+1, -0.33)**

   a. Sangma

   b. Bahmani

   c. Kakatiya

   d. Vijayanagar

---

4. Which of the given two statements A and B is/are true? What is the force of gravity: **(+1, -0.33)**

A. It is directly proportional to the product of the masses of the two objects.

B. It is directly proportional to the square of the distance between two objects.

a. Only B is true while A is false.

b. Both A and B are false.

c. Only A is true while B is false.

d. Both A and B are true.

---

5. Given that the weight of a 1-mole atom of oxygen is 16g. What is the molecular weight of ozone? **(+1, -0.33)**

a. 32 g/mol

b. 48 g/mol

c. 64 g/mol

d. 16 g/mol

---

6. The 2017 Deaflympics was held in _____. **(+1, -0.33)**

a. Istanbul, Turkey

b. Samsun, Turkey

c. Ankara, Turkey

d. Budapest, Hungary

---

7. The first and second groups of the modern periodic table are called? **(+1, -0.33)**

   a. b-block

   b. s- block

   c. o- block

   d. p- block

---

8. Out of total 85 students, 35 took Mathematics, 33 took Biology, while 23 students did not choose these two subjects. How many students opted for both Mathematics and Biology subjects? **(+1, -0.33)**

   a. 8

   b. 7

   c. 9

   d. 6

---

9. Nm $^{-2}$ is the international (SI) unit of _____. **(+1, -0.33)**

   a. force

   b. thrust

   c. momentum

   d. pressure

---

10. A mini van passes two persons moving in the same direction at 5.4 km/h and 6 km/h such that the mini-van is moving at 4.5 sec and 6.75 sec respectively. What is the length of the mini-van? **(+1, -0.33)**

a. 2.75 meter

b. 2 meter

c. 2.5 meter

d. 2.25 meter

---

11. The marked price of the laptop is Rs 22,000. The discount given is 12 $\frac{1}{2}$ %. VAT is charged at 10%. How much will the customer have to pay for the laptop? **(+1, -0.33)**

a. Rs. 21,175

b. Rs. 21,275

c. Rs. 21,715

d. Rs. 21,517

---

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

North America : Canada :: Europe : ?

a. Mexico

b. Spain

c. Egypt

d. China

---

13. Ramesh credited 15% of his salary in his fixed deposit account and spent 30% of the remaining amount on getting groceries. If he has Rs. 2,380 is cash, then what is his salary? **(+1, -0.33)**

a. Rs. 2,380

b. Rs. 4,500

c. Rs. 4,000

d. Rs. 2,800

---

14. Who among the following has been appointed as the independent director of the International Cricket Council (ICC), on February 9, 2018? **(+1, -0.33)**

a. Sachin Tendulkar

b. Jagmohan Dalmiya

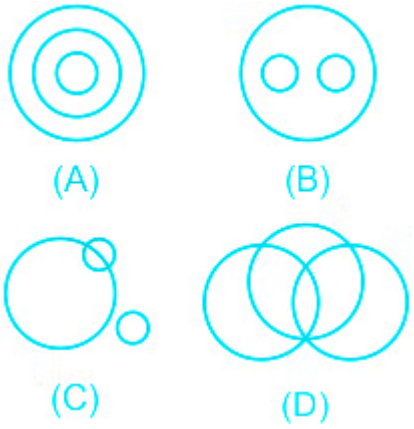
c. indra nooyi

d. Sourav Ganguly

---

15. Choose the Venn diagram that best represents the three classes given in the question below: **(+1, -0.33)**

Copper, Book, Wire



a. A

b. B

c. C

d. D

---

16. Complete the given alphabetical series: **(+1, -0.33)**

A, C, F _____, _____, U

a. I, P

b. J, O

c. I, O

d. J, P

---

17. Hari invested Rs.100 for three years at a simple interest rate of 11.03%. How much should Tipu invest to get the same amount after three years, but at 10% compound interest? **(+1, -0.33)**

a. Rs. 120

b. Rs. 110

c. Rs. 100

d. Rs. 105

---

18. Fill in the blanks using the correct option for the following statements from the given alternatives. On heating _____, plaster of paris is obtained. **(+1, -0.33)**

a. Carbonic acid

b. Baking soda

c. Gypsum

d. Calcium Carbonate

---

19. _____ is a part of DNA, which provides information for a protein. **(+1, -0.33)**

a. Chromosome

b. Nucleus

c. Trait

d. Gene

---

20. Arun gifted Vijay a watch, which moves forward by 5 seconds every 3 minutes. It was set right at 7 in the morning. That same day, it was quarter past four in the afternoon. Find the exact time? **(+1, -0.33)**

a. 4 p.m.

b. 587 minutes more than 03:11 p.m.

c. 597 minutes more than 3:12 p.m.

d. 23 minutes more than 04:11 p.m.

---

21. Find the value of : **(+1, -0.33)**

$\tan\frac{\pi}{24}\tan\frac{3\pi}{24}\tan\frac{5\pi}{24}\tan\frac{7\pi}{24}\tan\frac{9\pi}{24}\tan\frac{11\pi}{24}\tan\frac{16\pi}{24}$

a. $\sqrt{3}$

b. −1

c. 1

d. $-\sqrt{3}$

---

22. When is National Youth Day celebrated in India? **(+1, -0.33)**

a. 12 July

b. 15 December

c. 12 January

d. 12 November

---

23. Who suggested that life evolved from simple inorganic (abiotic) molecules? **(+1, -0.33)**

a. Murey

b. Darwin

c. Haldane

d. Mendel

---

24. What was the day on 5th august, 1987? **(+1, -0.33)**

a. Tuesday

b. Thursday

c. Saturday

d. Wednesday

---

25. Narendra and Sunil are facing north direction. Narendra rotates 45° clockwise and then again 45° clockwise. How much will Sunil have to rotate so that they both face each other? **(+1, -0.33)**

a. 180 ° anticlockwise

b. 180 ° clockwise

c. 90 ° anticlockwise

d. 45 ° clockwise

---

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

"Sun, Jupiter, Solar System"

a. 

b. 

c. 

d. 

---

27. Political leader Sudesh Mahto is from which of the following Indian states? **(+1, -0.33)**

a. Bihar

b. Odisha

c. Jharkhand

d. West Bengal

---

28. A and B can do a piece of work in 12 and 16 days respectively. Together they do that work together for 3 days, then A leaves. Then in how many days will B alone complete the remaining work? **(+1, -0.33)**

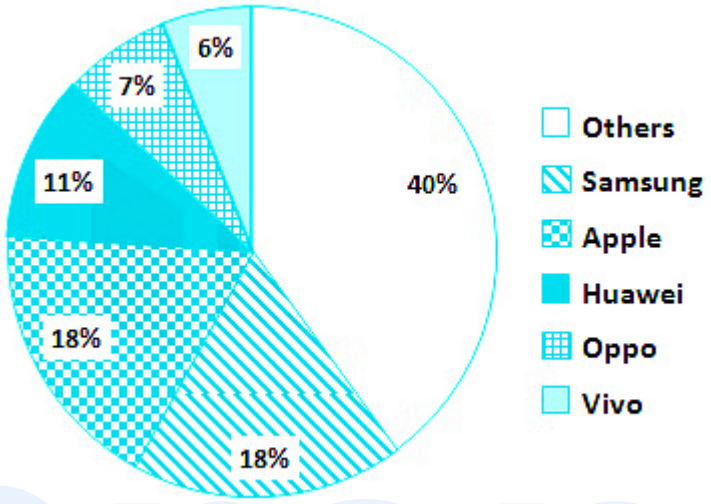
a. 12

b. 18

c. 9

d. 10

29. The given pie chart shows the total sales made by different mobile companies in the year 2017. **(+1, -0.33)**



If the total sales in the year 2017 is Rs. 5,000 crores, then the total sales made by the Huawei company was Rs. _____ crores.

a. 2000

b. 550

c. 350

d. 900

30. Which of the following is a film based on the life of a girl who climbed Mount Everest at a young age (13 years 11 months)? **(+1, -0.33)**

a. Newton

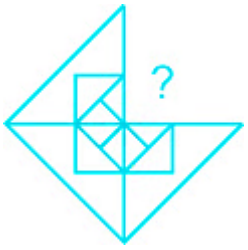
b. Shabd

c. Secret superstar

d. Poorna

---

31. Choose the correct figure from the options given below, which is suitable for the above blank space (?). **(+1, -0.33)**



a. 

b. 

c. 

d. 

---

32. Who is the Union Minister of Science and Technology at present (as of July 2018)? **(+1, -0.33)**

a. Mahesh Sharma

b. Ravi Shankar Prasad

c. Dr. Harsh Vardhan

d. Suresh Prabhu

---

33. Which of the following is the tube that originates from the heart and carries blood to various organs in the body? **(+1, -0.33)**

a. Veins

b. Blood cell to lung

c. Artery

d. Pulmonary arteries

---

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

Question:

Latika has 25 boxes of three colors and three different sizes (small, medium and big). How many oversized blue boxes does he have?

Statements:

1. The number of big box is half of the number of medium box.

2. There are 10 small blue colored boxes.

3. The number of medium boxes of green and red color is same.

a. Statements 1, 2 and 3 together are not sufficient.

b. Statement 1 alone is sufficient.

c. Statement 2 alone is sufficient.

d. Statements 1, 2 and 3 together are sufficient.

35. Pandit Narayanrao Bodas belonged to which Gharana of Hindustani classical music? (+1, -0.33)

a. Kirana Gharana

b. Banaras Gharana

c. Rampur Gharana

d. Gwalior Gharana

36. It is a religious city located in the state of Odisha in India. (+1, -0.33)

a. Saputara

b. Puri

c. Naina Devi

d. Katra

37. What can be inferred regarding energy from the given figure? (+1, -0.33)

a. The gravitational potential energy is in both the vehicles.

b. Two vehicles are moving fast using high energy.

c. Both vehicles are converting mechanical energy into muscular energy.

d. Both vehicles have kinetic energy.

---

38. Which of the following is a folk sport from rural Appalachia? **(+1, -0.33)**

a. Opera

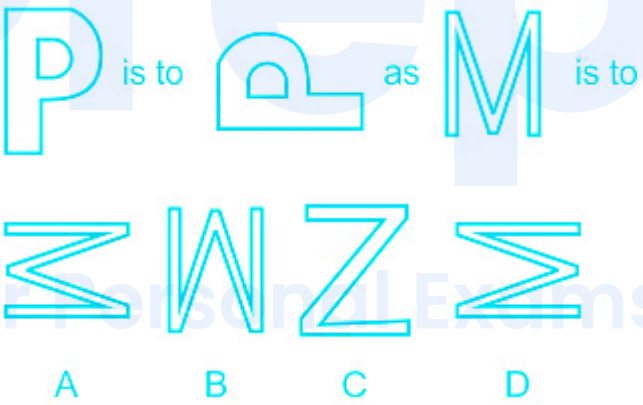
b. Hillbilly music

c. Rasta Music

d. Reggae

---

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



a. D

b. A

c. B

d. C

---

40. In a class of 45 students, the ratio of boys to girls is 4 : 5. The average marks of boys is 75 and the average marks of girls is 82. What is the average marks of the entire class? **(+1, -0.33)**

a. 78.6

b. 78.5

c. 78.9

d. 79.0

---

41. If the velocity is doubled, then **(+1, -0.33)**

a. Momentum increases by 3 times and kinetic energy by 4 times

b. Momentum increases by 4 times and kinetic energy increases by 3 times

c. Momentum increases by 2 times and kinetic energy by 4 times

d. Momentum increases by 4 times and kinetic energy by 2 times

---

42. In each of the questions below is given a statement followed by two assumptions I and II have been given. You have to consider the statement and the following assumptions and decide which of the assumptions are implicit in the statement. **(+1, -0.33)**

Statements:

Everyone loves to read fairy tales.

Assumptions:

I. Fairy tales are only reading material.

II. Nobody likes other stuff.

a. Only assumption I is implicit.

b. Both I and II are implicit.

c. Neither I nor II is implicit.

d. Only Assumption II is implicit.

---

43. There are 70 patients in a naturopathy hospital. It has three facilities (clay/steam/oil bath). 15 chose a clay and oil bath. 8 chose clay and steam bath. 9 chose oil and steam bath. 35 chose only 1 type of bath. How many chosen all three types of the bath? **(+1, -0.33)**

a. 3

b. 9

c. 12

d. 2

---

44. Which of these agricultural products earns maximum export value in the market? **(+1, -0.33)**

a. Spices

b. Cotton

c. Coffee

d. Basmati rice

---

45. Who won the Best Actress in a Leading Role award at Jio Filmfare Awards 2018? **(+1, -0.33)**

a. Deepika Padukone

b. Radhika Apte

c. Vidya balan

d. Kareena kapoor

---

46. The interest accruing on a certain sum of money at 10% in one year is Rs. is 400. Calculate the compound interest for the same sum of money at the same rate and for the same period, if the interest is compounded half yearly. **(+1, -0.33)**

a. Rs. 400

b. Rs. 210

c. Rs. 410

d. Rs. 200

---

47. If a = 0.125 then what is value of $\sqrt{4a^2 - 4a + 1}$ + 3a ? **(+1, -0.33)**

a. 1.500

b. 1.125

c. 1.250

d. 1.225

---

48. A meaningful word is formed by taking the letters at positions 1, 19, 20, and 25 of ABCDEFGHIJKLMNOPQRSTUVWXYZ. The second letter of that meaningful word is: **(+1, -0.33)**

a. T

b. O

c. M

d. Y

---

49. In which of the following the heart has only two chambers? **(+1, -0.33)**

a. Salamander

b. Cobra

c. Frog

d. Rohu

---

50. According to the World Bank's Global Economic Prospects Report 2018, India may top the list as the fastest growing economy with a growth rate of _____. **(+1, -0.33)**

a. 8.0%

b. 7.3%

c. 6.3%

d. 5.4%

---

51. Consider the given statement and state which of the given assumptions are implicit in the statement. **(+1, -0.33)**

Statement:

A notice indicating, "Don't spill the trash; please use the dustbin."

Assumptions:

1. People often do not follow instructions.

2. People tend to read notices and follow instructions.

a. Either assumption 1 or 2 assumption is implicit.

b. Neither assumption 1 nor 2 is implicit.

c. Only assumption 1 is implicit.

d. Only assumption 2 is implicit.

---

52. Which of the following does not belong to this group? **(+1, -0.33)**

A. well

B. pond

C. mug

D. Lake

a. D

b. B

c. C

d. A

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

Question:

Which word represents 'Mangoes' in the code language?

Statements:

1. "I love Mangoes" is written as 'E la mange'.

2. 'I love Orange' is written as 'E la orage'.

a. Only statement 1 is sufficient

b. Both Statements 1 and 2 are not sufficient.

c. Both Statements 1 and 2 are sufficient.

d. Only statement 2 is sufficient

---

54. The British divided the regions in India into the provinces of Bengal, Bombay and Madras called _____. (+1, -0.33)

a. Presidency

b. Constituency

c. Subdivision

d. Sectors

---

55. The length of each side of the polygon is 2.9 cm and its circumference is 17.4 cm. How many sides does a polygon have? (+1, -0.33)

a. 6

b. 5

c. 4

d. 7

---

56. A man clapped near the rock and heard the echo after 4 seconds. Then what is the distance of the rock from the person? **(+1, -0.33)**

(speed of sound = 346m/s)

a. 1384 m

b. 173 m

c. 692 m

d. 346 m

---

57. Aparna Popat is related to which sport? **(+1, -0.33)**

a. Chess

b. Badminton

c. Tennis

d. Hockey

---

58. What is the object called through which sound is transmitted? **(+1, -0.33)**

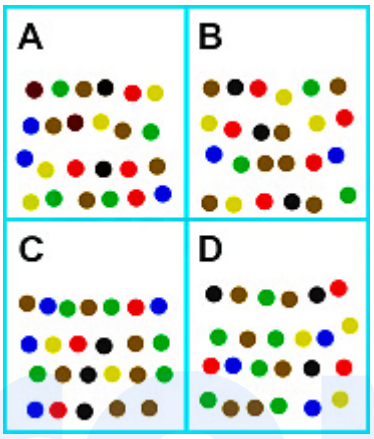
a. Material

b. Trembling

c. Medium

d. Machine

---

59. 

(+1, -0.33)

Select the shape that is different in the group.

a. C

b. B

c. A

d. D

---

60. Which union ministry organizes the National Film Awards every year? (+1, -0.33)

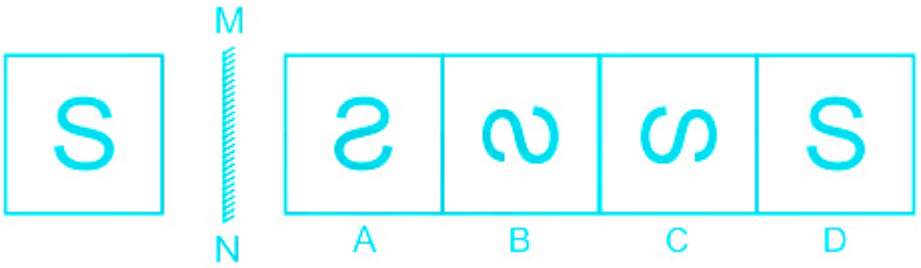
a. Culture and Tourism

b. Home Ministry

c. Youth affairs

d. Information and Broadcasting

61. Select the mirror image for the figure given below: (+1, -0.33)

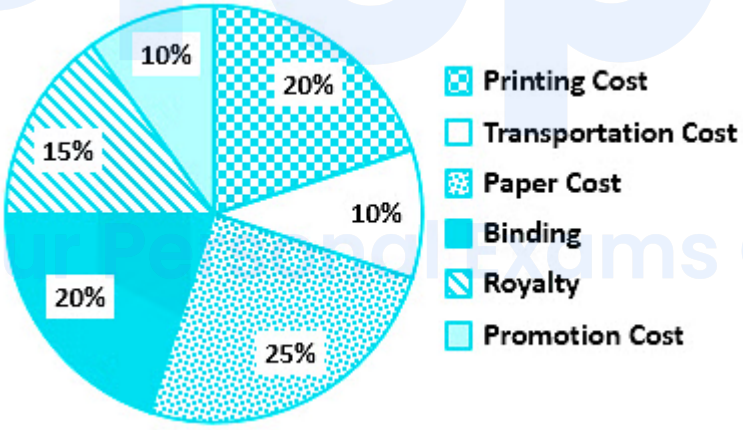


a. B

b. C

c. A

d. D



62. (+1, -0.33)

The given pie diagram shows the expenditure of a publishing house in Karnataka. If the total expenditure is Rs. 50,000, then the cost of the paper is _____.

a. Rs. 12,500

b. Rs. 5,000

c. Rs. 10,000

d. Rs. 7,500

---

63. In November 2017, who was appointed as the Secretary-General of the Lok Sabha? **(+1, -0.33)**

a. Sumitra Mahajan

b. Rama Devi

c. Desh Deepak Verma

d. Snehalta Srivastava

---

64. The product of Anusha and Neelam's ages is 240. If twice the age of Neelima is more than the age of Anusha by 4 years, then what is the age of Anusha? **(+1, -0.33)**

a. 18 years

b. 16 years

c. 20 years

d. 14 years

---

65. Select the missing word. **(+1, -0.33)**

Lion : Pride :: Wolf : _____?

a. Pack

b. Herd

c. Pod

d. Flock

---

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

Honour : Nobility :: Humiliate :

a. Eradicate

b. Entertain

c. Disgrace

d. Disappear

---

67. Four identical resistors, each of resistance R, are connected in parallel with each other. The equivalent resistance of the combination will be _____. **(+1, -0.33)**

a. 4R

b. $\frac{R}{2}$

c. 2R

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

---

68. Select the number which does not belong to the series. **(+1, -0.33)**

6, 7, 16, 51, 206, 1045

a. 1045

b. 16

c. 206

d. 7

---

69. What percentage is 15 minutes of $\frac{3}{2}$ day? **(+1, -0.33)**

a. 10%

b. $\frac{1}{6}$ %

c. $\frac{25}{36}$ %

d. 41 $\frac{2}{3}$ %

---

70. Which day was 3rd May, 2008? **(+1, -0.33)**

a. Sunday

b. Wednesday

c. Saturday

d. Monday

---

71. Consider the statement and the following arguments and decide which of the argument is strong with respect to the statement. **(+1, -0.33)**

Statement:

Whenever the national anthem is sung, people should stand upright and respect it.

Arguments:

I. Yes, it shows respect and pride for the country, as we are its citizens.

II. No, we don't need to claim patriotism unnecessarily.

a. Both Arguments I and II are strong.

b. Neither I nor II is strong.

c. Only argument I is strong.

d. Only argument II is strong.

---

72. Read the given question and select the correct conclusion. **(+1, -0.33)**

Question:

Pravalika studies in class 10th. Is Pravalika older than her classmate Pranita?

Conclusion:

I. Yes, since Pranita is Pravalika's classmate, so Pranita is younger than her.

II. No, since Pranita is Pravalika's classmate, Pranita is older than her.

a. Only conclusion I is correct

b. Only conclusion I Iis correct

c. Neither conclusion I nor conclusion II is correct.

d. Either conclusion I or conclusion II is correct.

---

73. If the amount of water vapour in the air is high, then the rate of evaporation is _____. **(+1, -0.33)**

a. Will decrease

b. Will be zero

c. Will remain the same

d. Will Increase

---

74. Specify HCF and LCM as 60 and 72 respectively. **(+1, -0.33)**

a. 16 and 360

b. 12 and 260

c. 12 and 360

d. 10 and 360

---

75. If the cost of $\frac{1}{9}$ of a pizza is Rs. 300, then the cost of $\frac{4}{9}$ of the same pizza will be: **(+1, -0.33)**

a. Rs. 420

b. Rs. 1200

c. Rs. 440

d. Rs. 436

---

76. Which of the following statement is not correct about acids **(+1, -0.33)**

a. Are sour in taste.

b. React with metals and bicarbonates to produce H_2, CO_2, and salts.

c. Slow neutralization i.e.
Acid + Base → H_2 + salt

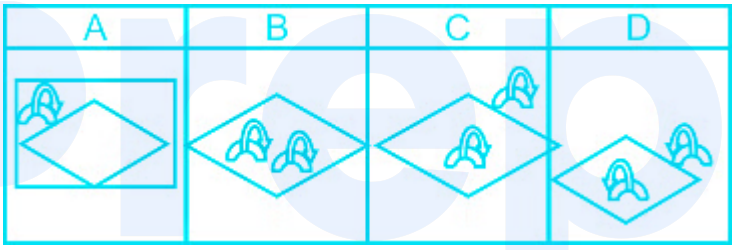
d. Forms H^+ in an aqueous medium/liquid state.

---

77. Which of the following option figures is closest to the question figure? **(+1, -0.33)**

Question figure :

Answer figure:



a. B

b. A

c. C

d. D

---

78. Ligaments and Tendons are made up of: **(+1, -0.33)**

a. Nervous system

b. Muscle tissue

c. Epithelial tissue

d. Connective tissue

---

79. Who is the present Governor of Maharashtra? (2018) **(+1, -0.33)**

a. Shri C. Subramaniam

b. Shri Chennamaneni Vidyasagar Rao

c. Shri S.C. Jamir

d. Dr P. C. Alexander

---

80. When Mendeleev started the work (Classification of Elements), _____ elements were known. **(+1, -0.33)**

a. 64

b. 63

c. 65

d. 61

---

81. Identify the missing number. **(+1, -0.33)**

676 : 841 :: 324 : _____

a. 484

b. 361

c. 441

d. 400

82. Which of the following is an organic acid? **(+1, -0.33)**

a. Carbonic acid

b. Sulfuric acid

c. Nitric acid

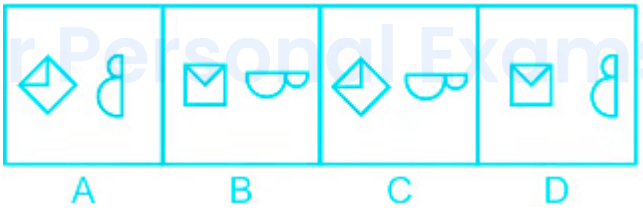
d. Oxalic acid

---

83. Select the figure from the answer figure which can replace the question mark in the question figure. **(+1, -0.33)**

Question figure :

Answer figure:



a. A

b. B

c. D

d. C

---

84. Frequency is expressed in _____ and indicates that the event is repeated every second. (+1, -0.33)

a. Ohm

b. Decibel

c. Ampere

d. Hertz

---

85. Where is the Wild Ass Sanctuary located? (+1, -0.33)

a. Gujarat

b. Goa

c. Odisha

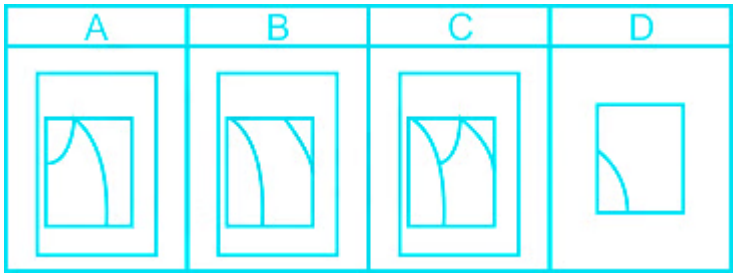
d. Maharashtra

---

86. Which answer figure is formed from the shapes given in the question figure? (+1, -0.33)

Question figure:

Answer figure:



a. A

b. C

c. B

d. D

---

87. _____ is a surface phenomenon. **(+1, -0.33)**

a. Sweat

b. Boiling

c. Steam

d. Excitement

---

88. The potential difference across the terminals of an electric heater is 60V when it receives a current of 4A from the source. If the potential difference increases to 142.5V, what will be the current received by the heater? **(+1, -0.33)**

a. 15 A

b. 24 A

c. 9.5 A

d. 12 A

---

89. What will be the value of $\frac{4}{7} \times \frac{4}{9}$? **(+1, -0.33)**

a. $\frac{16}{63}$

b. $\frac{8}{20}$

c. $\frac{8}{12}$

d. $\frac{8}{9}$

---

90. Based on the given statements two conclusions are given, decide which of the conclusions follows from the statement. **(+1, -0.33)**

Statement:

All clips are pins.

All pins are books.

Conclusion:

1. All clips are books.

2. Some pins are clips.

a. Only (2) follows.

b. Only (1) follows.

c. Both (1) and (2) follows.

d. Either (1) or (2) follows.

---

91. Read the following statements: **(+1, -0.33)**

A. If the value of universal gravitational constant of Earth is Ge and the value of universal gravitational constant of Moon is Gm, then Ge = Gm

B. The force between the two objects is one-fourth the mass of the two objects.

C. If the value of the universal gravitational constant on Earth is Ge and the value of the universal gravitational constant on the Moon is Gm, then Ge > Gm

D. Acceleration due to gravity doubles everywhere.

Which of these statements is correct?

a. B, C and D

b. A only

c. A, B and C

d. A, C and D

---

92. _____ helps to know the speed of the vehicle. **(+1, -0.33)**

a. Speedometer

b. Voltometer

c. Velometer

d. Lactometer

---

93. Simplify the equation: **(+1, -0.33)**

$(\frac{5}{6} \times \frac{1}{3}) + (\frac{1}{3} \times \frac{1}{2}) - (\frac{11}{4} \times \frac{1}{3}) = ?$

a. $\frac{-17}{36}$

b. $\frac{17}{9}$

c. $\frac{14}{33}$

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

---

94. All three angles of a triangle have equal value. What is the value of each angle? **(+1, -0.33)**

a. 45°

b. 90°

c. 60°

d. 80°

---

95. Given below are three statements followed by two conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. Decide which of the conclusions follow from the statements. **(+1, -0.33)**

Statements:

1. No guitar is a violin.

2. All violins are strings

3. No string is metal.

Conclusion:

I. No string being violin is a possibility.

II. Some guitars are not strings.

a. Both conclusion I and II follow.

b. Neither I nor II ollows

c. Only conclusion I follows.

d. Only conclusion II follows.

---

96. Find the proper word for the blank space in the given series: **(+1, -0.33)**

H, J, M, Q, ? , B

a. Z

b. C

c. T

d. V

---

97. $\sqrt{75.24+?}$ = 8.71 **(+1, -0.33)**

a. 0.6241

b. 6.0241

c. 6.241

d. 62.41

---

98. Two cars A and B starting at the same time meet each other after t hours in opposite directions and reach their destination after 5 hours and 6 hours respectively after the meeting. If the speed of car A is 55 km/h, then what will be the speed of car B? **(+1, -0.33)**

a. 66 $\sqrt{12}$ km/hr

b. 110 $\sqrt{3}$ km/hr

c. $\frac{110}{\sqrt{6}}$ km/hr

d. $\frac{55}{6}\sqrt{30}$ km/hr

---

99. Alkanes are saturated hydrocarbons in which a bond is found between two carbon atoms. which has a general formula. **(+1, -0.33)**

a. C_nH_{2n+2}

b. C_nH_{n+1}

c. C_nH_{2n-1}

d. C_nH_{2an+1}

---

100. Find the value of k so that (3x – 2) is a factor of $15x^2 - kx - 14$. **(+1, -0.33)**

a. –10

b. –11

c. 10

d. –12

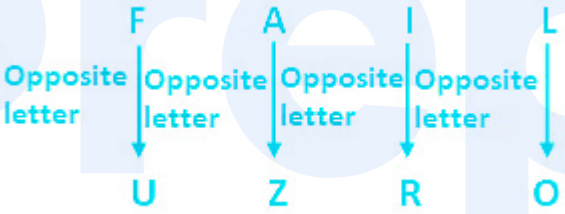
Answers

1. **Answer: a**

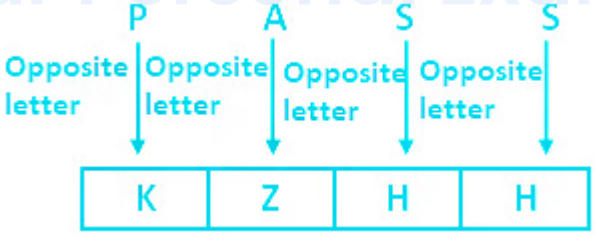
Explanation:

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

The logic followed here is:-



Similarly,



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

---

2. **Answer: d**

Explanation:

The correct answer is NCP.

- Rajya Sabha member Prafull Manoharbhai Patel belongs to NCP.

⭐ Key Points

- **Prafulla Manoharbhai Patel:**
  - His father, Manoharbhai Patel, was an Indian National Congress leader who was elected to represent the Gondia Bhandara districts in Maharashtra.
  - Praful Patel is the President of the Indian association football governing body of the All India Football Federation (AIFF) since 2012.
  - In 2015, at the AFC Congress held in Bahrain, Praful Patel became the Vice President of the Asian Football Confederation of the SAFF region.
    In 2017, Praful Patel became a member of the FIFA Finance Committee for a period of four years.

---

3. **Answer: b**

Explanation:

The correct answer is **Bahmani**.

- Bahmani Empire was founded by Hasan Gangu in 1347.

⭐ Key Points

- **The Bahmani Sultanate** was a Persianized Muslim kingdom of the Deccan in southern India and one of the major medieval Indian states.
  - Hasan Gangu was the founder of the Bahmani Bahmani kingdom.
  - He was a Turkish officer of Devagiri.
  - His kingdom extended from the Arabian Sea to the Bay of Bengal, which included the entire Deccan up to the Krishna River with his capital at Gulbarga.

⭐ Additional Information

- **Sangma:**

- The Sangama dynasty was founded by Harihara I and Bukka. Their father had been taken prisoner in 1327 by Muhammad bin Tughluq. They founded Vijayanagara in 1336.

- **Kakatiya :**
  - Kakatiyas is an Andhra dynasty that flourished in the 12th century CE. The Kakatiya dynasty ruled from Warangal (Telangana) from CE 1083-1323.
  - Golconda Fort in Hyderabad (Telangana) was also constructed by the Kakatiya rulers.
- **Vijayanagar:**
  - It was established in 1336 by the brothers Harihara I and Bukka Raya I of the Sangama dynasty, members of a pastoralist cowherd community that claimed Yadava lineage.

---

4. Answer: c

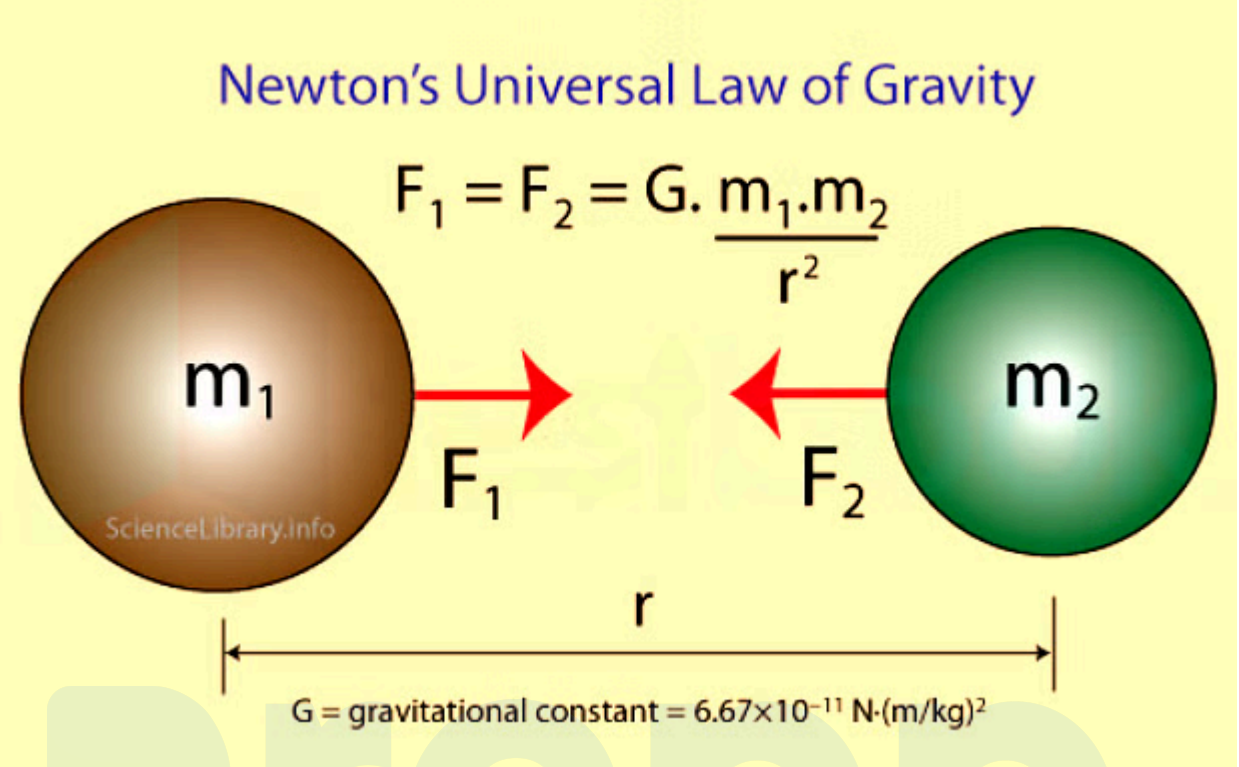
Explanation:

The correct answer is **Only A is true while B is false**.

⭐ **Key Points**

- Newton's Law of Universal Gravitation states that every particle attracts every other particle in the universe with **force directly proportional to the product of the masses** and **inversely proportional to the square of the distance between them**.
- In Newton's law of gravity, we noticed that the mass is a crucial quantity.
  - We consider mass and weight to be the same, but they are different in reality.
  - Weight is the gravitational force exerted on an object of a certain mass.
  - The object's weight can be obtained by multiplying the object's mass m by the acceleration due to gravity, g, at the Earth's surface.

⭐ **Additional Information**



5. **Answer: b**

Explanation:

The correct answer is **48 g/mol**.

⭐ **Key Points**

- The molar mass of ozone is **48g** as each **oxygen atom** has a mass has **16g** and there are **three oxygen** atoms. So one mole of ozone is equal to **48g.**
- **(16.00 X g/mole) X 3**
- **48.00 g/mol**

⭐ **Additional Information**

- **Ozone Concentration in Oxygen by Weight:**
  - 100 g O3/m3 = 6.99% O3 (Approximate).
  - 1% O3 = 14.3 g O3/m3 (Approximate).
  - 1% O3 = 6,520 PPM Ozone.

6. **Answer: b**

Explanation:

The correct answer is **Samsun, Turkey**.

- **The 2017 Deaflympics was held in Samsun, Turkey**.

⭐ **Key Points**

- **The Deaflympics** is an international multi-sport event organized by the International Committee for the Sports for the Deaf (ICSD).
  - The first edition, held in Paris in 1924, was also the first sporting event for people with special needs.
  - The Deaflympics is an international multi-sport event that took place in Samsun, Turkey from July 18 to July 30, 2017.
  - The 2017 Summer Deaflympics offered 18 sports, including golf made its debut.
  - The last Summer Games were held in 2017 in Samsun, Turkey.
  - The last Winter Games were held in the province of Sondrio, Italy in 2019.
  - **The next Summer Games are scheduled to take place in Caxias do Sul, Brazil, from 30 April to 15 May 2022** .

⭐ **Additional Information**

- **Samsun:**
  - Samsun is one of the safest cities in Turkey. It's a modern city with advanced infrastructure.
  - Samsun, historically known as Sampsounta is a city on the north coast of Turkey.

---

7. **Answer: b**

Explanation:

The correct answer is **s-block**.

- **The first and second groups of the modern periodic table are called s-block .**

⭐ **Key Points**

- The periodic table, also known as the periodic table of elements, is a tabular display of chemical elements.
  - The s-block elements of the periodic table are those in which the last electron enters the outermost s-orbital. Since the s-orbital can only accommodate two electrons, the two groups (1 and 2) belong to the s-block of the periodic table.
  - Alkali metals are called s block because they form alkalis when they react with water. Alkalis, including sodium hydroxide and potassium hydroxide, are hydroxide compounds of these elements.

⭐ **Additional Information**

Block	Groups
s	Group 1 (alkali metals) and Group 2 (alkaline earth metals) plus Period 1 (hydrogen and helium)
d	Groups 3 to 12 (transition metals)
p	Groups 13 to 18 (includes all Noble Gases, halogens and chalcogens)
f	Lanthanoids and Actinoids

---

8. Answer: d

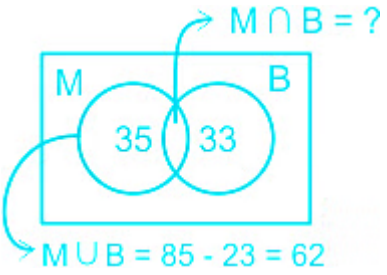
Explanation:

Given:

Number of students opted Mathematics = n(M) = 35

Number of students opted Biology = n(B) = 33

Calculation:



The number of students who did not opt these two subjects is,

85 - n(M U B) = 23

n(M U B) = 85 - 23 = 62

n(M U B) is number of students opted mathematics or Biology.

n(M ∩ B) is number of students opted both mathematics and Biology.

The formula is:-

n(M U B) = n(M) + n(B) - n(M ∩ B)

62 = 35 + 33 - n(M ∩ B)

n(M ∩ B) = 68 - 62 = 6

6 students opted for both Mathematics and Biology subjects.

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

---

9. **Answer: d**

Explanation:

The correct answer is **pressure**.

- **Nm –2** is the international (SI) unit of **pressure.**

⭐ Key Points

- The **International System of Units** (SI) is the basis of the modern metric system. All SI units can be derived from the **seven fundamental SI units** .
  - Pressure, in the **physical sciences** , is the **perpendicular force per unit area,** or the stress at a point within a confined fluid.
  - Pressure is the force per unit **perpendicular area** over which the force is applied, **p = F/A.**
  - Pressure is defined as force applied per unit area. Hence, its SI unit is **N/m ^{2}** or Pascal here, **1 Pascal = 1 N/m ^{2}.**

⭐ Additional Information

- **Pressure is classified into three types, they are:**
  - Absolute pressure.
  - Gauge pressure.
  - Differential pressure.
  - Sealed pressure or vacuum pressure.

⭐ Important Points

Unit of	SI Unit
force	Newton (N)
thrust	Newton (N)
momentum	kg·m/s

---

10. **Answer: d**

Explanation:

Given:

Person 1 is moving at a speed of 5.4 kmph i.e. 3/2 mps

Person 2 is moving at a speed of 6 kmph i.e. 5/3 mps

The mini-van crosses them in 4.5 sec and 6.75 sec respectively.

Concept used:

When a mini-van crosses a person, it basically crosses its own length.

The relative speed when two objectives are moving in the same direction is the positive difference between their individual speeds.

Distance = Time × Speed

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

Calculation:

Let the speed & length of the mini-van be S mps & L meter.

According to the question,

(S - 3/2) × 4.5 = L;

(S - 5/3) × 6.75 = L;

So,

(S - 3/2) × 4.5 = (S - 5/3) × 6.75

⇒ (S - 3/2) × (9/2) = (S - 5/3) × (27/4)

⇒ S = 2

So, the speed of the mini-van, S = 2 mps

Then, the length of the mini-van, L = 2.25 meter

∴ 2.25 meter is the length of the mini-van.

11. **Answer: a**

Explanation:

Given:

The marked price of the laptop is Rs 22,000.

Discount is given 12 $\frac{1}{2}$ % i.e. (25/2)%

VAT is charged at 10%

Concept used:

Selling Price = Marked Price - Discount

Application of percentage

Calculation:

So, the selling price after discount = 22500 - (22500 × (25/200)) = Rs. 19250

Then, the final selling price after adding a VAT on it = (19500 × 1.1) = Rs. 21,175

∴ The customer will have to pay Rs. 21,175 for the laptop.

⭐ Shortcut Trick

Here comes the successive percentage calculation.

One discount of 12.5% is given & 10% VAT was charged after that.

So, final percentage change = -12.5 + 10 - {(12.5 × 10) ÷ 100} = -3.75

So, the final selling price of the laptop = {22000 × (100 - 3.75)} ÷ 100 = Rs. 21175

∴ The customer will have to pay Rs. 21,175 for the laptop.

12. **Answer: b**

Explanation:

The logic followed here is:-

- Canada is a country in North America.
- Similarly, Spain is a country in Europe.

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

---

13. **Answer: c**

Explanation:

Given:

He credited 15% of his salary in his fixed deposit account.

He spent 30% of the remaining amount on getting groceries.

He had Rs. 4000 in cash

Concept used:

Application of percentage

Calculation:

So, the remaining percentage of salary after crediting in the fixed deposit

⇒ (100 - 15)%

⇒ 85%

So, the percentage of his salary, he spent on getting groceries

⇒ 85 × 30%

⇒ 25.5%

Now, the total percentage of his salary that he spent = (15 + 25.5)% = 40.5%

So, remaining salary = (100 - 40.5)% = 59.5%

Let the total salary be Rs. P.

According to the question,

59.5% × P = 2380

⇒ P = 4000

∴ His total salary is Rs. 4000.

---

14. Answer: c

Explanation:

The correct answer is Indra Nooyi.

- Indra Nooyi has been appointed as the independent director of the International Cricket Council (ICC), on February 9, 2018.

⭐ Key Points

- **Indra Nooyi** is an **Indian-American business executive** and former chairperson and **chief executive officer of PepsiCo.**
  - She has consistently ranked among the **world's 100 most powerful women.**
  - In **2014,** she was ranked at number **13 on the Forbes list** of **The World's 100 Most Powerful Women** and was ranked the second most powerful woman on the **Fortune list in 2015.**
  - In **2017** , she was ranked the **second most powerful woman** once more on the **Forbes list** of The **19 Most Powerful Women in Business.**
  - Nooyi joined PepsiCo in **1994** and was named **CEO in 2006,** replacing Steven Reinemund, becoming the fifth CEO in PepsiCo's 44-year history.

⭐ Additional Information

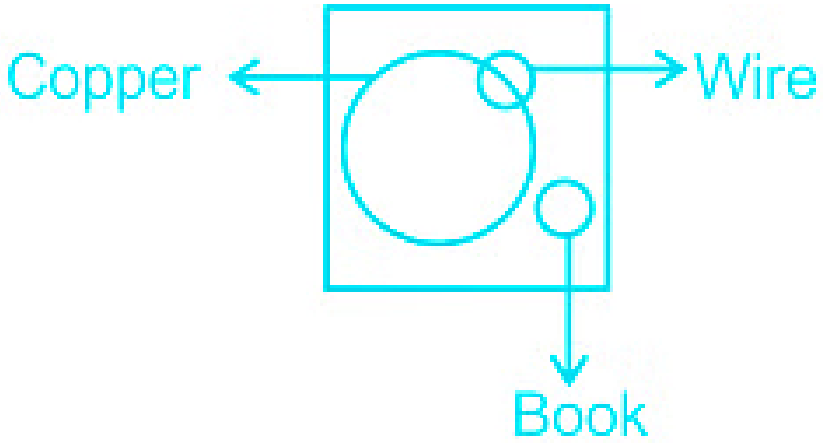
- **Sachin Tendulkar:**
  - Sachin Tendulkar is a former international cricketer of India who served as captain of the Indian national team.
- **Jagmohan Dalmiya:**
  - Jagmohan Dalmiya was an Indian cricket administrator and businessman from the city of Kolkata.
  - He was the President of the Board of Control for Cricket in India as well as the Cricket Association of Bengal.
- **Sourav Ganguly:**
  - He's an Indian cricket administrator, commentator, and former national cricket team captain.
  - Ganguly is the 39th and current president of the Board of Control for Cricket in India.

---

15. **Answer: c**

Explanation:

- Some wires are made of copper.
- A book is not related to copper or wire.
- The best Venn diagram representation is as follows:
-



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

---

16. **Answer: b**

Explanation:

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

The logic followed here is:-

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

---

17. **Answer: c**

Explanation:

Given:

Hari invested Rs.100 for three years at a simple interest rate of 11.03%.

Tipu invested a sum for three years at 10%.

Concept used:

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

where

P = Principal amount

R = Rate of interest per year

T = Time in years

Compound interest, CI = P(1 + R/100) n - P

where

P = Principal amount

R = Rate of interest per year

N = Time in years

Calculation:

Let the principal amount that Tipu invested be Rs. P.

After three years,

Hari gets simple interest on the sum he invested,

⇒ (100 × 11.03 × 3) ÷ 100

⇒ Rs. 33.09

Tipu gets compound interest on the sum he invested,

⇒ {P × (1 + 10/100) ^{3}} - P

⇒ P × 0.331

According to the question,

P × 0.331 = 33.09

⇒ P = 99.969..

⇒ P ≈ 100

∴ Tipu should invest Rs. 100 to get the same amount after three years but at 10% compound interest.

18. **Answer: c**

Explanation:

The correct answer is **Gypsum**.

- **On heating gypsum, plaster of paris is obtained**.

⭐ **Key Points**

- **Plaster of Paris** is obtained by **heating gypsum** or calcium sulfate dihydrate to about **140-180 degrees Celsius** .
  - When heated to such a temperature, **gypsum** forms the **Plaster of Paris.**
  - The name is derived from the large deposits of **gypsum** in the **Montmartre** hill in **Paris** .
  - Plaster of Paris is a chemical compound consisting of **fine white powder,** which hardens when exposed to moisture and allowed to dry.
  - Its chemical formula of Plaster of Paris is **$CaSO_4.1/2H_2O$** and is better known as **calcium sulphate hemihydrate.**

⭐ **Additional Information**

- **Carbonic acid:**
  - Carbonic acid is widely used in the preparation of bubbly drinks such as sodas, soft drinks, sparkling wines, and other aerated beverages.
- **Baking soda:**
  - Baking soda is a white crystalline compound with a slightly salty taste.
  - Its chemical formula is $NaHCO_3$and is generally known as sodium bicarbonate.
- **Calcium carbonate:**
  - Calcium carbonate is a chemical compound with the formula $CaCO_3$.
  - It is a common substance found in rocks as the minerals calcite and aragonite and is the main component of eggshells, snail shells, seashells, and pearls.

19. **Answer: d**

Explanation:

The correct answer is Gene.

- Gene is a part of DNA, which provides information for a protein.

⭐ Key Points

- **Genes** are **functional units** of heredity as they are made of DNA. The chromosome is made of **DNA containing many genes.**
  - Every gene comprises a particular set of instructions for a particular function or **protein-coding** . Speaking in usual terms, genes are responsible for heredity.
  - There are about **30000 genes** in each cell of the **human body** .**DNA present** in the gene comprises only **2 percent of the genome.**
  - Many studies have been made on the same that found the location of nearly **13000 genes** on **each of the chromosomes** .

⭐ Important Points

- **William Bateson** introduced the term **genetics** in the year **1905** .
  - **Wilhelm Johannes** was the first one who coined the term **GENE** in **1909** .
  - He was a Danish botanist.
  - He named it **Gene** to symbolize hereditary.

---

20. **Answer: a**

Explanation:

Given:

The watch gains 5 seconds in every 3 minute.

The clock was set correct at 7 in the morning.

The clock showed quarter past four in the afternoon i.e. 04.15 PM

Concept used:

1 min = 60 seconds

1 hour = 60 mins

Calculation:

From 7:00 AM to 4:15 PM, the gap = 9 hours 15 mins. i.e. 555 mins.

So, in 555 mins, the watch will gain = (555 ÷ 3) × 5 = 925 seconds

Now, 925 means 15 min 25 seconds

So, the clock will go forward in time by 15 min 25 seconds.

So, the exact time should be 15 min 25 second less that 4.15PM

Now, the exact time = 3.59.35 PM ≈ 4 PM

∴ When the watch indicates 4:15 PM exact time is 4PM.

---

21. **Answer: d**

Explanation:

Given:

$\tan \frac{\pi}{24} \tan \frac{3\pi}{24} \tan \frac{5\pi}{24} \tan \frac{7\pi}{24} \tan \frac{9\pi}{24} \tan \frac{11\pi}{24} \tan \frac{16\pi}{24}$

Concept used:

$\tan \theta \times \text{Cot } \theta = 1$

$\tan \theta = \text{Cot } (\pi/2 - \theta)$

Calculation:

Now,

tan $\frac{\pi}{24}$ = Cot (π/2 - π/24) = Cot(11π/24)

tan $\frac{3\pi}{24}$ = Cot (π/2 - 3π/24) = Cot(9π/24)

tan $\frac{5\pi}{24}$ = Cot (π/2 - 5π/24) = Cot (7π/24)

tan $\frac{16\pi}{24}$ = tan 120° = (-√3)

So,

tan $\frac{\pi}{24}$ tan $\frac{3\pi}{24}$ tan $\frac{5\pi}{24}$ tan $\frac{7\pi}{24}$ tan $\frac{9\pi}{24}$ tan $\frac{11\pi}{24}$ tan $\frac{16\pi}{24}$

⇒ Cot(11π/24) Cot(9π/24) Cot (7π/24) tan (7π/24) tan (9π/24) tan (11π/24) tan (16π/24)

⇒ Cot(11π/24) tan (11π/24) Cot(9π/24) tan (9π/24) Cot (7π/24) Cot (7π/24) tan (7π/24) tan (16π/24)

⇒ 1 × 1 × 1 × tan (16π/24)

⇒ tan 120°

⇒ (-√3)

∴ The required value of tan $\frac{\pi}{24}$ tan $\frac{3\pi}{24}$ tan $\frac{5\pi}{24}$ tan $\frac{7\pi}{24}$ tan $\frac{9\pi}{24}$ tan $\frac{11\pi}{24}$ tan $\frac{16\pi}{24}$ is (-√3).

---

22. Answer: c

Explanation:

The correct answer is 12 January.

- On 12 January, National Youth Day is celebrated in India.

⭐ Key Points

- **National Youth Day** is celebrated on **12 January** and is also known as **Rashtriya Yuva Diwas.**
  - The day is observed to commemorate the **birth anniversary** of **Swami Vivekananda,** one of the **greatest philosophers** and **spiritual leaders.**
  - In **1984,** the **Indian Government** first declared to celebrate the birthday of **Swami Vivekananda** i.e. **12 January** as **National Youth Day** . Since then the day has been celebrated as **National Youth Day** all over the **country** .
  - The main aim of the Government is to make a better future for the country by motivating the **youths** through the way of their life and ideas of the **Swami Vivekananda** .

⭐ Additional Information

- **Swami Vivekananda** was born on **12 January 1863** was an **Indian Hindu monk** . He was a chief disciple of the 1 **9th-century Indian** mystic **Ramakrishna** .
  - When Swami Ji became a **monk** from **Narendra** , his name was **Swami Vividishanand,** but before moving to **Chicago** , he changed his name to **Vivekananda.**
  - **Swami Vivekananda books are:**
    - Karma Yoga (1896).
    - Raj Yoga (1896).
    - Vedanta Shastra (1896).
    - Speeches from Colombo to Almora (1897).

---

23. Answer: c

Explanation:

The correct answer is Haldane.

- Haldane suggested that life evolved from simple inorganic (abiotic) molecules.

⭐ Key Points

- JBS British scientist Haldane suggested in 1929 that life may have evolved from simple inorganic molecules that were present on Earth shortly after its

formation.

- He hypothesized that conditions on Earth at the time, which were far from those of today, could have given rise to the more complex organic molecules needed for life.
- The first primitive organisms would arise from further chemical synthesis.

⭐ Additional Information

Scientist	Major findings/Research
Murey	• In 1872, Murray embarked on the Challenger voyage, the world's first oceanographic exploring expedition. • He was one of the founders of oceanography.
Darwin	• Authored On the origin of species. • The theory of animal ancestry of human beings was inferred from this book.
Haldane	• Oparin Haldane Hypothesis: Life must have developed from simple inorganic molecules. • A developed mathematical theory of pollution genetics along with other two fellow scientists.
Mendel	• Known as the father of modern genetics.

---

24. **Answer: d**

Explanation:

- Concept:

No. of Odd days	Ordinary Year	Leap Year
	365 ÷ 7 = 52 weeks + 1 odd day	366 ÷ 7 = 52 weeks + 2 odd day

Years	No. of odd days
100 years	5
200 years	3
300 years	1
400 years	0

- Note : Multiple of 400 years i.e. 800, 1200, 1600, 2000 have 0 odd days .
- Calculating leap year: For Finding the number of leap year (1 - 99) years, divide the number of years by 4 and the quotient will be the number of leap years.
- Code for weekdays:

No. of odd days	Day
0	Sunday
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday

- 1987 = 1600 + 300 years (1601 to 1900) + 86 years (1901 to 1986) + year 1987
- No. of odd days from 1601 to 1900 = 1 odd day (5 odd days in every 100 years)

- The total number of odd days from 1901 to 1986 = 21 leap years + 65 ordinary years = 42 + 65 = 107 odd days = 2 odd days.
- In 1600 years, odd days = **0**

- So total in 1986 years = 0 + 1 + 2 = **3**odd days
- In 1987, the no. of days up to 5 August = 31(Jan) + 28 (Feb) + 31(Mar) + 30(Apr) + 31(May) + 30(June) + 31(July) + 5 days (Aug) = 217/7 = 0 odd days.

Total in 1987 years up to 5 Aug = 3 + 0 = 3 odd days.
The codes for the weekdays are as follows:

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

- The day of the week on 5 August 1987 was Wednesday.

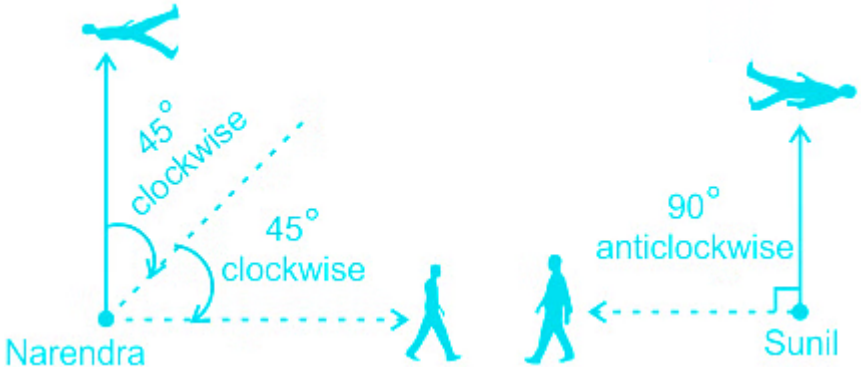
Hence, "option 1" is the correct answer

---

25. Answer: c

Explanation:

The distance diagram is as follows:



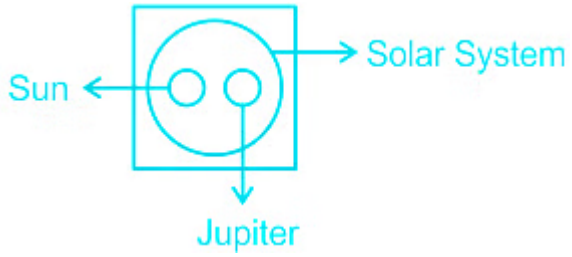
- Narendra and Sunil should be facing the opposite direction. Only then will they be facing each other.
- Therefore, Sunil has to rotate 90 ° anticlockwise to face Narendra.

26. **Answer: a**

Explanation:

- Sun and Jupiter are parts of our solar system.

The best suitable Venn diagram is as follows:



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

27. **Answer: c**

Explanation:

The correct answer is **Jharkhand**.

- **Political leader Sudesh Mahto is from Jharkhand**.

⭐ **Key Points**

- **Sudesh Mahto** is an Indian politician who was the Deputy Chief Minister of Jharkhand.
  - He is a member of the Jharkhand Legislative Assembly from Silli.
  - He won the first assembly election in 2000 at the age of 25.
  - He was inducted as the Minister of Road Construction on the formation of Jharkhand. He took over as the Deputy Chief Minister of Jharkhand state on 29 December 2009.
  - He runs the Birsa Munda Archery Academy in Silli, which received the President's Award in 2016 and produced Madhumita Kumari, a silver

medalist at the Asiad Olympics for India.

---

28. Answer: c

Explanation:

Given:

A and B can do a piece of work in 12 and 16 days respectively.

Together they do that work together for 3 days, then A leaves.

Concept used:

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

Calculation:

LCM (12,16) = 48

Let the total work be the LCM of 12 & 16.

So, the total work = 48 units

Now,

A does = 48 ÷ 12 = 4 units each day

B does = 48 ÷ 16 = 3 units each day

Together they do = (4 + 3) = 7 units each day

So, in 3 days, they completed = 7 × 3 = 21 units of work

Now, the remaining work = (48 - 21) = 27 units

So, B will complete the remaining work in = 27 ÷ 3 = 9 days

∴ In 9 days B will alone complete the remaining work.

29. **Answer: b**

Explanation:

Total sales in the year 2017 are Rs. 5,000 crores.

Then, the total sales made by the Huawei company = (5000 × 11%) = Rs. 550 Crore

∴ **The total sales made by the Huawei company was Rs. 550 crores.**

30. **Answer: d**

Explanation:

The correct answer is **Poorna**.

- **Poorna is a film based on the life of a girl who climbed Mount Everest at a young age (13 years 11 months)**.

⭐ **Key Points**

- **Poorna** is a **2017 Indian Hindi-language biographical adventure film** directed by **Rahul Bose** .
  - The film was released in India on **31 March 2017** .
  - The story is about a girl **Poorna** who belongs to **Telugu speaking tribal family** in **Pakala, Nizamabad district** in the **Telangana** state of **India** .
  - She climbed the **peak of Mount Everest** at the age of **13 years and 11 months** and becomes the **youngest girl** in the **world.**
  - The film was broadcast at the **2017 Palm Springs International Film Festival** where it got nominated on the festival's list of **30 Best Feature Films.**

⭐ **Additional Information**

Film name	Director
Newton	Amit V. Masurkar
Shabd	Leena Yadav
Secret superstar	Advait Chandan

---

31. **Answer: c**

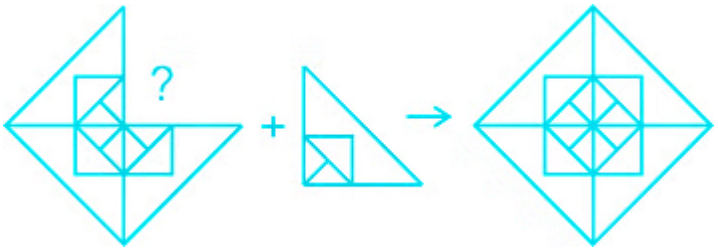
Explanation:

⭐ Mistake Points

Option 4 seems like the answer figure, but there is an extra line in the option 4 figure. So, it is not the correct figure for the question figure.

Among the given options only option 3 can complete the question figure.

- We must rotate option figure 3 180° anticlockwise
- 



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

---

32. **Answer: c**

Explanation:

The correct answer is **Dr. Harsh Vardhan**.

- **Dr. Harsh Vardhan is the Union Minister of Science and Technology at present (as of July 2018)**.
  - As of now **January 2022** the **Union Minister of Science and Technology** is**Dr. Jitendra Singh.**

⭐ **Key Points**

- The **Ministry of Science and Technology** is the Indian **government ministry** charged with the formulation and administration of the rules and regulations and laws relating to **science and technology** in **India.**
  - The Ministry of Science and Technology is formed in **1971.**
  - The first ministry of Science and technology is C. Subramaniam from 2 May 1971 to 10 October 1974

⭐ **Additional Information**

Person Name	Details
Mahesh Sharma	• Mahesh Kumar Sharma is an Indian politician belonging to the Bharatiya Janata Party. • He was elected in the 2014 Indian general election from Gautam Buddh Nagar.
Ravi Shankar Prasad	• Ravi Shankar Prasad is an Indian politician and lawyer, from the Bharatiya Janata Party.
Dr. Harsh Vardhan	• Harsh Vardhan is an Indian otorhinolaryngologist. • He had served as the Minister of Health and Family Welfare, Minister of Science and Technology and Minister of Earth Sciences in the BJP-led NDA government of Prime Minister Narendra Modi from 30 May 2019 to 7 July 2021.
Suresh Prabhu	• Suresh Prabhakar Prabhu is an Indian politician and India's Sherpa to the G7 and G20 who was the Minister of Civil Aviation, Railways, Commerce & Industry in the First Modi ministry.

33. **Answer: c**

Explanation:

The correct answer is Artery.

- The artery is the tube that originates from the heart and carries blood to various organs in the body.

⭐ Key Points

- As the **heartbeats** , it **pumps blood** through a **system of blood vessels** , called the **circulatory system** . The vessels are **elastic tubes** that carry **blood to every part of the body.**
- **Blood is essential:**
  - It carries oxygen and nutrients to your body's tissues
  - It takes carbon dioxide and waste products away from the tissues.
  - It is needed to sustain life and promote the health of all the body's tissues.

⭐ Additional Information

- **There are three main types of blood vessels:**
  - **Arteries:**
    - The arteries (red) carry oxygen and nutrients away from your heart, to your body's tissues.
    - Arteries begin with the aorta, the large artery leaving the heart.
    - They carry oxygen-rich blood away from the heart to all of the body's tissues.
  - **Capillaries:**
    - Capillaries are small, thin blood vessels that connect the arteries and the veins.
    - Their thin walls allow oxygen, nutrients, carbon dioxide and waste products to pass to and from the tissue cells.
  - **Veins:**
    - These are blood vessels that take oxygen-poor blood back to the heart.
    - Veins become larger and larger as they get closer to the heart.

---

34. Answer: a

Explanation:

Calculation:

Statement 1:

We can say The number of big boxes = 1/2 of the number of the medium boxes

So ratio of medium to big boxes = 2 : 1

So, statement 1 alone is not sufficient

Statement 2:

There are 10 small blue colored boxes

So, the remaining 25 - 10 = 15 boxes are small and medium

So, statement 2 alone is not sufficient

Statement 3 :

Medium boxes = 15 × 2/3 = 10

So medium red and medium green boxes are 5 each

Now 5 boxes are big

So, statement 3 alone is not sufficient

From all three statements, it is not clear that 5 big boxes are the same in color or different so we cannot get the actual number of blue big boxes

∴ **Statements 1, 2 and 3 together are not sufficient.**

---

35. **Answer: d**

Explanation:

The correct answer is Gwalior Gharana.

- Pandit Narayanrao Bodas belonged to Gwalior Gharana of Hindustani classical music.

⭐ Key Points

- **Narayanrao Bodas** was an Indian classical vocalist from Maharashtra, belonging to the **Gwalior Gharana** .

- He was also a leading vocalist of **Marathi's stage drama.**
- **Narayanrao Bodas** was born on **31 January 1933 in Karachi, British India** .
- Bodas retired from the stage in **1993** , at the age of 60 after giving a final performance of **Sangeet Saubhadra** in **Goa** .
- At the age of 83, he gave a stirring performance at the **Secret Masters Series** held at the **Ravindra Natya Mandir** in **Mumbai.**

⭐ Additional Information

Gharana	Details
Kirana Gharana	• It is the birthplace of Ustad Abdul Karim Khan (1872–1937), who was one of the most important musicians of this Gharana and of Hindustani music in general in the twentieth century.
Banaras Gharana	• Ram Sahai started the Banaras tabla Gharana 200 years ago, introducing a new technique of using all five digits to produce beats that could accompany different genres of singing and dance.
Rampur Gharana	• Rampur-Sahaswan Gharana is a Gharana of Hindustani classical music centered in the North-Uttar Pradesh towns of Rampur and Sahaswan. • Ustad Inayat Hussain Khan was the founder of this Gharana.
Gwalior Gharana	• The Gwalior Gharana is one of the oldest Khyal Gharana in Indian classical music. • The rise of the Gwalior Gharana started with the reign of the Mughal emperor Akbar.

36. **Answer: b**

Explanation:

The correct answer is **Puri**.

- **Puri is a religious city located in the state of Odisha in India**.

⭐ **Key Points**

- **Puri and the Jagannath temple** were attacked 18 times by Muslim rulers, from the 7th century AD to the early 19th century with the aim of plundering the temple treasury.
  - Puri has been selected as one of the heritage cities for the Heritage City Development and Augmentation Scheme (HRIDAY) scheme of the Government of India.
  - The Jagannath Temple in Puri is one of the major Hindu temples built in the Kalinga style of architecture.
  - The present Jagannath temple was rebuilt on the site of an older temple from the 10th century onwards and was commissioned by Ananthavarman Chodaganga Deva, the first king of the Eastern Ganga dynasty.

⭐ **Additional Information**

Religious city	Details
Saputara	• Saputara is a hill town in the west Indian state of Gujarat. The Artist Village cultural center displays, and sells, tribal arts and crafts.
Naina Devi	• Mata Naina Devi is a town and a municipal council in Bilaspur district in the Indian state of Himachal Pradesh.
Katra	• Katra is a small town in Reasi district in the union territory of Jammu and Kashmir, India, situated in the foothills of the Trikuta Mountains, where the holy shrine of Vaishno Devi is located.

37. **Answer: d**

Explanation:

The correct answer is **Both vehicles have kinetic energy**.

- **Kinetic energycan be inferred regarding energy from the given figure**.

⭐ **Key Points**

- Kinetic energy is seen when the object is in motion . Energy is exerted on the object in order to make it move .
  - The kinetic energy of the object is dependent on the mass of the object and the speed at which it moves.

⭐ **Additional Information**

- Chemical energy:

- Chemical energy is energy stored in the bonds of chemical compounds, like atoms and molecules.
- This energy is released when a chemical reaction takes place.

- Potential energy:
  - Potential energy is stored energy that depends upon the relative position of various parts of a system.
  - Spring has more potential energy when it is compressed or stretched.
- Electrical energy:
  - Electrical energy is energy derived as a result of the movement of electrically charged particles.
  - This energy is supplied by the combination of electric current and electric potential that is delivered by an electrical circuit.

---

38. Answer: b

Explanation:

The correct answer is **Hillbilly music**.

- **Hillbilly is a folk sport from rural Appalachia**.

⭐ **Key Points**

- **Hillbilly music** was at one time considered an acceptable label for what is now known as **country music.**
  - **Hillbilly music** country music originating in mountainous regions of southern **United States hillbilly music.**
  - **Appalachia** is a cultural region in the **Eastern United States** that stretches from the Southern Tier of **New York** State to northern **Alabama and Georgia.**
  - **Appalachian culture** is known for its literature and music. **African-American blues** musicians introduced the banjo in the late **1700s** , and the instrument has become a prominent symbol of the music of the region.

⭐ **Additional Information**

- **Opera Music:**
  - Opera, a staged drama set to music in its entirety, is made up of vocal pieces with instrumental accompaniment and usually with orchestral overtures and interludes.
- **Rasta Music :**
  - Rastafari, also known as the Rastafari movement or Rastafarianism, is a religion that developed in Jamaica during the 1930s.
- **Reggae** is a music genre that originated in Jamaica in the late 1960s.

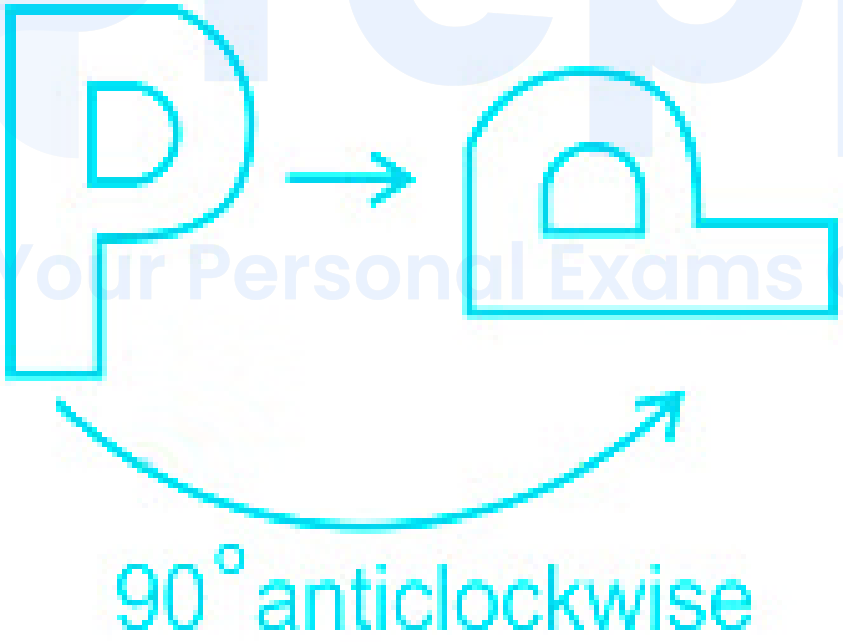
---

39. Answer: a

Explanation:

The logic followed here is:-

- Figure 1 to figure 2: 90° anticlockwise rotation.
-



- Similarly, figure 3 to figure 4: 90 ° anticlockwise rotation.

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

---

40. Answer: c

Explanation:

given by:

Total number of students = 45

Ratio of boys & girls = 4 : 5

The average marks for boys is 75 and for girls is 82

Concept used:

Let x n be the observations and w n be the weights of the observations ; The weighted average formula is given below.

W = (w 1 x 1 + w 2 x 2 + w 3 x 3 + ... + w n x n) ÷ (w 1 + w 2 + w 3 + ... + w n)

Calculation:

Number of boys in the class = 45 × (4/9) = 20

Number of girls in the class = 45 × (5/9) = 25

So, the average marks of the entire class

⇒ {(20 × 75) + (25 × 82)} ÷ 45

⇒ 78.9 (Approx.)

∴ The average marks of the entire class is 78.9.

---

41. Answer: c

Explanation:

The correct answer is **Momentum increases by 2 times and kinetic energy by 4 times**.

- If the velocity is doubled, then **Momentum increases by 2 times and kinetic energy by 4 times.**

⭐ **Key Points**

- **Solution:**
  - Momentum (P) = mv
    - v' = 2v
    - P' = 2mv
  - Kinetic Energy $K = \frac{1}{2}mv^2$
    - v' = 2v.
    - So, $K' = \frac{1}{2}m(2v)^2 = 4 \times \frac{1}{2}mv^2 = 4K$

⭐ **Additional Information**

- Kinetic energy is seen when the object is in motion . Energy is exerted on the object in order to make it move .
- The kinetic energy of the object is dependent on the mass of the object and the speed at which it moves.

42. **Answer: c**

Explanation:

The statement declares that fairy tales are loved by everyone.

- The statement only talks about fairy tales being loved by all people, but it does not suggest that fairy tales have no other use or purpose. So, assumption I is not implicit.
- Nothing about people liking or disliking other stuff is suggested in the given statement, so assumption II is also not implicit.

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

43. **Answer: a**

Explanation:

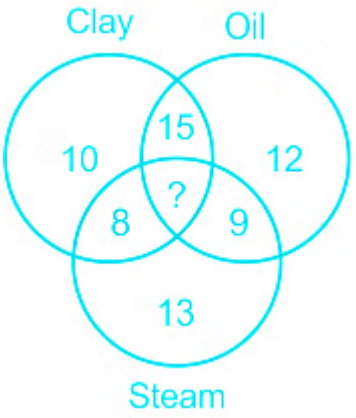
Given:

Total number of patients = 70

Concept used:

Ven diagram

Calculation:



In the given ven diagram

We can see 15 is in Clay and Oil

8 is in Clay and Steam

9 is in Oil and Steam

And as in the question, nothing is mentioned about 35 we have divided it into 10, 12, 13

So,

No. of patients who chose all three = 70 - (15 + 8 + 9 + 35)

⇒ 3

∴ Requried answer is 3

---

44. Answer: d

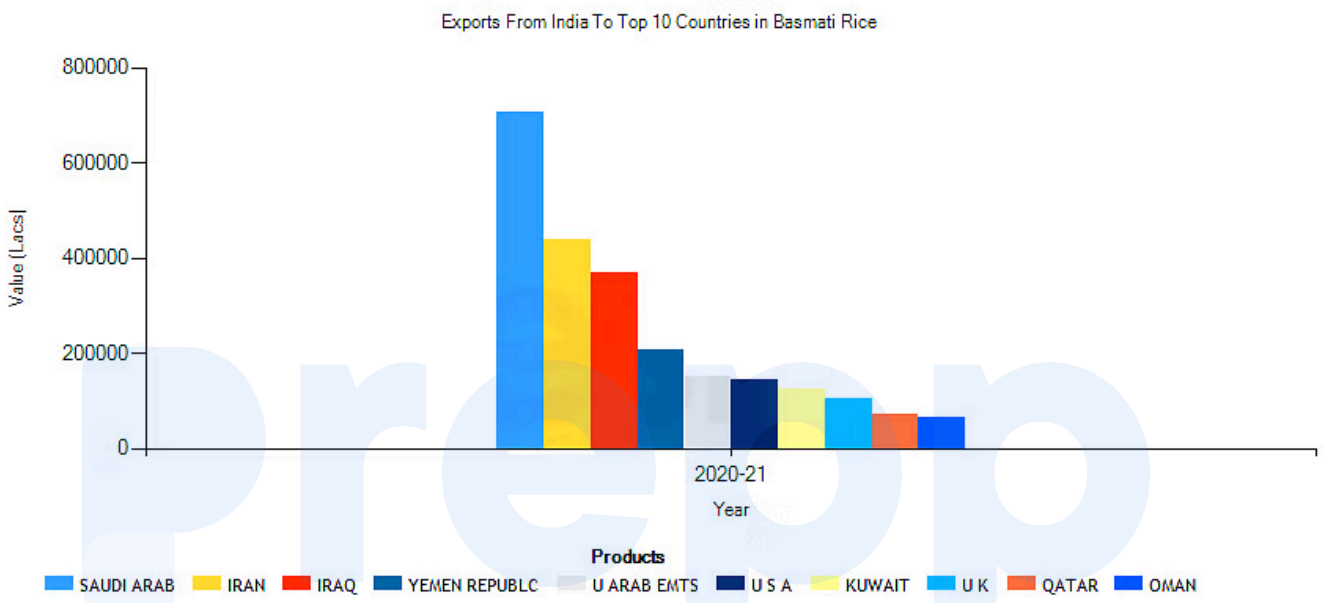
Explanation:

The correct answer is **Basmati rice**.

⭐ **Key Points**

- The largest area under **Basmati rice** is in the State of **Haryana** (60%) followed by **Uttar Pradesh** (17.1%) and **Punjab** (16.1%).

- In **2020-21 ,India's rice exports** (Basmati and Non-Basmati) rose **87%** to **17.72 MT** from **9.49 MT** achieved in **2019-20** .
- In value terms, India's rice exports rose **38%** to **$8.8 billion** in **FY21** from **$6.4 billion** reported in **2019-20** .
- **Non-Basmati rice** exports were **$4.8 billion** while **Basmati Rice** exports were **$4 billion** in **FY21** .



Additional Information

- **Spices:**
  - The total spices export in FY21 was US $4.0 billion and for the month of March 2021, it was US$ 448.77 million. During FY19, India's chili export stood at 468,500 tonnes, cumin export at 180,300 tonnes, turmeric export at 133,600 tonnes, and cardamom large export at 860 tonnes.
- **Cotton:**
  - India is the largest cotton producer in the world. India's overall cotton production accounted for ~360 lakh bales in FY21. The total cotton yarn/ fabs /made-ups, handloom products, and other export accounted for US $5.97 billion from April 2021 to August 2021 and for August 2021 it was US$ 1.29 billion.
- **Coffee:**
  - The total coffee export was US $377.65 million in April 2021 to August 2021 and for August 2021 it was US$ 76.71 million.

In FY 21, the total coffee export accounted for US $719.50 million and for March 2021 it was US $ 97.41 million. Of the total coffee produced in India, 70% is exported and 30% is consumed domestically.

---

45. Answer: c

Explanation:

The correct answer is **Vidya Balan**.

- **Vidya Balan won the Best Actress in a Leading Role award at Jio Filmfare Awards 2018**.

⭐ **Key Points**

- **The Filmfare Awards** are a set of awards honoring artistic and technical excellence in the Hindi language film industry of India.
  - The Filmfare Festival is one of the most famous film events in India.
  - The awards were first introduced by The Times Group's Filmfare magazine in **1954** , the same year as the National Film Awards.

⭐ **Additional Information**

Person Name	Details
Deepika Padukone	• Deepika Padukone features in listings of the nation's most popular personalities, and Time named her one of the 100 most influential people in the world in 2018.
Radhika Apte	• Radhika Apte is an Indian actress. She works predominantly in Hindi films and has appeared in a few Tamil, Marathi, Telugu, Bengali, and English-language films.
Kareena Kapoor	• In 2005 Kareena was honored with Rajiv Gandhi Young Achiever Award.

46. **Answer: c**

Explanation:

Given:

Interest acquired = Rs. 400

Rate of interest = 10%

Time = 1 Year

Concept used:

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

where

P = Principal amount

R = Rate of interest per year

T = Time in years

Compound interest, CI = P × (1 + R/100) n - P

where

P = Principal amount

R = Rate of interest per year

N = Time in years

Calculation:

Let the principal amount be Rs. P.

According to the question,

(P × 10 × 1) ÷ 100 = 400

⇒ P = 4000

Now, the compound interest on Rs. 4000 at a 10% rate and for the same period, if the interest is compounded half-yearly,

$4000 \times (1 + \{(10/2)/100\})^{(12/6)} - 4000$

⇒ Rs. 410

∴ The compound interest is Rs. 410.

---

47. Answer: b

Explanation:

Given:

a = 0.125

Concept used:

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

Calculation:

Now,

$\sqrt{4a^2 - 4a + 1}$

$\Rightarrow \sqrt{(1 - 4a + 4a^2)}$

$\Rightarrow \sqrt{(1 - 2a)^2}$

$\Rightarrow (1 - 2a)$

So,

$\sqrt{4a^2 - 4a + 1}$ + 3a

$\Rightarrow (1 - 2a) + 3a$

$\Rightarrow 1 + a$

$\Rightarrow 1.125$

∴ The required value of $\sqrt{4a^2 - 4a + 1}$ + 3a is 1.125.

---

48. Answer: a

Explanation:

Given series: ABCDEFGHIJKLMNOPQRSTUVWXYZ

- 1st letter: A
- 19th letter: S
- 20th letter: T
- 25th letter: Y

The meaningful word formed: STAY

The second letter: T

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

---

49. Answer: d

Explanation:

The correct answer is **Rohu**.

- **Rohu the heart has only two chambers**.

⭐ **Key Points**

- **Rohu** is a fish with a two-chambered heart, most amphibians and reptiles (toads and lizards) have a three-chambered heart while birds (ostriches) and mammals have four-chambered hearts.
  - Rohu is a species of fish of the carp family, which is found in the rivers of South Asia.
  - Rohu belongs to the group of Pisces which has 2 chambered heart (one atrium and one ventricle). A two-chambered heart has a mixture of oxygenated and deoxygenated blood.

⭐ **Additional Information**

- **Salamander:**
  - Salamanders are characterized by their lizard-like appearance, with slender bodies, blunt snouts, short limbs projecting at right angles to the body, and the presence of a tail in both larvae and adults.
  - Kingdom: Animalia
  - Phylum: Chordata
  - Class: Amphibia
- **Cobra:**
  - Cobra is the common name of various elapid snakes, most of which belong to the genus Naja.

    - Kingdom: Animalia
    - Phylum: Chordata
    - Class: Reptilia
- **Frog:**
    - A frog is any member of a diverse and largely carnivorous group of short-bodied, tailless amphibians composing the order Anura.
    - Kingdom: Animalia
    - Phylum: Chordata
    - Class: Amphibia
    - The world's largest frog species is known as the Goliath Frog.

---

50. Answer: b

Explanation:

The correct answer is **7.3%**.

- **According to the World Bank's Global Economic Prospects Report 2018, India may top the list as the fastest growing economy with a growth rate of 7.3%**.

⭐ **Key Points**

- Since the 2000s, India has made remarkable progress in reducing absolute poverty. Between 2011 and 2015, more than 90 million people were lifted out of extreme poverty.
    - Recently, the World Bank has released its June 2021 Global Economic Prospects, where it has projected India's GDP growth rate to be 8.3% for the year 2021-22.
    - India's economy is expected to grow at 8.3% for the financial year 2021-22, 7.5% for 2022-23 and 6.5% for 2023-24.

⭐ **Additional Information**

- **GDP:**
    - GDP is a measure of economic activity in a country. It is the total value of a country's annual output of goods and services. It gives the economic

output from the consumers' side.
    - GDP = Private consumption + Gross investment + Government investment + Government spending + (exports-imports).
- **Recession and Depression:**
    - **Recession** : It is a macroeconomic term that refers to a slowdown or a massive contraction in economic activities for a long enough period, or it can be said that when a recession sustains for long enough, it is called a recession.
    - **Depression** : It is a deep and long-lasting period of negative economic growth, with output falling for at least 12 months and GDP falling by over 10% or it can be referred to as a severe and prolonged recession.
- **Fiscal Policy:**
    - Fiscal policy refers to the use of government spending and tax policies to influence economic conditions.

---

51. Answer: d

Explanation:

The notice is an imperative statement requesting people to follow the instruction- 'use the dustbin'.

- From the given statement, it can be observed that the notice is displayed with the expectation or belief that people usually read it and follow the request. Thus, the assumption is implicit that people tend to read notices and follow the instructions given in them.
- Only one of the assumptions can be implicit in this case. As assumption 2 is implicit, assumption 1 is not implicit.

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

---

52. Answer: c

Explanation:

The logic followed here is:-

- Well, pond, and lake are sources of water.
- A mug is a large cup used to contain liquid.

So, "mug" is different from others.

Hence, **"C"** is the correct answer.

---

53. Answer: c

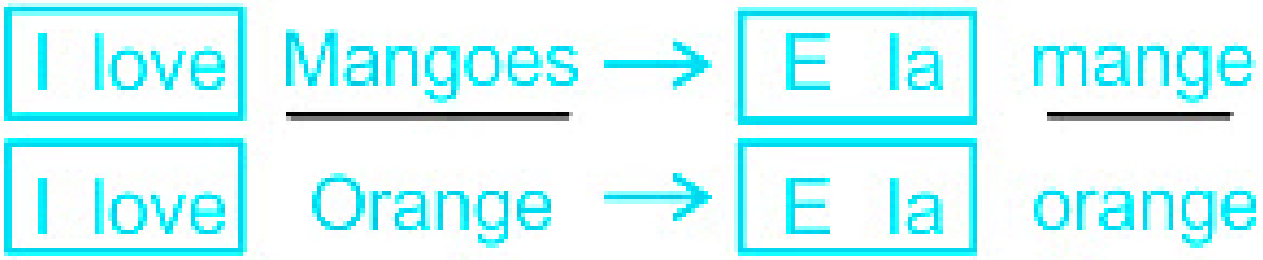
Explanation:

1. "I love Mangoes" is written as 'E la mange'.

- Here, there are 3 possible codes for "Mangoes" - E or la or mange. Therefore, statement 1 alone is not sufficient and option 1 is wrong.

2. 'I love Orange' is written as 'E la orage'.

- No information is given about the code of "Mangoes". Therefore, statement 2 alone is not sufficient and option 4 is wrong.

- From statements 1 and 2, we get the following:
- 

- Therefore, the code of "Mangoes" is "mange".
- So, statements 1 and 2 together are sufficient.

Hence, "option 3" is the correct answer.

---

54. **Answer: a**

Explanation:

The correct answer is **Presidency**.

- **The British divided the regions in India into the provinces of Bengal, Bombay and Madras called Presidency**.

⭐ **Key Points**

- **The East India Company** , which was incorporated on 31 December 1600, established trade relations with Indian rulers at Masulipatam on the east coast in 1611 and Surat on the west coast in 1612.
  - Between 1612 and 1757 the East India Company established factories (trading posts) at several places, mostly in coastal India, with the consent of the Mughal emperors, the Maratha Empire or local rulers.
  - During the period of the Company's rule in India, 1757–1858, the Company gradually acquired sovereignty over large parts of India, now called the Presidency.

⭐ **Additional Information**

- **By 1851, the East India Company's vast and growing holdings across the sub-continent were still grouped into just four main territories:**
  - Bengal Presidency with its capital at Calcutta.
  - Bombay Presidency with its capital at Bombay.
  - Madras Presidency with its capital at Madras.
  - North-Western Provinces with the seat of the Lieutenant-Governor at Agra.

---

55. **Answer: a**

Explanation:

Given:

The length of each side of the polygon is 2.9 cm.

Its circumference is 17.4 cm.

Concept used:

Circumference of a polygon = length of each side of the polygon × number of its sides

Calculation:

Let the number of sides of the polygon be N.

According to the question,

N × 2.9 = 17.4

⇒ N = 6

∴ **The polygon has 6 sides.**

---

56. **Answer: c**

Explanation:

The correct answer is **692m**.

⭐ **Key Points**

- **Solution:**
  - Speed of sound, v=346ms-1.
  - Time taken for hearing the echo, t = 4 s.
  - Distance travelled by the sound
    - = v X t
    - = 346ms-1×4s= 1384m

- In 4 s sound has to travel twice the distance between the cliff and the person. Hence, the distance between the cliff and the person = 1384 m/2 = 692 m.

---

57. Answer: b

Explanation:

The correct answer is Badminton.

- Aparna Popat is related to Badminton sport.

⭐ Key Points

- **Aparna Popat** is a former Indian **badminton player.** She was **India's national champion** for a record-equaling **nine times** when she won all the senior national championships between **1997 and 2006.**
  - Aparna captured her first **Senior National title** at **Hyderabad** in **1997** .
  - **Aparna Popat** was honored with **Arjuna Award** in **2005** .

⭐ Additional Information

- Famous Badminton players from India are:
  - Prakash Padukone
  - Pullela Gopichand
  - Saina Nehwal
  - Kidambi Srikanth
  - PV Sindhu

---

58. Answer: c

Explanation:

The correct answer is **Medium**.

- Medium is the object called through which sound is transmitted.

⭐ Key Points

- The matter or subject through which sound is transmitted is called a **Medium.**
  - **Sound** is produced by the vibrations of the particles of the **medium.**
  - Sound cannot travel in **Vacuum** .

⭐ Additional Information

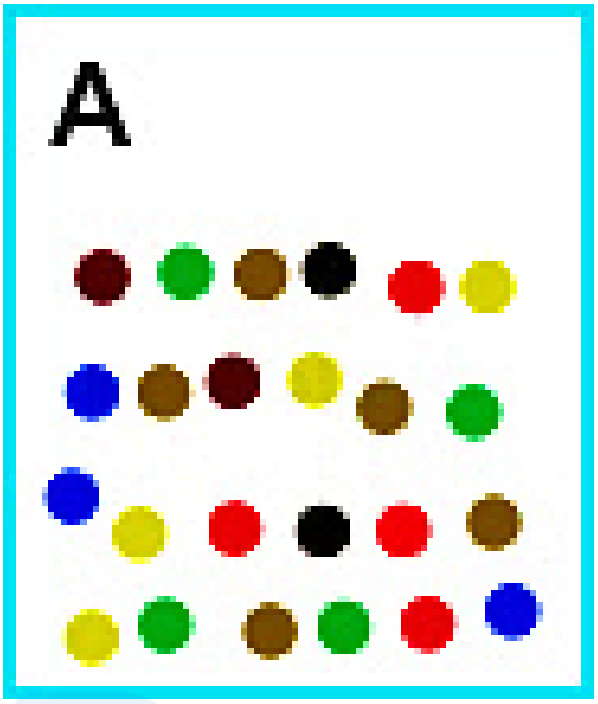
- **Sound waves can be described by five characteristics:**
  - Wavelength
  - Amplitude
  - Time-Period
  - Frequency
  - Velocity or speed

---

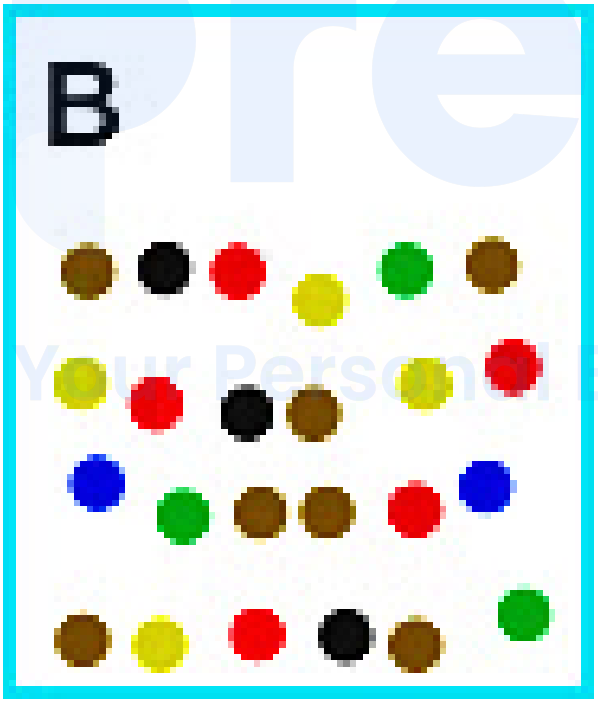
59. **Answer: a**

Explanation:

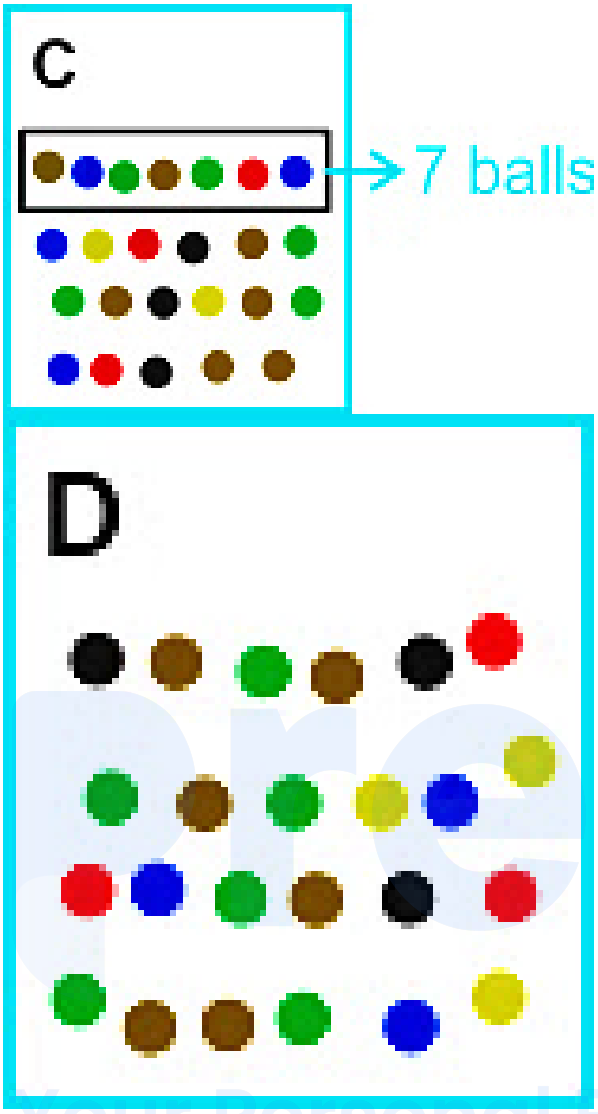
The logic followed here is:



- - 6 balls in each of the 4 rows.



- - 6 balls in each of the 4 rows.

- 

- - 6 balls in each of the 4 rows.
- Hence, figure C is the correct answer.

---

60. **Answer: d**

Explanation:

The correct answer is **Information and Broadcasting**.

- **The National Film Awards** is the most prominent film award ceremony in India.
  - The National Film Awards, established in 1954, have been administered since 1973 by the Directorate of Film Festivals, Government of India, along with the International Film Festival of India and Indian Panorama.

- The event is organized by the Directorate of Film Festivals, which comes under the Ministry of Information and Broadcasting.

⭐ Additional Information

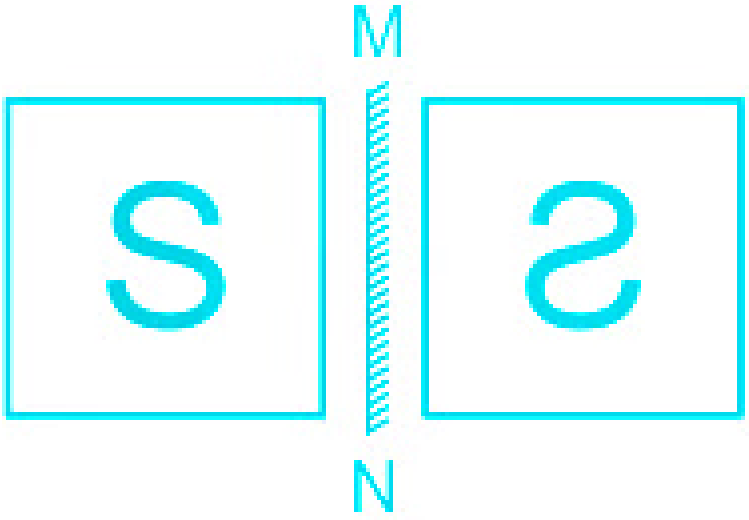
- **The Ministry of Information and Broadcasting** is a ministerial agency of the Government of India.
  - It is responsible for the formulation and administration of rules, regulations, and laws in the areas of information, broadcasting, press, and cinema of India.
  - The Central Board of Film Certification is another important statutory body under this ministry that is responsible for the regulation of motion pictures in India.
  - The first Information and Broadcasting Minister of India is **Vallabhbhai Patel** and **now as of January 2022** , the Information and Broadcasting Minister is **Anurag Singh Thakur** .

---

61. **Answer: c**

Explanation:

The mirror image of the question figure is as follows:

- 

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

62. **Answer: a**

Explanation:

Total expenditure = Rs. 50000

So, the cost of the paper = 50000 × 25% = Rs. 12500

∴ The cost of the paper is Rs. 12500.

63. **Answer: d**

Explanation:

The correct answer is Snehalta Srivastava.

- In November 2017, Snehalata Srivastava was appointed as the Secretary-General of the Lok Sabha.

⭐ Key Points

- **The Secretary-General** of the Lok Sabha is the administrative head of the Lok Sabha Secretariat. He/she is appointed by the Speaker of the Lok Sabha.
- **The Lok Sabha or House of the People** is the lower house of the Parliament of India.
  - Each Lok Sabha is formed for a five-year term.
  - The Lok Sabha (Lower house of the People) was duly constituted for the first time on **17 April 1952 after the first General Elections were held from 25 October 1951 to 21 February 1952** .

⭐ Additional Information

Person Name	Details
Sumitra Mahajan	• Sumitra Mahajan is an Indian politician who was the Speaker of Lok Sabha from 2014 to 2019. She belongs to Bharatiya Janata Party. • She represented the Indore constituency of Madhya Pradesh from 1989 to 2019 as the longest-serving Woman Member of Parliament.
Rama Devi	• Rama Devi is an Indian politician from Bihar and belongs to Bhartiya Janata Party. • She is on the Panel of chairpersons of the 17th Lok Sabha as of 2019.
Desh Deepak Verma	• Desh Deepak Verma is a retired IAS officer of the 1978 batch currently posted as chairman of UP Electricity Regulatory Commission (UPERC).
Snehalta Srivastava	• She was the 16th Secretary-General of the Lok Sabha from 10 December 2017 to 30 November 2020.

64. **Answer: c**

Explanation:

given by:

The product of the ages of Anusha and Neelim is 240.

Twice the age Neelma is 4 years older than Anusha.

Concept used:

Calculation:

Let the ages of Anusha & Neelim be P & Q respectively.

According to the question,

$2Q = P + 4$ .... (1)

$P \times Q = 240$ ....(2)

So, putting $P = (2Q - 4)$ in (2) we get,

$(2Q - 4) \times Q = 240$

$\Rightarrow 2Q^2 - 4Q - 240 = 0$

$\Rightarrow (2Q - 24)(Q + 10) = 0$

Therefore, age must be positive, $Q = 12$.

So, Anusha's age = $240 \div 12 = 20$

$\therefore$ Anusha is 20 years old.

---

65. Answer: a

Explanation:

The logic followed here is:-

- A group of lions is called a pride.

Similarly,

- A group of wolves is called a pack.

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

⭐ Additional Information

- The plural form of the word wolf is wolves.

---

66. **Answer: c**

Explanation:

The logic followed here is:-

- "Honour" is a synonym of "nobility".
- Similarly, "humiliate" is the synonym of "disgrace".

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

---

67. **Answer: d**

Explanation:

The correct answer is R/4.

Concept :

Resistance:

- The measurement of the opposition of the flow of electric current through a conductor is called the resistance of that conductor. It is denoted by R.

There are mainly two ways of the combination of resistances:

1. Resistances in series:

- When two or more resistances are connected one after another such that the same current flows through them are called as resistances in series .
- The net resistance/equivalent resistance (R) of resistances in series is given by:
- Equivalent resistance, R = R 1 + R 2

2. Resistances in parallel:

- When the terminals of two or more resistances are connected at the same two points and the potential difference across them is equal is called resistances in parallel.
- The net resistance/equivalent resistance(R) of resistances in parallel is given by:

$\frac{1}{R_{eff}} = \frac{1}{R_1} + \frac{1}{R_2}$

Explanation:

When Four resistors of R Ω are connected in parallel.

$\frac{1}{R_{eff}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4}$

$\frac{1}{R_{eff}} = \frac{1}{R} + \frac{1}{R} + \frac{1}{R} + \frac{1}{R}$

R eff = R/4

⭐ Additional Information

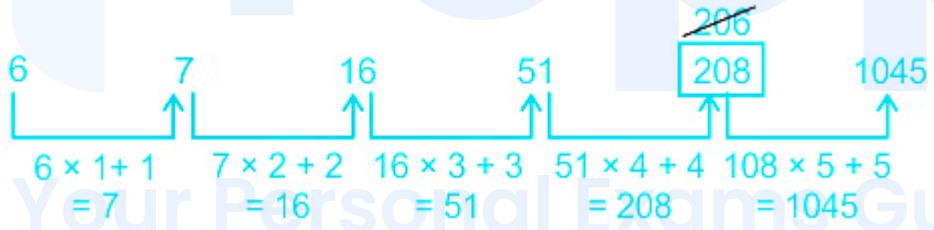
Series Combination	Parallel Combination
In series, voltage is divided through each of the connected resistors.	In parallel, the current is divided through each connected resistor.
In series, the Current will be the same throughout the circuit.	In parallel, Voltage will be the same throughout the circuit.

---

68. **Answer: c**

Explanation:

The logic followed here is:-



⭐ Key Points

- The number 206 does not follow the pattern of the given series.
- Therefore, 206 does not belong to the series.

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

---

69. **Answer: c**

Explanation:

Given:

15 minutes of $\frac{3}{2}$ day

Concept used:

1 hour = 60 minutes

1 min = 60 seconds

Calculation:

3/2 of a day = 24 × 3/2 = 36 hours

36 hours = (36 × 60) minutes

So, 15 minutes of 3/2 day = (15/(36 × 60)) × 100% = (25/36)%

---

70. Answer: c

Explanation:

- Concept:

No. of Odd days	Ordinary Year	Leap Year
	365 ÷ 7 = 52 weeks + 1 odd day	366 ÷ 7 = 52 weeks + 2 odd day

Years	No. of odd days
100 years	5
200 years	3
300 years	1
400 years	0

- Note : Multiple of 400 years i.e. 800, 1200, 1600, 2000 have 0 odd days .
- Calculating leap year: For Finding the number of leap year (1 - 99) years, divide the number of years by 4 and the quotient will be the number of leap years.
- Code for weekdays:

No. of odd days	Day
0	Sunday
1	Monday
2	Tuesday
3	Wednesday
4	Thursday
5	Friday
6	Saturday

- 2008 = 2000 + 7 years + year 2008
  - In 2000 years, odd days = 0
  - In 7 years (from 2001 to 2007), = 7/4 = 1 leap year and 6 normal years.
    - In 1 leap year, odd days = 2, and 6 normal years = 6 odd days
    - So total = 2 + 6 = 8 odd days i.e. 8/7 = 1 odd day
- In 2008, the number of days up to 3 May = 31 (Jan) + 29 (Feb - leap year) + 31(Mar) + 30(Apr) + 3(May) = 124/7 = 5 odd days.
- Total in 2008 years up to 3 May = 0 + 1 + 5 = 6 odd days.

The codes for the weekdays are as follows:

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

- The day of the week on 3 May 2008 was Saturday.

Hence, "option 3" is the correct answer.

---

71. Answer: c

Explanation:

The statement suggests that people should respect the national anthem.

- Argument I agrees with the statement and justifies that as the citizens of the country, people should show respect and pride by standing upright during the national anthem. There is no loss in standing upright when the national anthem is being played. On the contrary, one may feel a sense of patriotism during the act. So, argument I is strong.
- Argument II disagrees with the statement suggesting it to be unnecessary patriotism. However, the word "unnecessary" is used without justifying why is it unnecessary or useless. Rather, it can be considered as one of the ways in which patriotism can be cultivated or sustained. Thus, argument II is not strong.

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

---

72. Answer: c

Explanation:

It is given that Pravalika is in standard 10th. We do not know anything about Pranita from the question statement.

- Since Pranita is Pravalika's classmate, they could be about the same age.
- It cannot be determined who is older until we know the age details of both persons.
- The age details of Pranita and Pravalika are not mentioned in the conclusions.
- So, none of the conclusions is correct.

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

73. **Answer: a**

Explanation:

The correct answer is **Will decrease**.

- If the humidity in the atmosphere is high, the rate of evaporation is low because the air is filled with water vapor and is not able to take up more humidity. Thus, the evaporation process slows down.

⭐ Key Points

- **Evaporation** is a form of vaporization that usually occurs at the surface of a liquid and involves the transition of liquid particles to the gaseous phase.
  - Therefore, this process is said to involve a change in the state of the fluid.
  - The surrounding gas should not saturate with the substance to be evaporated.
  - The rate of evaporation is greater at higher temperatures because as the temperature rises, the amount of energy required for evaporation decreases.
  - Water loss by evaporation in sunny, warm weather is greater than in cloudy and cool weather.
  - The moisture content of the air, or water vapor content, also has an effect on evaporation.
  - The lower the relative humidity, the drier the air, and the higher the rate of evaporation.
  - The more moist the air, the closer the air is to saturation, and the less evaporation can take place.
  - Also, warm air can have a higher concentration of water vapor, so you might think that warm air has more room to store more water vapor than cool air.

74. **Answer: c**

Explanation:

given by:

Nos. 60 & 72.

Concept used:

LCM & HCF

Calculation:

LCM (60,72) = 360

HCF (60,72) = 12

∴ HCF & LCM of 60 & 72 are 12 and 360 respectively.

---

75. Answer: b

Explanation:

Given:

The cost of $\frac{1}{9}$ of a pizza is Rs. 300

Concept used:

Calculation:

Let the price of the pizza be P.

According to the question,

P × (1/9) = 300

⇒ P × (4/9) = 1200

∴ T he cost of $\frac{4}{9}$ of the same pizza will be Rs. 1200.

76. **Answer: c**

Explanation:

The correct answer is **Slow neutralization i.e. Acid + Base → H 2 + salt.**

- Slow neutralization i.e. Acid + Base → H 2 + salt is not correct about acids.

⭐ **Key Points**

- The terms acid and base have been defined in different ways, depending on the particular way of looking at the properties of **acidity** and **basicity.**
- **Arrhenius first** defined acids as compounds that **ionize** to produce **hydrogen ions,** and bases as compounds that ionize to produce **hydroxide ions.**
- According to the **Lowry-Bronsted** definition, an **acid is a proton donor** and a **base is a proton acceptor.**
- In order to find the numeric value of the level of acidity or basicity of a substance, the **pH scale** (wherein pH stands for 'potential of hydrogen) can be used.
- The **pH scale** is the most common and trusted way to measure how **acidic or basic** a substance is.
  - A **pH scale** measure can vary from **0**to **14,** where **0**is the **most acidic** and **14** is the most basic a substance can be.

⭐ **Additional Information**

- **Theories of Acids and Bases:**
  - The **Arrhenius theory** of acids and bases states that **an acid generates H+ ions in a solution whereas a base produces an OH− ion in its solution** .
  - The **Bronsted-Lowry theory** defines **an acid as a proton donor and a base as a proton acceptor** .
  - Finally, the **Lewis definition** of acids and bases describes **acids as electron-pair acceptors and bases as electron-pair donors** .

⭐ **Important Points**

- **Forms H + in an aqueous medium/liquid state:**
  - An Arrhenius acid is a substance that dissociates in water to form hydrogen ions (H +). In other words, an acid increases the concentration of H + ions in an aqueous solution.

---

77. Answer: d

Explanation:

The logic followed here is:-

- The closest to the question figure is its mirror image in figure D.

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

---

78. Answer: d

Explanation:

The correct answer is **Connective tissue**.

- **Ligaments and Tendons are made up of connective tissue**.

⭐ **Key Points**

- **Connective tissue,** as the name implies, is a term given to several **different tissues of the body** that serve to **connect, support,** and help bind other **tissues in the body.**
- **Connective tissue can further be broken down into three categories:**
  - **loose connective tissue, dense connective tissue** , and **specialized connective tissue.**

- **Loose connective tissue** works to hold organs in place and is made up of extracellular matrix and collagenous, elastic, and reticular fibers.
- **Dense connective tissue** is what makes up tendons and ligaments and consists of a higher density of collagen fibers.
- Examples of **specialized connective tissues** are adipose tissue, cartilage, bone, blood, and lymph.

⭐ Additional Information

- **Nervous system:**
  - The nervous system is a complex network of nerves and cells that carry messages to and from the brain and spinal cord to various parts of the body.
- **Muscle tissue:**
  - Muscle tissue is composed of cells that have the special ability to shorten or contract in order to produce movement of the body parts.
- **Epithelial tissue:**
  - The epithelium is a type of body tissue that forms the covering on all internal and external surfaces of your body, lines body cavities and hollow organs and is the major tissue in glands.

---

79. **Answer: b**

Explanation:

The correct answer is **Shri Chennamaneni Vidyasagar Rao .**

- **Shri Chennamaneni Vidyasagar Rao is the present Governor of Maharashtra**.

⭐ Key Points

- **Chennamaneni Vidyasagar Rao** is an Indian politician from Telangana, associated with the Bharatiya Janata Party.
  - He served as the Governor of Maharashtra from 2014 to 2019.
  - As a member of the Bharatiya Janata Party, he served as the Union Minister of State in the Ministry of Home Affairs in the government of Atal

Bihari Vajpayee from 1999.
    - He was elected to the Lok Sabha from Karimnagar (Lok Sabha constituency) in 1998 and 1999 (13th Lok Sabha).

⭐ Important Points

- **As of June 2022,**
    - Present Governor of Maharashtra: **Bhagat Singh Koshyari.**
    - Chief Minister of Maharashtra: **Eknath Shinde**
    - Home Minister of Maharashtra: **Anil Deshmukh** .
    - Present Commissioner of Police of Mumbai: **Hemant Nagrale.**
- **Shri C. Subramaniam:**
    - He served as Minister of Finance and Minister of Defence in the union cabinet. He later served as the Governor of Maharashtra.
    - He was awarded Bharat Ratna, India's highest civilian award, in 1998, for his role in ushering Green Revolution.
    - He also worked as the Deputy Chairman of the Planning Commission from 2 May 1971 to 22 July 1972.
- **Shri S.C. Jamir:**
    - Jamir is an Indian politician and former Governor of Odisha.
    - He has served as the Chief Minister of Nagaland, Governor of Maharashtra, Governor of Gujarat & Governor of Goa.
    - He was awarded the third-highest Civilian Award in India, Padma Bhusan in 2020 for his work in public affairs.
- **Dr. P. C. Alexander:**
    - He served as the Governor of Tamil Nadu from 1988 to 1990 and as the Governor of Maharashtra from 1993 to 2002.
    - He was also a member of the Rajya Sabha representing Maharashtra as an independent candidate from 29 July 2002 to 2 April 2008.

---

80. Answer: b

Explanation:

The correct answer is **63**.

- 63 elements were known when Mendeleev started his work.

⭐ Key Points

- **Mendeleev's Periodic Law:** The physical and chemical properties of elements are periodic functions of their atomic masses.
  - Mendeleev arranged all the elements known at that time in increasing order of atomic mass and this arrangement became a periodic table.
  - In Mendeleev's Periodic Table: The total number of periods in the periodic table was seven and the total number of groups was nine.
  - That is, 63 elements were known when Mendeleev started his work.

⭐ Important Points

- **At present we know 118 elements** . All of these have different properties. Of these 118, only 94 occur naturally.

---

81. Answer: c

Explanation:

The logic followed here is:-

- $\sqrt{676}$ = 26; 26 + 3 = 29; 29^2 = 841

Similarly,

- $\sqrt{324}$ = 18 = 18 + 3 = 21 = 21 2 = 441

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

---

82. Answer: d

Explanation:

The correct answer is Oxalic acid.

- Oxalic acid is an organic acid.

⭐ Key Points

- An **organic acid** is an **organic compound** with **acidic properties** . The most common organic acids are **carboxylic acids** , whose acidity is associated with their carboxyl group **COOH.**
  - In general, **organic acids** are **weak acids** and d **o not dissociate completely in water** , whereas strong mineral acids do.
  - Organic acids are used in **food preservation** because of their effects on **bacteria.**

⭐ Additional Information

- **Carbonic acid:**
  - C arbonic acid, (H_2CO_3), is a compound of the elements hydrogen, carbon, and oxygen. It is formed in small amounts when its anhydride, carbon dioxide (CO_2), dissolves in water.
- **Sulfuric acid:**
  - Sulfuric acid, known in antiquity as oil of vitriol, is a mineral acid composed of the elements sulfur, oxygen, and hydrogen, with the molecular formula H_2SO_4.
- **Nitric acid:**
  - Nitric acid is a nitrogen oxoacid of formula HNO_3 in which the nitrogen atom is bonded to a hydroxy group and by equivalent bonds to the remaining two oxygen atoms.

---

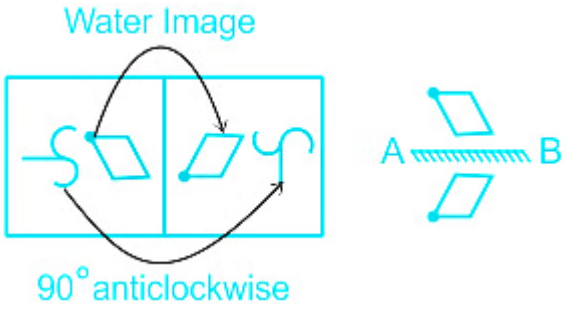
83. Answer: d

Explanation:

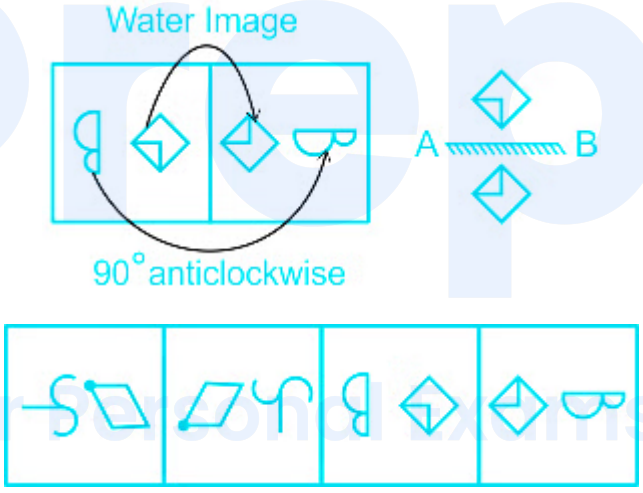
The logic followed here is:-

- Figure 1 to figure 2:
  - The symbol S has rotated 90° anticlockwise.

- The water image of a parallelogram is given.
- In the second figure, both shapes interchange their positions.



- Similarly, figure 3 to figure 4:
  - The symbol B has rotated 90° anticlockwise.
  - The water image of a rhombus is given.
  - In the fourth figure, both shapes interchange their positions.



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

---

84. Answer: d

Explanation:

The correct answer is **Hertz**.

- **Frequency is expressed in Hertz and indicates that the event is repeated every second**.

⭐ Key Points

- The number of periods or **cycles per second** is called **frequency** . The **SI unit** for frequency is the **hertz** (Hz). **One hertz** is the same as **one cycle per second.**
  - **Frequency refers** to the number of occurrences of a **periodic event per time** and is measured in **cycles/seconds** .
  - Any electromagnetic wave's frequency multiplied by its wavelength **equals the speed of light** .

⭐ Additional Information

- The **hertz** (symbol: Hz) is the **unit of frequency** in the **International System of Units** (SI) and is defined as one cycle per second.
  - A hertz is an SI-derived unit whose expression in terms of SI base units is s^{-1} ,meaning that one hertz is the reciprocal of one second.
  - It is named after **Heinrich Rudolf Hertz** , the first person to provide conclusive proof of the existence of **electromagnetic waves.**

⭐ Important Points

Unit	Unit of
Ohm	Electrical resistance
Decibel	Sound intensity
Ampere	Electric current

---

85. **Answer: a**

Explanation:

The correct answer is **Gujarat**.

- **The Wild Ass Sanctuary is located in Gujarat**.

⭐ **Key Points**

- **The wild ass** , locally known as Ghudkhar and found only in the small Rann of Kutch in Gujarat in India.
  - Wild Ass Sanctuary is located in the Little Rann of Kutch in Gujarat, the Wild Ass Sanctuary is the only place on earth where Indian wild ass still roam free.
  - Wild Ass Sanctuary is the largest wildlife sanctuary in the country which is spread over an area of 4954 sq. km.
  - It was established in 1972, a year later the Wild Ass Sanctuary came under the Wildlife Protection Act 1972. The three entry points to the sanctuary are Bajna, Adeshwar, and Jinjhwada.

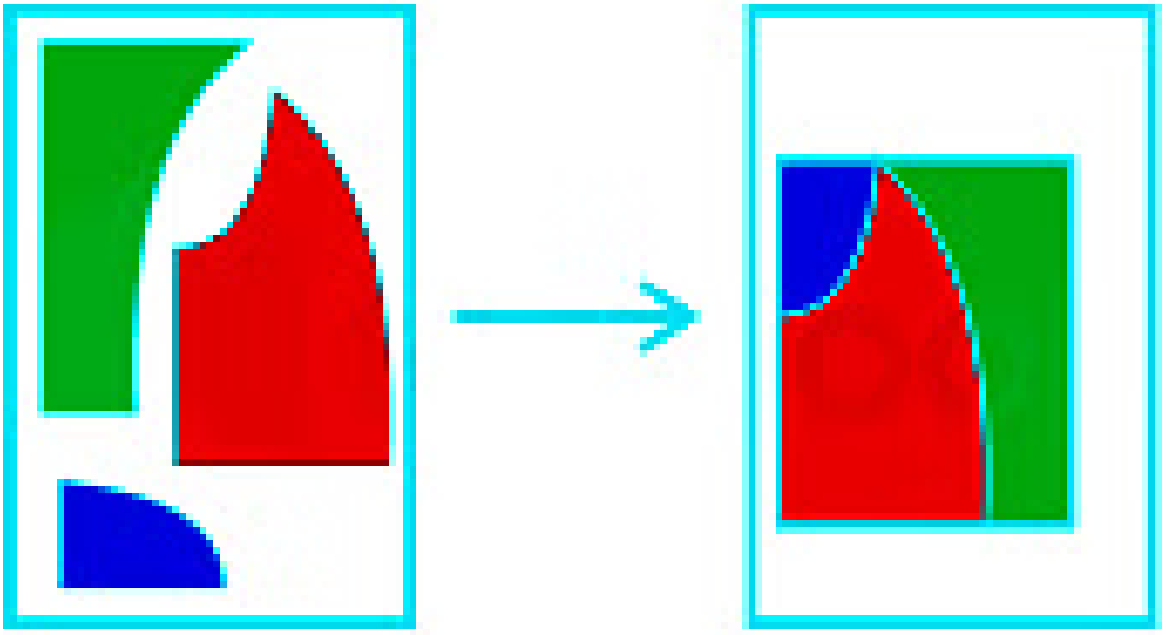
⭐ **Additional Information**

State	Wildlife sanctuary
Gujarat	• Rampara wildlife sanctuary. • Mitiyala wildlife sanctuary. • Jambughoda wildlife sanctuary.
Goa	• Bondla wildlife sanctuary. • Madei wildlife sanctuary. • Bhagavan Mahavir wildlife sanctuary.
Odisha	• Dibrugarh Wildlife Sanctuary. • Sunabeda Wildlife Sanctuary. • Hadagarh Wildlife Sanctuary.
Maharashtra	• Koyna Wildlife Sanctuary. • Mhasdi wildlife sanctuary. • Mayureshwar Wildlife Sanctuary.

86. **Answer: a**

Explanation:

The figure formed from the shapes given in the question figure is given below:

- 

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

---

87. **Answer: c**

Explanation:

The correct answer is **Steam**.

- **Steam is a surface phenomenon**.

⭐ **Key Points**

- The **properties of liquid** which can be only seen at the free surface of the **liquid** is a **surface phenomenon** .
  - For example, surface tension is a **surface phenomenon** in which the **free liquid surface** acts like a stretched membrane due to **tensile forces** acting on each liquid particle due to **adjacent liquid particles** .
  - This force is called **Surface tension force.** Also, evaporation of the liquid is a **surface phenomenon** in which the topmost layer of liquid is converted into vapor without reaching the **boiling point.**

- **Evaporation** is a **surface phenomenon** because it occurs on the surface.
  - For example, when we put wet clothes for drying we spread them out so that the surface area gets increased. When the surface area increases the water will get enough space to get into the vapor stage and thus **evaporation happens easily.**

---

88. Answer: c

Explanation:

The correct answer is **9.5 A.**

⭐ **Key Points**

- **Solution:**
  - V=60V
  - I=4A.
  - R=V / I
  - R =60 / 40
  - R = **15Ω** .
- When potential difference is increased to **142.5V** .
  - I=V / R
  - I =142.5 / 15
  - **9.5 A.**

---

89. Answer: a

Explanation:

Given:

$\frac{4}{7} \times \frac{4}{9}$

Calculation:

$\frac{4}{7} \times \frac{4}{9}$

⇒ 16/63

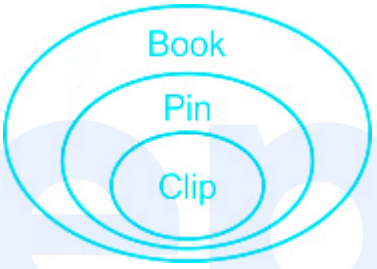
∴The required value of $\frac{4}{7} \times \frac{4}{9}$ is 16/63.

---

90. Answer: c

Explanation:

The Venn diagram is given below:-



Conclusion:

1. All clips are books. → True (All clips are pins, all pins are books. So, all clips are books is correct. This is visible in the above Venn diagram.)

2. Some pins are clips. → True (All clips are pins, so some pins are clips also correct. As can be seen in the Venn diagram, a part of pin is clip.)

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

---

91. Answer: b

Explanation:

A is the only correct answer .

Main points

Concept :

- Newton's law of universal gravitation: Every object in the universe attracts every other object with a force directly proportional to the product of their masses and inversely proportional to the square of the distance between them.

$\Rightarrow F = \frac{Gm_1m_2}{r^2}$

Where, F = gravitational force between objects, m 1 = mass of one object, m 2 = mass of second object, r = distance between centers of two objects and G = universal gravitational constant

- Universal Gravitational Constant (G): It is an empirical constant that gives the relationship between the force of gravity , the mass of a body and the distance between them .
  - The value of G is 6.67 × 10 -11 Nm 2 / kg 2 .

Description :

- The universal gravitational constant (G) is an empirical constant that does not depend on anything.
  - The value of G is constant everywhere in the universe. So statement A is correct and statement C is false.
  - It does not depend on the mass or distance between the two bodies or the medium in which the bodies are placed .
- If the mass of two objects is doubled, the force becomes

$\Rightarrow F' = \frac{Gm_1'm_2'}{r^2} = \frac{G2m_1 \times 2m_2}{r^2} = \frac{4Gm_1m_2}{r^2} = 4F$

- So statement C is false.
- The value of acceleration due to gravity is different at different places , the value of g on the surface of the Earth is 9.8 m/s 2 and the value of g on the surface of the Moon is g e /6 . So statement D is wrong.

---

92. Answer: a

Explanation:

The correct answer is Speedometer.

- A speedometer helps to know the speed of the vehicle.

⭐ Key Points

- **A speedometer** , an instrument that indicates the **speed of a vehicle** , is usually combined with a device known as an **odometer** that records the **distance traveled.**
  - The speedometer records the **speed in km/h.**
  - The odometer records the distance **traveled by the vehicle** .
  - Odometer is also used by people who construct roads and survey lands.
  - A speedometer is a gauge that tells you the **velocity of the vehicle at that moment.**

⭐ Important Points

- **Voltometer** : A voltmeter is an instrument used for measuring the electric potential difference between two points in an electric circuit.
- **Velometer** : A velometer is a device used to measure the speed of air in a given area.
- **Lactometer** : A lactometer is an instrument that is used to check the purity of milk by measuring its density.

---

93. Answer: a

Explanation:

Given:

$(\frac{5}{6} \times \frac{1}{3}) + (\frac{1}{3} \times \frac{1}{2}) - (\frac{11}{4} \times \frac{1}{3})$

Concept used:

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

Calculation:

$(\frac{5}{6} \times \frac{1}{3})$ + $(\frac{1}{3} \times \frac{1}{2})$ - $(\frac{11}{4} \times \frac{1}{3})$

⇒ (5/18) + (1/6) - (11/12)

⇒ (-17/36)

∴ **The required value of** $(\frac{5}{6} \times \frac{1}{3})$ + $(\frac{1}{3} \times \frac{1}{2})$ - $(\frac{11}{4} \times \frac{1}{3})$ **is (-17/36).**

---

94. Answer: c

Explanation:

given by:

All three angles of a triangle have equal value.

Concept used:

The sum of the angles of a triangle is 180°

Calculation:

Let Q be the value of each angle of the triangle.

So, we know,

Q + Q + Q = 180°

⇒ Q = 60°

∴ The value of each angle is 60°.

---

95. Answer: b

Explanation:

The least possible Venn diagram is as follows:

Conclusion:

I. No string being violin is a possibility. → False (All violins are strings, so it is not possible..)

II. Some guitars are not strings. → False (it is possible but not definite.)

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

---

96. Answer: d

Explanation:

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

The logic followed here is:-

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

---

97. Answer: a

Explanation:

Given:

√{(75.24) + ?} = 8.71

Concept used:

Calculation:

Let the required number be P.

According to the question,

√{(75.24) + P} = 8.71

⇒ (75.24) + P = $(8.71)^2$

⇒ P = 0.6241

∴ The required value is 0.6241.

---

98. Answer: d

Explanation:

Given:

Two cars A and B starting at the same time meet each other after t hours in opposite directions.

A & B r each their destination after 5 hours and 6 hours respectively.

Concept used:

Distance = Speed × Time

If A & B two cars start from the P & Q respectively and after X hours they at point M. They continue their journey, A takes Y hours to reach Q and B takes Z hours to reach P.

Then, X = √(Y × Z)

Calculation:

So, t = √(6 × 5) = √30

Then, A goes in t hours = 55√30 km

According to the question, B crosses the distance that A covered in t hours in 6 hours.

So, the speed of B = 55√30 ÷ 6 = (55/6)√30 kmph

∴ The speed of car B is (55/6)√30 km/hr.

---

99. Answer: a

Explanation:

The correct answer is C n H2n+2.

- **Alkanes** are saturated hydrocarbons in which a bond is found between two carbon atoms. And its general formula is **Cn H 2n+2.**

⭐ Key Points

- **Alkanes** are **organic compounds** that consist entirely of **single-bonded carbon** and **hydrogen atoms** and lack any other functional groups.
  - **Alkanes** are also saturated **hydrocarbons** . Alkanes are the simplest and least reactive **hydrocarbon species** containing **only carbons** and **hydrogens** .
  - Alkanes have the general formula $C_n H_{2n+2}$and can be subdivided into the following **three groups** :
  - The linear straight-chain alkanes.
    - Branched alkanes.
    - Cycloalkanes.
  - **Alkanes** have densities between **0.6 and 0.8 g/cm3** , so they are **less dense than water.** Thus **gasoline** , which is largely a **mixture of alkanes** , is less dense than water and will **float on water.**

---

100. Answer: b

Explanation:

Given:

$(3x - 2)$ is a factor of $15x^2 - kx - 14$

Concept used:

Calculation:

Since the above polynomial is factor by (3x - 2), substituting x = 2/3, we will get 0.

Then,

$15(2/3)^2 - k(2/3) - 14 = 0$

$\Rightarrow 15(4/9) - k(2/3) - 14 = 0$

$\Rightarrow (60/9) - (2k/3) - 14 = 0$

⇒ (60 - 6k - 126)/9 = 0

⇒ 60 - 6k - 126 = 0

⇒ -66 - 6k = 0

⇒ 6k = -66

⇒ k = -66/6

⇒ k = -11

∴ **The required value of k is (-11).**