



Your Personal Exams Guide



NDA



CDS



SSC CGL



CBSE UGC NET



IAS



SSC CHSL



CTET



MPSC



AFCAT



CSIR UDC NET



IBPS PO



UP POLICE



SSC MTS



SBI PO



BPSC



UP TET



IBPS RRB



IBPS CLERK



IES



UPSC CAPF



SSC Stenogr..



RRB NTPC



SSC GD



RBI GRADE B



RBI Assistant



DSSSB

RRB Group D 2018 Previous Year Paper (27-Sep-2018) (Shift 1)

Total Time: 1 Hour : 30 Minute

Total Marks: 100

Instructions

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

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

Your Personal Exams Guide

CBT

1. You are given a question and two statements. Identify which of the statements is/are sufficient to answer the question. (+1, -0.33)

Question:

What is the total age of the sisters 10 years from now?

Statements:

1. Lina is 20 years old now.
 2. Lina's sister's age is twice that of $\frac{1}{4}^{\text{th}}$ of the age of Lina.
- a. Statement 1 alone is sufficient.
 - b. Statement 1 and 2 together are not sufficient.
 - c. Statement 2 alone is sufficient.
 - d. Statement 1 and 2 together are sufficient.

-
2. Who has won the Best Actor award in the 90th Oscar awards 2018? (+1, -0.33)

- a. Garry Oldman
- b. Denzel Washington
- c. Daniel Day Lewis
- d. Daniel Kaluuya

-
3. A person clapped his hands near a cliff and heard echo after 6 s. The distance of the cliff from the person is: (+1, -0.33)

[take $v = 346 \text{ ms}^{-1}$]

- a. 1038 m
- b. 1083 m
- c. 2076 m
- d. 2706 m

4. A car accelerates uniformly from 18 kmh^{-1} to 72 kmh^{-1} in 5 s. The acceleration of the car is: (+1, -0.33)

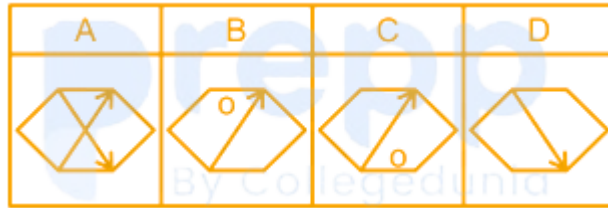
- a. 3 ms^2
- b. 10.8 ms^{-2}
- c. 10.8 ms^2
- d. 3 ms^{-2}

5. Which of the option figures bears the closest resemblance to the question figure? (+1, -0.33)

Question Figure:



Option figures:



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

6. What is the percentage of oxygen in $\text{Al}_2(\text{SO}_4)_3$? (+1, -0.33)

- a. 57.7%
- b. 56.1%
- c. 53.1%
- d. 52.6%

7. Given is a question followed by two arguments. Decide which of the arguments is/are strong with respect to the question. (+1, -0.33)

Question:

Should we avoid overuse of air conditioners?

Arguments:

Yes, it weakens the human system.

No, the comfort cannot be forsaken.

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

8. Prime Minister Narendra Modi laid the foundation stone of Char Dham highway development project or Chardham Mahamarg Vikas Pariyojna at ----- (+1, -0.33)

- a. Rishikesh
 - b. Dehradun
 - c. Manikaran
 - d. Haridwar
-

9. Pond is related to Water in the same way as Mountain is related to: (+1, -0.33)

- a. Birds
 - b. Rocks
 - c. Animals
 - d. Climb
-

10. Who became the first Indian woman to win the Korea open series in Badminton? (+1, -0.33)

- a. Saina Nehwal

- b. Jwala Gutta
- c. Ashwini Ponnappa
- d. P. V. Sindhu

11. You are given a question and two statements. Identify which of the statements is/are necessary/sufficient to answer the question. (+1, -0.33)

Question:

Among the bags A, B, C and D which one is the lightest bag?

Statements:

- 1. B is heavier than A.
 - 2. A is lighter than C and D.
- a. Statement 2 alone is sufficient
 - b. Statement 1 and 2 together are necessary
 - c. Statement 1 alone is sufficient
 - d. Statement 1 and 2 are not sufficient to solve

12. Name the country which won the 2017 Women's Hockey Asia Cup title? (+1, -0.33)

- a. Nepal
- b. Pakistan
- c. India
- d. Bangladesh

13. The median of the numbers 14, 12, 12, 16, 13 and 18 is: (+1, -0.33)

- a. 13
- b. 14
- c. 14.5
- d. 13.5

14. PM Modi's Birthday has been celebrated as _____ across India. (+1, -0.33)

- a. Kisan Diwas
- b. Sewa Diwas
- c. Hindi Diwas
- d. Bal Diwas

15. The Chola kings were prolific temple builders who built the _____ temple at Tanjavur. (+1, -0.33)

- a. Brahmeshvara
- b. Brihadeesvara
- c. Lingaraja
- d. Dilwara

16. _____ gas is used as an illuminating gas. (+1, -0.33)

- a. Methyl
- b. Propane
- c. Acetylene
- d. Ethyne

17. $80 \div [48 - \{56 - (60 - 36 \div 12 \times 4)\}] = ?$ (+1, -0.33)

- a. 5
- b. 8
- c. 4
- d. 2

-
18. Read the given statement(s) and conclusions carefully and select which of the conclusions logically follow(s) from the statement. (+1, -0.33)

Statement:

"Kirti played a very good shot on the pitch," says a friend to Sajit.

Conclusions:

- I. Sajit likes cricket.
 - II. Kirti might be a good player.
- a. Conclusion I alone follows
 - b. Conclusion II alone follows
 - c. Neither I nor II follows

d. Both the conclusions follow

19. $\frac{3}{4} + \left\{ \frac{3}{4} + \frac{3}{4} \div \left(\frac{3}{4} + \frac{3}{4} \right) \right\} = ?$ (+1, -0.33)

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

b. 1

c. 2

d. $2\frac{3}{4}$

20. A water tank is $\frac{2}{5}$ th full. Inlet A can fill the tank in 12 minutes while an outlet pipe B can empty it in 6 minutes. If both the pipes are open, how long will it take to empty or fill the tank completely? (+1, -0.33)

a. It fills in 4.8 min

b. It empties in 4.8 min

c. It fills in 5.6 min

d. It empties in 5.6 min

21. 38% of a number is 133. What is the number? (+1, -0.33)

a. 340

b. 350

c. 360

d. 355

22. Who among the following had been roped in June 2017 by the Union Government of India to promote GST? (+1, -0.33)

- a. Sachin Tendulkar
- b. Salman Khan
- c. Amitabh Bachchan
- d. Aishwarya Rai Bachchan

23. Find the square root of 15625. (+1, -0.33)

- a. 125
- b. 145
- c. 150
- d. 135

24. Complete the number series by choosing the missing terms from the options. (+1, -0.33)

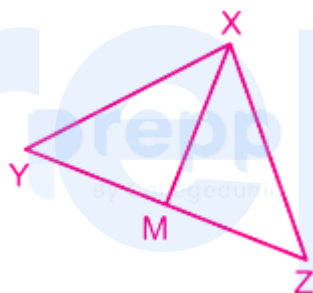
32, 64, 256, 1536, ?, 122880, 1474560

- a. 122860
- b. 12268
- c. 12285
- d. 12288

25. If $\tan a = \sqrt{3} + 2$, then the value of $\tan a - \cot a = ?$ is (+1, -0.33)

- a. 2
- b. $2\sqrt{3}$
- c. $\sqrt{3} - 2$
- d. 4

26. In the diagram, M is the midpoint of $\overline{YZ}$, $\angle XMZ = 32^\circ$, and $\angle XYZ = 16^\circ$. The measure of $\angle XZY$ is: (+1, -0.33)



- a. 68°
- b. 84°
- c. 81°
- d. 74°

27. Soft drinks contain: (+1, -0.33)

- a. Oxalic acid
- b. Tartaric acid
- c. Carbonic acid

d. Citric acid

28. Raghu has invested Rs. 1000 and received Rs. 1300 at 6% per annum simple interest after X years. Find the value of X. (+1, -0.33)

a. 4 years

b. 3 years

c. 2 years

d. 5 years

29. Thorn Forests are found in _____. (+1, -0.33)

a. Kashmir

b. Kerala

c. Sikkim

d. Rajasthan

30. Bending of light rays in the denser medium is termed as _____. (+1, -0.33)

a. Reflection

b. Dispersion

c. Refraction

d. Deflection

31. In a shop 4.5% of 1500 kg toor dal was sold. Find the quantity sold. (+1, -0.33)

- a. 64.5 kg
- b. 63.5 kg
- c. 70 kg
- d. 67.5 kg

32. Consider the given statement(s) and decide which of the given assumption(s) is/are implicit in the statement. (+1, -0.33)

Statement:

School students are more influenced by their faculty nowadays.

Assumption :

I. School students consider their faculty as role models.

II. More time is spent at schools by students

- a. Neither I nor II is implicit
- b. Only II is implicit
- c. Only I is implicit
- d. Either I or II is implicit

33. An object travels 23 m in 3 s and then another 15 m in 2 s. What is the average speed of the object? (+1, -0.33)

- a. 7.6 ms^{-1}

- b. 7.6 s^{-1}
 - c. 8.0 ms^{-1}
 - d. 7.6 m
-

34. Find the next term in the following series: (+1, -0.33)

X24C, V22E, T20G, _____

- a. RI19
 - b. RI9I
 - c. RI8I
 - d. RI18
-

35. Pipe A is an inlet pipe that can fill an empty cistern in 69 hours. Pipe B can drain the filled cistern in 46 hours. When the cistern is filled, the two pipes are opened one at a time for an hour each, starting with Pipe B. How long will it take for the cistern to be empty? (+1, -0.33)

- a. 11 days 10 hours
 - b. 11 days 7 hours
 - c. 11 days 12 hours
 - d. 1 days 13 hours
-

36. When a constant force acts on an object with a mass of 8 kg for a duration of 3 s, it increases the object's velocity from 4 ms^{-1} to 6 ms^{-1} . What is the magnitude of the applied force? (+1, -0.33)

- a. 5.33 N
 - b. 4.33 N
 - c. 6.33 N
 - d. 3.33 N
-

37. Find the next term in the following series. (+1, -0.33)

Z26, X24, V22, -----

- a. T20
 - b. W23
 - c. K15
 - d. J20
-

38. An object of 10 kg is moving with a speed of 2 m/s. The kinetic energy of the object is: (+1, -0.33)

- a. 20 J
 - b. 5 J
 - c. 10 J
 - d. 40 J
-

39. If a is positive and $a^2 + \frac{1}{a^2} = 7$, then find $a^3 + \frac{1}{a^3}$. (+1, -0.33)

- a. 21

b. $3\sqrt{7}$

c. 18

d. $7\sqrt{7}$

40. _____ elements have the largest atoms. (+1, -0.33)

a. F

b. O

c. H

d. Li

41. West Bengal shares boundaries with _____ countries. (+1, -0.33)

a. 2

b. 4

c. 1

d. 3

42. Find the odd one out. (+1, -0.33)

A	B	C	D
1595	1425	1725	1325
AEIE	ADBE	AGBE	ACBE

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

43. If a person moves a trolley for a distance of 10 m with a force of 50 N, then the work done is: (+1, -0.33)

- a. 0.2 J
- b. 5 J
- c. 20 J
- d. 500 J

44. A and B can complete a task in 1.5 days. However, A had to leave a few days before the task was completed and hence it took 2 days in all to complete the task. If A alone could complete the work in 2.625 days, how many days before the work getting over did A leave? (+1, -0.33)

- a. 1.125

- b. 0.625
 - c. 0.375
 - d. 0.875
-

45. A/An _____ tissue is formed beneath the skin and between internal organs. (+1, -0.33)

- a. Epithelial
 - b. Nervous
 - c. Muscular
 - d. Adipose
-

46. If MEAT is coded as 135120, then what will be the code for ZEBRA? (+1, -0.33)

- a. 2652181
 - b. 2652191
 - c. 2662181
 - d. 2662191
-

47. Who among the following hosted the Hindi version of "Bigg Boss-11"? (+1, -0.33)

- a. Aamir Khan
- b. Salman Khan
- c. Shilpa Shetty

d. Farhan Akhtar

48. _____ is the property of attracting electrons by the halogen atoms in a molecule. (+1, -0.33)

- a. Electron affinity
 - b. Electropositivity
 - c. Electrochemistry
 - d. Electronegativity
-

49. The headquarter of the Board of Control for Cricket in India (BCCI) is located in: (+1, -0.33)

- a. Delhi
 - b. Mumbai
 - c. Chennai
 - d. Kolkata
-

50. Which of the following inert gases is placed in period 4 of the periodic table? (+1, -0.33)

- a. Kr
- b. Rn
- c. Xe
- d. Ar

51. In a code language, AILMENT is written as 1923540. What is the code for DISEASE? (+1, -0.33)

- a. 4985195
- b. 4995195
- c. 4905195
- d. 4995196

52. Sabrina travelled 8 km/hr on foot and 13 km/hr on cycle. She travelled a distance of 84 kms in 8 hours. For how many hours did she cycle? (+1, -0.33)

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

53. Venu is the Son of Avani and Amit is the son of Avani's brother. How is Amit's Mother related to Venu? (+1, -0.33)

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

54. Who is considered as the father of taxonomy? (+1, -0.33)

- a. Darwin
- b. Einstein
- c. Mandelbrot
- d. Linnaeus

55. 5th January 2018 was a Friday. Which of the following years will also have 5th January on a Friday? (+1, -0.33)

- a. 2022
- b. 2020
- c. 2024
- d. 2023

56. As per the RBI Annual Report 2016-17, what is the estimated value of demonetised banknotes received? (+1, -0.33)

- a. Rs. 12.25 lakh crore
- b. Rs. 15.28 lakh crore
- c. Rs. 19.48 lakh crore
- d. Rs. 13.35 lakh crore

57. Who among the following was crowned with the Miss World 2017 title? (+1, -0.33)

- a. Andrea Meza
 - b. Rolene Strauss
 - c. Manushi Chillar
 - d. Aurore Kichenin
-

58. For the data given below, find the sum of mode, median and mean. (+1, -0.33)

6, 3, 8, 4, 3, 11, 7, 4, 5, 4.

- a. 13.5
 - b. 13
 - c. 14
 - d. 14.5
-

59. Vishal is 20 years younger to Arya. Twelve years hence Arya's age will be 1.25 times that of Vishal. Arya is now ----- years old. (+1, -0.33)

- a. 78
 - b. 68
 - c. 88
 - d. 72
-

60. Read the given statement(s) and conclusions carefully and select which of the conclusions logically follow(s) from the statement(s). (+1, -0.33)

Statement:

Looking at Limay's new watch, Nita comments, "Oh, that's so awesome. Where did you buy it from?"

Conclusions:

- I. Limay's watch is attractive
 - II. Nita wants to know where to buy a similar watch from.
- a. Both the conclusions follow
 - b. Conclusion II alone follows
 - c. Neither I nor II follows
 - d. Conclusion I alone follows

61. In _____, Sher Khan (Sher Shah) attacked Bengal and defeated Ghiyashuddin Shah. (+1, -0.33)

- a. 1358
- b. 1583
- c. 1538
- d. 1540

62. By selling a used phone for Rs. 7,260, Sanjan got 34% less than what it cost him to buy it a few years ago. At what price should Sanjan have sold the phone to gain a profit of 5%? (+1, -0.33)

- a. Rs. 11,460

- b. Rs. 11,550
- c. Rs. 11,440
- d. Rs. 11,560

63. You are given a question and three statements. Identify which of the statements is/are necessary/sufficient to answer the question. (+1, -0.33)

L, M, N, O and P are standing in a circle facing the centre. Who is standing to the right of L?

Statements:

- 1. Next to L are P and M
 - 2. O is standing to the right of P
 - 3. O is standing to the left of N
- a. Statement 1 and 2 are not sufficient
 - b. Statements 1 and 2 together are sufficient
 - c. The statements are insufficient
 - d. Statement 1 alone is sufficient

64. In a code language, FATE is written as 61205. What is the code for LEAN? (+1, -0.33)

- a. 125114
- b. 125115
- c. 126114

d. 135114

65. Which of the following numbers is irrational?

(+1, -0.33)

a. $\sqrt[10]{1024}$

b. $\sqrt[4]{1024}$

c. $\sqrt{1024}$

d. $\sqrt[5]{1024}$

66. Find the next term in the given series.

(+1, -0.33)

B2, K12, T72, -----

a. C432

b. A434

c. A432

d. C434

67. The famous activist Irom Chanu Sharmila is better known as 'The Iron Lady of -----'.

(+1, -0.33)

a. Manipur

b. Mizoram

c. Nagaland

d. Tripura

68. _____ helps the eye to adjust the focal length of the lens. (+1, -0.33)

- a. Lens
- b. Ciliary body
- c. Retina
- d. Entire eye ball

69. Which of the following correctly represents the relationship between the following classes? (+1, -0.33)

- A) Bell
- B) Water
- C) Brass



70. Name the Chief Minister of Telangana who was honoured with the Global Agricultural Leadership Award 2017. **(+1, -0.33)**

- a.** Siddaramaiah
 - b.** K. T. Rama Rao
 - c.** N. Chandrababu Naidu
 - d.** K. Chandra Shekhar Rao
-

71. What is the full form of ASSOCHAM? **(+1, -0.33)**

- a.** Associated Chambers of Commerce and Industry
 - b.** Association of Commerce
 - c.** Associated Commerce
 - d.** Associated Chambers in India
 - e.** Question Not Attempted
-

72. Name the Bollywood actor who received Kala Ratan Award in March 2017? **(+1, -0.33)**

- a.** Naseeruddin Shah
 - b.** Akshay Kumar
 - c.** Anupam Kher
 - d.** Jitendra
-

73. Where the mature sperm are produced? (+1, -0.33)

- a. Scrotum
 - b. Vas deferens
 - c. Prostate gland
 - d. Testes
-

74. Asexual reproduction takes place in: (+1, -0.33)

- a. Plants
 - b. Higher animals
 - c. Lower animals
 - d. Lower animals and plants
-

75. Tribeni had to travel 175 km in 3.5 hours. However, she travelled at the rate of 58 km/hr for 2.5 hours and then rested for 20 minutes before completing the journey. If Tribeni managed to reach on time, her speed during the last stretch would have been _____. (+1, -0.33)

- a. 36 km/hr
 - b. 30 km/hr
 - c. 42.5 km/hr
 - d. 45 km/hr
-

76. Who among the following was sworn in as the Chief Minister of Manipur in 2017? (+1, -0.33)

- a. M Koireng Singh
- b. N Biren Singh
- c. Longjam Thambou
- d. M Alimuddin Singh

77. An object travels 23 m in 3 s and then another 15 m in 2 s. What is the average speed of the object? (+1, -0.33)

- a. 7.6 ms^{-1}
- b. 6.6 ms^{-1}
- c. 8.0 ms^{-1}
- d. 7.6 m

78. $(-12)[11 + \{7 \times (-3)\}] \div [4 \{13 - (-3) \times (-6)\}] = ?$ (+1, -0.33)

- a. -6
- b. -4
- c. 4
- d. -2

79. An object having the capability to do work is said to possess_____. (+1, -0.33)

- a. Inertia
- b. Force
- c. Pressure
- d. Energy

80. How many triangles are there in this figure? (+1, -0.33)



- a. 21
- b. 23
- c. 22
- d. 20

81. _____ is displaced when zinc is added to the solution of copper sulphate. (+1, -0.33)

- a. Copper
- b. Hydrogen
- c. Zinc

d. Sulphate

82. Atomic radius is measured in: (+1, -0.33)

- a. Micrometres
- b. Nanometres
- c. Millimetres
- d. Centimetres

83. ----- compound is used as a drying agent. (+1, -0.33)

- a. Calcium oxide
- b. Calcium carbide
- c. Gypsum
- d. Calcium carbonate

84. What will come in the place of question mark (?) in the below series? (+1, -0.33)

$\Omega \leq \textcircled{R}$	$\textcircled{R} \Omega \geq$	$\Omega < \textcircled{R}$	?
-------------------------------	-------------------------------	----------------------------	---

Option figure:

A	B	C	D
$\Omega \textcircled{R} >$	$\textcircled{R} > \Omega$	$\textcircled{R} \Omega >$	$\textcircled{R} < \Omega$

a. A

b. D

c. B

d. C

-
85. Consider the given statement(s) and decide which of the given assumption(s) is/are implicit in the statement. (+1, -0.33)

Statement:

“The use of antibiotic tablets destabilises the gut bacteria”.

Assumptions:

I. There are friendly bacteria in the gut.

II. Gut health is foremost for overall health.

a. Both I and II are implicit.

b. Only I is implicit.

c. Only II is implicit.

d. Neither I nor II is implicit.

-
86. A mass of 20 kg is at a height of 8 m above the ground. Then the potential energy possessed by the body is: (+1, -0.33)

[Given $g = 9.8 \text{ ms}^{-2}$]

a. 1568 J

b. 1568 C

c. 1568 W

d. 1568 N

87. 1 kWH = _____ J

(+1, -0.33)

a. 3.6×10^{-8}

b. 3.6×10^{-6}

c. 3.6×10^8

d. 3.6×10^6

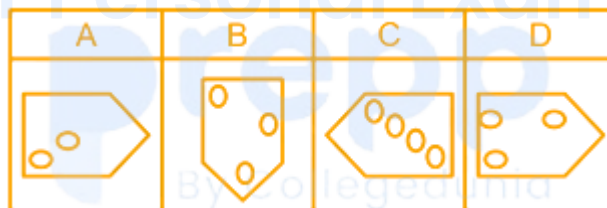
88. Which of the option figures bears the closest resemblance to the question figure?

(+1, -0.33)

Question figure:



Option figures:



a. B

b. D

c. C

d. A

89. What is the average price difference per kg (in Rs.) for vegetables between two years for the three months given in the following table? (+1, -0.33)

Months	Price per kg - Year 1	Price per kg - Year 2
Jan	40	35
Feb	40	50
Mar	40	35

- a. Average price of vegetables in Year 1 is less than that in Year 2.
- b. There is no difference in the average price.
- c. Average price of vegetables in Year 2 is less than that in Year 1.
- d. We cannot compare the prices.

90. Select the lateral mirror image of TEETH from the given option figures? (+1, -0.33)

Option figures.

TEETH	HT33T	1EE1H	H133L
A	B	C	D

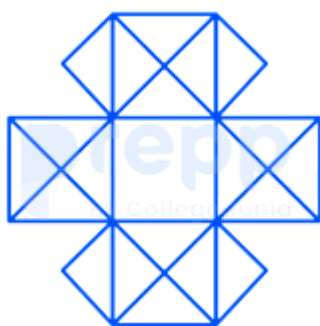
- a. C
- b. D

c. A

d. B

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

(+1, -0.33)



a. 44

b. 32

c. 46

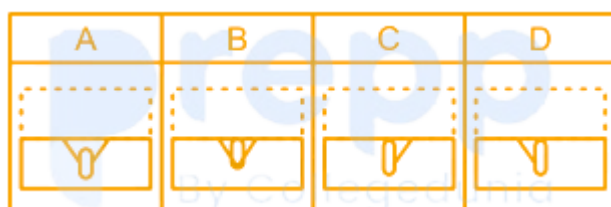
d. 30

92. Which pattern will the given transparent sheet resemble when it is folded at the dotted line?

(+1, -0.33)



Option figure:



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

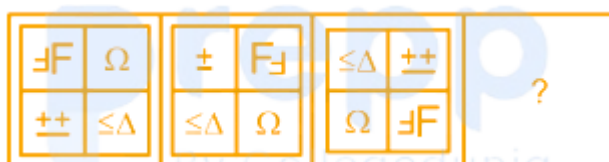
93. In the year 2016, there were 52 weeks and P days. Find the value of P. (+1, -0.33)

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

94. Which of the fractions given below is not equal to $\frac{4}{11}$? (+1, -0.33)

- a. $\frac{32}{88}$
- b. $\frac{84}{219}$
- c. $\frac{64}{176}$
- d. $\frac{20}{55}$

95. Select the option that can replace the question mark (?) in the following series. (+1, -0.33)



Option figure:

A		B		C		D	
$\pm\pm$	Ω	$\leq\Delta$	Ω	Ω	$\leq\Delta$	Ω	$\leq\Delta$
$F\sqcup$	$\leq\Delta$	$F\sqcup$	$\pm$	$F\sqcup$	$\pm\pm$	$F\sqcup$	$\pm$

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

96. Alarms from 3 different clocks sound out after every 2, 4 and 6 hours, respectively. If all the clocks are started at the same time, how many times will the alarms ring together in a span of 3 days? (+1, -0.33)

- a. 6
- b. 3
- c. 9
- d. 2

97. Meet starts cycling early in the morning, facing the Sun. After some time, he takes a 45° turn to his left and then again turns 80° towards his left. In which direction is he now ? (+1, -0.33)

- a. South - East
- b. South - West

c. North – West

d. North – East

98. As of August 2018, what is the portfolio held by the current Union Minister Ravi Shankar Prasad? (+1, -0.33)

a. Human Resource Development

b. Petroleum

c. Law and Telecommunications

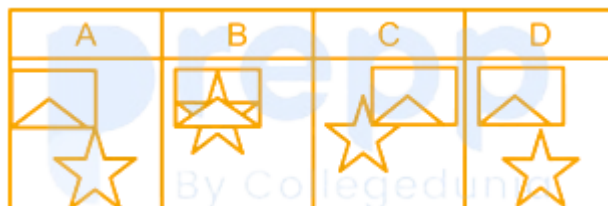
d. Coal

99. Which of the option figures bears the closest resemblance to the question figure? (+1, -0.33)

Question figure:



Option figures:



a. A

b. C

c. B

d. D

100. $(-18) [36 \div \{7 - (-2)\}] \div [(-4)\{19 - (-3) \times (-5)\}] = ?$ (+1, -0.33)

a. -4.5

b. 4.5

c. 2.5

d. -2.5

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Answers

1. Answer: d

Explanation:

Statement 1,

⇒ Lina's age = 20

Statement 2,

⇒ Lina's sister's age = $2 \times (1/4) \times \text{Lina's age} = (1/2) \times 20 = 10$ years

⇒ Total age of both sisters after 10 years from now = $(20 + 10) + (10 + 10) = 50$ years

∴ Statement 1 and 2 together are sufficient.

2. Answer: a

Explanation:

- Garry Oldman won the Best Actor award in the 90th Oscar awards in the year 2018.
- He won the best for his film 'Darkest Hour'.
- The Oscar for Best film was won by 'The Shape of Water'.
- Rami Malek won the best actor award in the 91st Oscar Award for his film Bohemian Rhapsody in the year 2019.
- The Oscar for Best film was won by 'Green Book' in the year 2019.

3. Answer: a

Explanation:

CONCEPT:

- Echo: If we shout or clap near a suitable reflecting object such as a tall building or a mountain, we will hear the same sound again a little later. This sound which we hear is called an echo.
 - Echoes are heard due to the phenomenon of Reflection of sound waves.
 - To hear the echo clearly, the reflecting object must be more than 17.2 m from the sound source for the echo to be heard by a person standing at the source.

Calculation:

Given that,

The time taken by the echo to reach back to the source $(t) = 6s$.

Velocity of the sound $(v) = 346 \text{ m/s}$.

Distance between person and cliff $(d) = v \times t_a$

As sound travels back and forth to form an echo and hence time is twice.

Now dividing the time take by 2 we get actual time $(T_a) = 6/2 \Rightarrow 3$

Therefore, the distance from person to the cliff $(d) = 346 \times 3 \Rightarrow 1038 \text{ m}$.

The distance between the person and the cliff is **1038 meters**.

4. Answer: d

Explanation:

CONCEPT:

Acceleration (a) :

- The time rate of change of velocity of an object is called the acceleration of the object. i.e.

$$a = \frac{v_2 - v_1}{t_2 - t_1}$$

Where v_2 = velocity of an object at time t_2 and v_1 = velocity of an object at time t_1

- It is a vector quantity.
- It's direction is same as that of change in velocity.

CALCULATION:

Given that,

⇒ Initial velocity of the car (u) = 18 km/h

⇒ Final velocity of the car (v) = 72 km/h

⇒ Acceleration is defined as change in velocity with respect to time i.e. $a = v_f/t$

⇒ Change in velocity is final velocity – initial velocity (v_f) = $72 - 18 \Rightarrow 54 \text{ Km/h} = 54 \times 5 / 18$

⇒ 15 m/s.

⇒ Acceleration of the car (a) = $15/5 = 3 \text{ m/s}^2$.

⇒ Therefore, the acceleration of the car (a) = 3 m/s^2 or 3 ms^{-2}

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5. Answer: c

Explanation:

Figure C is the exact Water image of the given question.

Hence, the closest resemblance to the question figure is “figure C”.

6. Answer: b

Explanation:

- Given compound is Aluminium Sulphate $\text{Al}_2(\text{SO}_4)_3$
- the Atomic mass of Aluminium (Al) = 27.
- The atomic mass of Sulphur (S) = $16 \times 2 = 32$
- The atomic mass of oxygen (O) = $8 \times 2 = 16$.
- Total molar mass of the compound is $(27 \times 2) + (32 \times 3) + (16 \times 12) \Rightarrow 342 \text{ gm/mole}$.
- Molar Mass of the oxygen = $12 \times 16 \Rightarrow 192 \text{ gm/mole}$.
- Percentage of oxygen in total compound = $(192/342) \times 100 \Rightarrow 56.140\%$
- Therefore, the percentage of oxygen in Aluminium Sulphate is **56.1 %**

7. Answer: a

Explanation:

The argument I holds strong because it gives factual information about "human system being weaken due to use of air conditioner".

While argument II only talks about "comfort" which can be achieved by using air conditioner normally and thus it does not provide any strong fact or basis to be hold strong.

Hence, "only argument I is strong".

8. Answer: b

Explanation:

- Prime Minister laid the foundation stone of Char Dham highway development project or Chardham Mahamarg Vikas Pariyojna at **Dehradun**.
- The project aims at improving the connectivity to the Char Dham pilgrimage centres in the Himalayas.
- It includes developing around 900 km of national highways in Uttarakhand at a total cost of Rs. 12000 crores.

9. Answer: b

Explanation:

Pond consists of water mainly and in the same way mountains consists of rocks mainly as per the given options.

Hence, "rocks" is the correct answer.

10. Answer: d

Explanation:

- **P.V. Sindhu** became the first Indian Woman to win the Korean open Series in Badminton.
 - In the year 2017, she won against Nozomi Okuhara of Japan to become the first Indian women to win Korean open Series in Badminton.
 - She also won silver medal at Rio Olympics in the year 2016.
-

11. Answer: b

Explanation:

We can check statements one by one.

Statements:

B is heavier than A → information about other two bags is not given.

So, the statement I is not sufficient alone.

A is lighter than C and D → information about B- bag and relation between bag C and D is not given. So, we cannot find which bag is lightest. Thus, statement II is not sufficient alone.

On combining both the statements I and II we get,

$C, D, B > A$. $\rightarrow$ thus we can find A is lightest among all the bags.

Hence, "Statement 1 and 2 together are necessary".

12. Answer: c

Explanation:

- India won the 2017 Women's Hockey Asia Cup title.
 - India beat China in the final in a penalty shootout.
 - Women's Hockey Asia Cup title was held in Japan.
 - Women's Hockey Asia Cup title 2018 was won by South Korea.
-

13. Answer: d

Explanation:

Numbers are 12, 12, 13, 14, 16 and 18

$\Rightarrow$ Sum of middle two number = $13 + 14 = 27$

$\Rightarrow$ Median = $27/2 = 13.5$

14. Answer: b

Explanation:

- Prime Minister Modi's Birthday has been celebrated as **Sewa Divas** across India.
- His party, Bharatiya Janata Party (BJP) celebrated 17 September (Modi Birthday) as Sewa Divas by organising blood donation camps and cleaning streets etc.

15. Answer: b

Explanation:

- The Chola Kings built **Brihadeesvara** temple at Tanjavur.
- It was built by RajaRaja – I in the year 1010 A.D.
- His son Rajendra I built a city called Gangaikondacholapuram and excavated a tank called Cholagangam.
- Chola dynasty was founded by Vijayalaya.

16. Answer: b

Explanation:

- **Propane gas** is used as illuminating gas.
- The molecular formula Propane is C_3H_8 .
- Propane is the gas normally used for cooking in the form of Liquefied Natural Petroleum (LPG).

★ Additional Information

- <https://www.scientificamerican.com/article/illuminating-gas-what-it-is-and-how/>

Compound	Molecular Formula
Methyl	CH_3
Butene	C_4H_8
Ethyne or Acetylene	C_2H_2

17. Answer: d

Explanation:

$$\Rightarrow 80 \div [48 - \{56 - (60 - 36 \div 12 \times 4)\}]$$

$$\Rightarrow 80 \div [48 - \{56 - (60 - 3 \times 4)\}]$$

$$\Rightarrow 80 \div [48 - \{56 - (60 - 12)\}]$$

$$\Rightarrow 80 \div [48 - \{56 - 48\}]$$

$$\Rightarrow 80 \div [48 - 8]$$

$$\Rightarrow 80 \div 40$$

$$\Rightarrow 2$$

18. Answer: b

Explanation:

- From the statement given, Sajit is saying only about how kirti played and there is no information given about "Sajit likes cricket" or not. So, we cannot assume that "Sajit likes cricket".
- However, as it is stated that, "Kirti played a very good shot on the pitch", Kirti is capable of playing good shots. This gives rise to the possibility that Kirti could be a good player.

Hence, "Conclusion II alone follows".

Note: The official question has a discrepancy; it has been updated to remove the ambiguity.

19. Answer: c

Explanation:

Concept Used:

Using the BODMAS principle,

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

Calculation:

$$\Rightarrow \frac{3}{4} + \left\{ \frac{3}{4} + \frac{3}{4} \div \left(\frac{3}{4} + \frac{3}{4} \right) \right\}$$

$$\Rightarrow \frac{3}{4} + \left\{ \frac{3}{4} + \frac{3}{4} \div (6/4) \right\}$$

$$\Rightarrow \frac{3}{4} + \left\{ \frac{3}{4} + \frac{1}{2} \right\}$$

$$\Rightarrow \frac{3}{4} + \left\{ \frac{3}{4} + \frac{1}{2} \right\}$$

$$\Rightarrow 8/4$$

$$\Rightarrow 2$$

20. Answer: b

Explanation:

$\Rightarrow$ Part of tank filled in one minute = $1/12$

$\Rightarrow$ Part of tank emptied in one minute = $1/6$

$\Rightarrow$ Part of tank emptied in one minute when both the inlet were open = $(1/6) - (1/12)$
= $1/12$

$\Rightarrow$ Part of tank to be emptied = $2/5$

$\Rightarrow$ Time taken = $(2/5) / (1/12) = 4.8$ min

21. Answer: b

Explanation:

Let the number be x.

$$\Rightarrow 38\% \text{ of } x = 133$$

$$\Rightarrow (38/100) \times x = 133$$

$$\Rightarrow x = 350$$

22. Answer: c

Explanation:

- **Amitabh Bachchan** was made as brand ambassador in June 2017 by the Union Government of India to promote GST (Goods and Services Tax).
 - Before Amitabh Bachchan, P.V. Sindhu used to be a Brand ambassador of GST.
-

23. Answer: a

Explanation:

$$\Rightarrow \sqrt{15625} = \sqrt{(125 \times 125)} = 125$$

24. Answer: d

Explanation:

We have,

$$\Rightarrow 32 \times 2 = 64$$

$$\Rightarrow 64 \times 4 = 256$$

$$\Rightarrow 256 \times 6 = 1536$$

$$\Rightarrow 1536 \times 8 = ?$$

$$\Rightarrow ? \times 10 = 122880$$

$$\Rightarrow 12880 \times 12 = 1474560$$

$$\therefore ? = 1536 \times 8 = 12288$$

25. Answer: b

Explanation:

Given:

$$\tan \alpha = \sqrt{3} + 2$$

Formula used:

$$\cot x = 1/\tan x$$

$$a^2 - b^2 = (a + b)(a - b)$$

Calculation:

$$\cot \alpha = 1/\tan \alpha = 1/(\sqrt{3} + 2)$$

$$\Rightarrow \frac{1}{(\sqrt{3} + 2)} \times \frac{(\sqrt{3} - 2)}{(\sqrt{3} - 2)} = \frac{(\sqrt{3} - 2)}{((\sqrt{3})^2 - 2^2)}$$

$$\Rightarrow \cot \alpha = (\sqrt{3} - 2)/(-1) = 2 - \sqrt{3}$$

$$\Rightarrow \tan \alpha - \cot \alpha = (\sqrt{3} + 2) - (2 - \sqrt{3}) = 2\sqrt{3}$$

$\therefore$ The value of $\tan \alpha - \cot \alpha$ is $2\sqrt{3}$.

26. Answer: d

Explanation:

In $\triangle XYM$,

$$\angle XYM + \angle XMY + \angle YXM = 180^\circ$$

$$\Rightarrow 16^\circ + (180^\circ - \angle XMZ) + \angle YXM = 180^\circ \quad (\because \angle XMY + \angle XMZ = 180^\circ)$$

$$\Rightarrow 16^\circ + 180^\circ - 32^\circ + \angle YXM = 180^\circ$$

$$\Rightarrow \angle YXM = 16^\circ = \angle XYM$$

$$\therefore YM = XM = MZ \quad (\because M \text{ is the midpoint of } YZ)$$

$$\therefore \angle MXZ = \angle MZX = \angle XZY$$

In $\triangle XMZ$

$$\angle XMZ + \angle MXZ + \angle MZX = 180^\circ$$

$$\Rightarrow 32^\circ + \angle MXZ + \angle MXZ = 180^\circ$$

$$\Rightarrow 2 \times \angle MXZ = 180^\circ - 32^\circ$$

$$\Rightarrow \angle MXZ = 74^\circ$$

$$\Rightarrow \angle XZY = \angle MXZ = 74^\circ$$

$\therefore$ The value of $\angle XZY$ is 74°

27. Answer: c

Explanation:

- Soft drinks contain **Carbonic acid** (H_2CO_3).
- Carbonic Acid is formed when water is mixed with carbon dioxide.
- This reaction is given as $CO_2 + H_2O \rightarrow H_2CO_3$.

A cid	Found in
Oxalic Acid	Spinach, Tomato etc.
Tartaric Acid	Tamarind, Grapes and Unripe Mangoes etc.
Citric Acid	Oranges, lemons etc.

28. Answer: d

Explanation:

$$\Rightarrow \text{Simple interest} = (\text{principal} \times \text{time} \times \text{rate})/100 = (1000 \times 6 \times X)/100 = 60X$$

$$\Rightarrow \text{Amount} = \text{Interest} + \text{Principal} = 1000 + 60X$$

According to question,

$$\Rightarrow 1000 + 60X = 1300$$

$$\Rightarrow 60X = 300$$

$$\Rightarrow X = 5$$

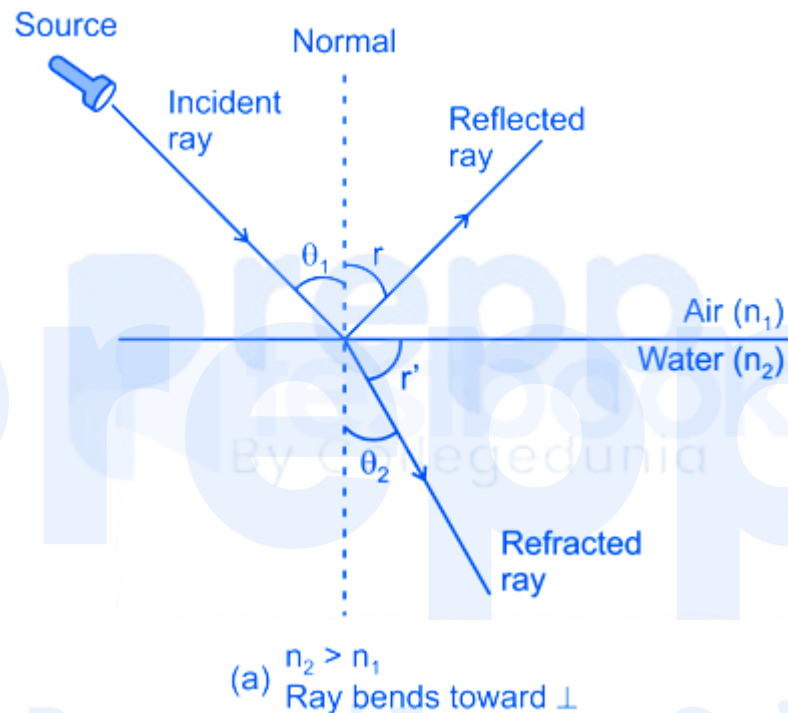
29. Answer: d**Explanation:**

- Thorn Forests are found in **Rajasthan**.
- This type of vegetation is found in dry areas.
- Leaves are in the form of spines to reduce the water loss.
- These types of forest are found in Rajasthan, Punjab, Haryana, Eastern Slopes of the Western Ghats and Gujarat.
- Some of the important trees found in these of forests are Cactus, khair, babool, keekar etc.

30. Answer: c**Explanation:**CONCEPT:

- Refraction : The bending of a ray of light when it goes from one medium to another is called refraction of light .

- Refraction occurs when waves or rays of the light bend towards or away from the normal when they travel from one medium to another of a different density.
- When a light ray travels from a lighter to a denser medium, the light ray bends towards the normal.
- When a light ray travels from a denser to a lighter medium the light ray bend away from the normal.



EXPLANATION:

1. Reflection: The phenomena in which light ray is sent back into the same medium from which it is coming, on interaction with boundary, is called reflection.
2. Dispersion of light: The splitting of white light, when it passes through glass prism into its constituent spectrum is known as the dispersion of light.
3. **Refraction** : The bending of light rays in the denser medium is termed as Refraction. So option 3 is correct.
4. **Deflection** : There is no such phenomenon as a deflection of light.

31. Answer: d

Explanation:

$$\Rightarrow \text{Quantity of Dal sold} = 4.5\% \text{ of } 1500 = (4.5/100) \times 1500 = 67.5 \text{ kg}$$

32. Answer: c

Explanation:

From the statement given, as the students are influenced by their faculty, we can assume that "School students consider their faculty as role models".

But the information about the time spent by the students in the school is not provided. So, we cannot assume that "More time is spent at schools by students".

Hence, "Only assumption I is implicit".

33. Answer: a

Explanation:

Concept:

- Speed: The distance travelled by the body in unit time.
- $Speed = \frac{Distance}{Time}$
- Also, $Time = \frac{Distance}{Speed}$
- Average Speed: Since the body does not always have the same speed, So we use the concept of average speed. It is the ratio of total distance covered to total time taken by the body.
- $Average\ Speed = \frac{Total\ Distance}{Total\ Time}$

Calculation:

Given that,

The object travels 23 m in 3 sec.

The object again travels 15 m in 2s.

Thus total distance travelled by the object = $23 + 15 \Rightarrow 38\text{m}$

Total time = $3 + 2 \Rightarrow 5\text{s}$

Average speed = distance/ time

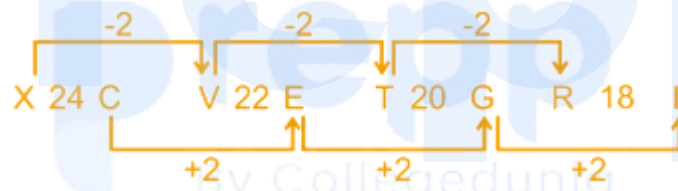
= $38/5 \Rightarrow 7.6 \text{ m/s}$

The average speed of the object is **7.6 m/s or 7.6 ms^{-1}**

34. Answer: c

Explanation:

The pattern followed here is as follows,



The number in the middle is the positional value of the letter in the 1st position.

Hence, "R18I" is the correct answer.

35. Answer: b

Explanation:

Calculation:

Let the capacity of the cistern be the LCM of 69 and 46 i.e. 138 units.

$\Rightarrow$ The efficiency of Pipe A = $138/69 = 2$ units

⇒ The efficiency of Pipe B = $138/46 = 3$ units

Since Pipe B is draining, the efficiency of pipe B will be -3 .

The pattern of work = B, A, B, A, B, A...

⇒ Work done by pipe B and pipe A in 2 hours = $-3 + 2 = -1$ unit

In 2 hours → 1 unit emptied

Then, 135 units emptied in → $2 \times 135 = 270$ hours

The remaining work is to be done by pipe B.

Now, pipe B will be working for the next hour for -3 units and the tank would be empty.

⇒ Total time = $270 + 1 = 271$ hours = **11 days 7 hours**

★ Alternate Method

Take LCM of 69 and 46 = 138

Total work = 138 unit

The efficiency of A = $138/69 = 2$ units/hour

The efficiency of B = $138/46 = 3$ units/hour

Work done by A for 1st hour = 2 unit

Work done by B for 2nd hour = 3 unit

B and A together alternatively for 2 hour = $-3 + 2 = -1$ unit

(Negative sign indicates the tank is getting drained)

Both taps will fill and empty the tank alternatively till the completion of 135 units of work in the next turn, The cistern will be emptied by B completely

⇒ time by B and A alternatively = $(135/1) \times 2 = 270$ hours

Remaining work = $138 - 135 = 3$ units

Time taken for Remaining Work done by B = $3/3 = 1$ hour

Total Time = 270 hours + 1 hour = 11 days 7 hours

$\therefore$ Time Required to empty the tank 11 days 7 hours.

36. Answer: a

Explanation:

CONCEPT:

- Equation of motion : The mathematical equations used to find the final velocity, displacements, time, etc of a moving object without considering force acting on it are called equations of motion.
- These equations are only valid when the acceleration of the body is constant and they move on a straight line.

There are three equations of motion :

$$V = u + at$$

$$V^2 = u^2 + 2as$$

$$S = ut + \frac{1}{2}at^2$$

Force : It is a kind of push or pulls applied to an object which causes it to accelerate at a certain rate

i.e., Force produces acceleration in a body.

$$\therefore F = m \times a$$

Where,

V = final velocity,

u = initial velocity,

s = distance travelled by the body under motion,

a = acceleration of body under motion,

t = time taken by the body under motion.

Calculation:

Given that,

Mass of the object = 8kg.

Time in which force acting on the body (t) = 3s

initial Velocity of the object (u) = 4m/s

Final Velocity of the object (v) = 6m/s

Force applied on the object = F

Acceleration of the object $v = u + at$.

$$6 = (4) + (a) (3).$$

$$= 2/3.$$

Now from newton second law, we get $F = ma$

$$F = (8) (2/3) \Rightarrow 5.33$$

The magnitude of the applied force is **5.33N**.

37. Answer: a

Explanation:

The pattern followed here is as follows,



The number is the positional value of the letter.

Hence, "T20" is the correct answer.

38. Answer: a

Explanation:

CONCEPT:

- Kinetic energy (KE): The energy possessed by a body due to the virtue of its motion is termed as kinetic energy.

i.e., $KE = \frac{1}{2}mv^2$

Where

m = mass of the body

v = velocity of the body

KE = kinetic energy of the body

Calculation:

Given that,

Mass of the object (m) = 10kg

Speed of the object (v) = 2 m/s.

Kinetic Energy (K.E) = $\frac{1}{2}mv^2$.

$$= \frac{1}{2} (10)(2)^2 \Rightarrow 20 \text{ joules.}$$

The kinetic energy of the object is **20 J**.

39. Answer: c

Explanation:

Formula used:

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a + b)^3 = a^3 + b^3 + 3ab(a + b)$$

Calculation:

$$\text{Given that, } a^2 + \frac{1}{a^2} = 7$$

$$\Rightarrow a^2 + \frac{1}{a^2} + 2 = 9$$

By using the above formula,

$$\Rightarrow \left(a + \frac{1}{a}\right)^2 = 9$$

$$\Rightarrow \left(a + \frac{1}{a}\right) = 3 \text{ ----(1)}$$

$$\text{We know that, } (a + b)^3 = a^3 + b^3 + 3ab(a + b)$$

$$\Rightarrow a^3 + \frac{1}{a^3} + 3\left(a \times \frac{1}{a}\right)\left(a + \frac{1}{a}\right) = 27$$

Using equation (1)

$$\Rightarrow a^3 + \frac{1}{a^3} + 3 \times 3 = 27$$

$$\Rightarrow a^3 + \frac{1}{a^3} = 27 - 9 = 18$$

40. Answer: d

Explanation:

- Lithium (Li) element has the largest atom.

- Largest atom is defined by its atomic radius i.e. the distance between nucleus to its outermost orbit/ valency shell.
- As we move from left to right in the periodic table the atomic radius decreases.
- But as we go down the period in the periodic table the atomic radius increases.
- Hence lithium has the largest atom and it is greater than Hydrogen (H), Oxygen (O) and Fluorine(F).

Table: Modern Periodic table

Legend:

- Alkali metals
- Alkaline Earth Metals
- Halogens
- Nobel gases

The zig zag line separates the metals from the non metals

GROUP NUMBER

PERIODS

Transition Metals

GROUP NUMBER

1	2											GROUP NUMBER						18
1	H	2											5	6	7	8	9	10
2	3	4											B	C	N	O	F	Ne
3	11	12	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Na	Mg											Al	Si	P	S	Cl	Ar
4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
	Cs	Ba	La*	Hf	Ta	E	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	87	88	89	104	105	106	107	108	109	110	111	112	113	115	116	117	118	119
	Fr	Ra	Ac**	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo

*Lanthanoides 6	58	59	60	61	62	63	64	65	66	67	68	69	70	71
	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
**Actinoides 7	90	91	92	93	94	95	96	97	98	99	100	101	102	103
	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

41. Answer: d

Explanation:

- West Bengal shares boundaries with 3 countries.
- West Bengal shares its boundaries with Nepal, Bhutan, and Bangladesh.
- West Bengal, Mizoram, Assam, Tripura, and Meghalaya are the Indian states that share their borders with Bangladesh.
- Bangladesh is the country that India has the largest border with.

42. Answer: c

Explanation:

The pattern followed here is every term is having only "two vowels" except option A.

In option A "AEIE" all four are vowels.

Hence, "option A" is odd one

43. Answer: d

Explanation:

Concept:

The work done by a force is defined as: The product of the component of the applied force on the block in the direction of the displacement and the magnitude of this displacement is called work done.

When a force is applied on an object which causes displacement along the direction of force then the work is said to be done by that force.

$$\text{i.e., } W = \vec{F} \cdot d\vec{x} = F dx \cos \theta$$

Here both force and displacement will be along the same direction since force is causing this displacement thus Work done is a scalar quantity.

Calculation:

Given that,

- Force acting on the trolley (F) = 50 N
- Distance travelled by trolley (s) = 10 m
- Total work is done $W = F \times s$

$$= 50 \times 10 \Rightarrow 500 \text{ J}$$

- The total work done is **500 joules**.

44. Answer: d

Explanation:

$$\Rightarrow A's \text{ efficiency} = 1/A = 1/2.625$$

$$\Rightarrow (A + B)'s \text{ efficiency} = (1/A) + (1/B) = (1/1.5)$$

$$\Rightarrow (1/B) = (1/1.5) - (1/2.625) = 750/2625 = 10/35 = 2/7$$

Let A work for x days

$$\Rightarrow \text{Work done by A} + \text{Work done by B} = 1$$

$$\Rightarrow (x/2.625) + \{(2 \times 2)/7\} = 1$$

$$\Rightarrow (8x/21) + (4/7) = 1$$

$$\Rightarrow 8x/21 = 3/7$$

$$\Rightarrow x = 9/8 = 1.125$$

$$\Rightarrow A \text{ left the work for} = 2 - x = 2 - 1.125 = 0.875$$

45. Answer: d

Explanation:

- **A Adipose tissue** is formed beneath the skin and between internal organs.
- Adipose tissue is a type of loose connective tissue that stores fat to provide insulation to the body and protect major organs.
- It is the cells of the adipose tissue, called adipocytes which store fat in the form of triglycerides.

Epithelial Tissue	- The tissue found at the outer layer of skin is epithelial tissue. - Epithelial tissue covers the external surface as well as the internal lining of the organs.
Nervous Tissue	- Cells of this tissue are called neurons. - The brain, Spinal Cord and nerves are made up of this tissue.
Muscular Tissue	- Muscular tissue consists of elongated cells, also called muscle fibres. - This tissue is responsible for movement in our body.

46. Answer: a

Explanation:

The pattern followed here is as follows,

M E A T
↓ ↓ ↓ ↓
13 5 1 20

The letters are assigned with their positional values.

Z E B R A
↓ ↓ ↓ ↓ ↓
26 5 2 18 1

Hence, "2652181" is the correct answer.

47. Answer: b

Explanation:

- **Salman Khan** hosted the Hindi version of "Bigg Boss-11".
- Salman Khan hosted the show for the eighth time in a row.
- This season is televised on Colors TV.

48. Answer: d

Explanation:

- **Electronegativity** is the property of attracting electrons by the halogen atoms in a molecule.
- Electronegativity is a measure of the tendency of an atom to attract a bonding pair of electrons.
- Fluorine (F) with atomic number 9 is the most electronegative element.

Electron affinity	It is defined as a change in the energy of a neutral atom when an electron is added to it.
Electrochemistry	It defined as the study of a chemical reaction when electricity is passed through them.
Electropositivity	It is defined as a tendency of an atom to donate an electron.

49. Answer: b

Explanation:

- Board of Control for Cricket in India (BCCI):

- It is the national governing body for cricket in India.
- It is not a government body.
- The board was formed in December 1928.
- Its headquarter is in Mumbai.
- The current President of BCCI is **Roger Binny**.
- BCCI does not depend on the Government of India for its finances.
- BCCI formed in December 1928 as a society, registered under the Tamil Nadu Societies Registration Act.
- The BCCI is India's richest sporting body and the richest cricket board in the world.

50. Answer: a

Explanation:

- **Krypton (Kr)** is placed in period 4 in the Atomic Table.
- Inert gases belong to **Group 18** of the Periodic Table.
- The Inert gases are Helium (He), Neon (Ne), Argon (Ar), Krypton (Kr), Xenon (Xe), Radon (Rn) and Ununoctium (Uuo) / Oganesson (Og).

Your Personal Exams Guide

Table: Modern Periodic table

The periodic table is organized into groups and periods. The groups are numbered 1 to 18, and the periods are numbered 1 to 7. The elements are color-coded by their properties:

- Alkali metals (Group 1)
- Alkaline Earth Metals (Group 2)
- Halogens (Group 17)
- Noble gases (Group 18)

The zigzag line separates the metals from the non metals.

The periodic table is organized into groups and periods. The groups are numbered 1 to 18, and the periods are numbered 1 to 7. The elements are color-coded by their properties:

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- Halogens (Group 17)
- Noble gases (Group 18)

The zigzag line separates the metals from the non metals.

51. Answer: b

Explanation:

The pattern followed here is as follows,

A	I	L	M	E	N	T
↓	↓	↓	↓	↓	↓	↓
1	9	1	2	1	3	5
↓	↓	↓	↓	↓	↓	↓
1	9	2	3	5	4	0

The letters are assigned with the unit digit of their positional values.

D I S E A S E

↓ ↓ ↓ ↓ ↓ ↓ ↓

4 9 19 5 1 19 5

↓ ↓ ↓ ↓ ↓ ↓ ↓

4 9 9 5 1 9 5

Hence, "4995195" is the correct answer.

52. Answer: a

Explanation:

Let time travelled on foot be x and on cycle be $(8 - x)$ hours.

⇒ Distance travelled on foot = speed $\times$ time = $8 \times x = 8x$ km

⇒ Distance travelled on cycle = speed $\times$ time = $13 \times (8 - x) = (104 - 13x)$ km

⇒ Total distance travelled = $8x + (104 - 13x) = 104 - 5x$ km

According to question,

⇒ $104 - 5x = 84$

⇒ $5x = 20$

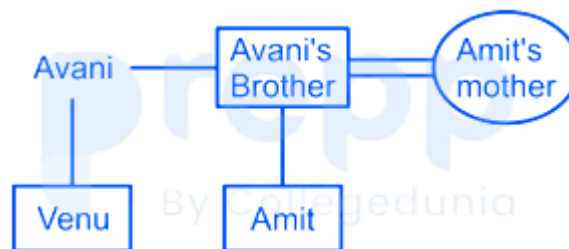
⇒ $x = 4$

∴ Time travelled on cycle = $(8 - 4) = 4$ hours

53. Answer: b

Explanation:

We can draw family tree diagram from the given information, as follows,



Clearly, Amit and Venu are cousins. Therefore, Amit's mother will be "aunt" of Venu.

Hence, "Aunt" is the correct answer.

54. Answer: d

Explanation:

- Carolus Linnaeus formulated the scientific system for naming the species and hence was called **the Father of Taxonomy**.
- He published this theory in his book called "**Systema Naturae**".
- The basis of this classification is to operate the organisms based on their characteristics to separate the larger groups to smaller units i.e. species.
- The hierarchy of animal classification is Phylum (called Division in plants), Class, Order, Family, Genus, Species.
- **Charles Darwin** is known as the **Father of Evolution**.

55. Answer: c

Explanation:

Number of odd days from 5 th January 2018 till 5 th January 2019 = 1

Number of odd days from 5 th January 2019 till 5 th January 2020 = 1

Number of odd days from 5 th January 2020 till 5 th January 2021 = 2

Number of odd days from 5 th January 2021 till 5 th January 2022 = 1

Number of odd days from 5 th January 2022 till 5 th January 2023 = 1

Number of odd days from 5 th January 2023 till 5 th January 2024 = 1

Total odd days = $1 + 1 + 2 + 1 + 1 + 1 = 7 = 0$ odd days

5 th January 2024 is Friday.

Hence, "2024" is the correct answer.

56. Answer: b

Explanation:

The correct answer is Rs. 15.28 lakh crore.

★ Key Points

- As per RBI Annual Report 2016-17, An estimated of demonetised **Rs. 15.28 lakh crore** banknotes are received.
- On November 8, 2016 PM Modi announced demonetisation.
- Due to this the **500- and 1000-rupees banknotes** ceased to be legal tender in India from Midnight of November 8.
- Demonetization was done to stop corruption and choke illegal transactions, stop terror funding etc.

57. Answer: c

Explanation:

- **Manushi Chillar** was crowned as the Miss World 2017 title.
- She was the sixth Indian to win the Miss World title with first being Reita Faria in 1966.
- Vanessa Ponce of Mexico won the Miss World 2018 title.

58. Answer: c

Explanation:

Data is 3, 3, 4, 4, 4, 5, 6, 7, 8, 11

$$\Rightarrow \text{Mean} = (3 + 3 + 4 + 4 + 4 + 5 + 6 + 7 + 8 + 11)/10 = 55/10 = 5.5$$

$$\Rightarrow \text{Median} = (4 + 5)/2 = 9/2 = 4.5$$

$$\Rightarrow \text{Mode} = 4$$

$$\Rightarrow \text{Required sum} = 5.5 + 4.5 + 4 = 14$$

59. Answer: c

Explanation:

Let Arya's age be x years.

$$\Rightarrow \text{Vishal's age} = x - 20 \text{ years}$$

After 12 years, according to question,

$$\Rightarrow \text{Arya's age} = 1.25 \times \text{Vishal's age}$$

$$\Rightarrow x + 12 = 1.25 \times (x - 20 + 12)$$

$$\Rightarrow x + 12 = 1.25x - 10$$

$$\Rightarrow 0.25x = 22$$

$$\Rightarrow x = 88$$

$\therefore$ Arya's age is 88 years.

60. Answer: a

Explanation:

From the statement given we can find that, Nita is mesmerized by looking at Limay's new watch, from the words "Oh, that's so awesome". So, we can conclude that "Limay's watch is attractive".

And, Nita Asked Limay that, "Where did you buy it from?". So, we can conclude that, "Nita wants to know where to buy a similar watch from".

Hence, "both the conclusions follow:".

61. Answer: c

Explanation:

- In the year **1538** Sher Khan (Sher Shah) attacked Bengal and defeated Ghiyashuddin Shah.
- Sher Shah is the founder of the Sur Empire and his original name was Farid.
- He founded the Sur Empire in the year 1540 by defeating Humayun in the Battle of Chausa.
- He ruled from 1540-1545 and after his death Sur Dynasty existed for another 10 years and then India was finally reconquered by Humayun in the year 1555.
- The Tomb of Sher Shah Suri is in the town of Sasaram in Bihar state.

62. Answer: b

Explanation:

Short trick:

$$\text{Required price} = 7260 / 0.66 \times 1.05 = \text{Rs. } 11550$$

Detailed solution:

Let the cost price be Rs. x .

$$\Rightarrow \text{Selling price} = \text{Rs. } 7260$$

$$\Rightarrow \text{Loss} = 34\% \text{ of } x = 0.34x$$

$$\Rightarrow \text{Cost price} - \text{loss} = 7260$$

$$\Rightarrow x - 0.34x = 7260$$

$$\Rightarrow 0.66x = 7260$$

$$\Rightarrow x = 11000$$

Now, to gain a profit of 5%

$$\Rightarrow \text{Selling price} = 11000 + 5\% \text{ of } 11000 = 11000 + 550 = \text{Rs. } 11550$$

63. Answer: b

Explanation:

We can check the statement one by one.

Statement 1 : Next to L are P and M

Here, information about O and N is not given. Thus, statement 1 alone is not sufficient.

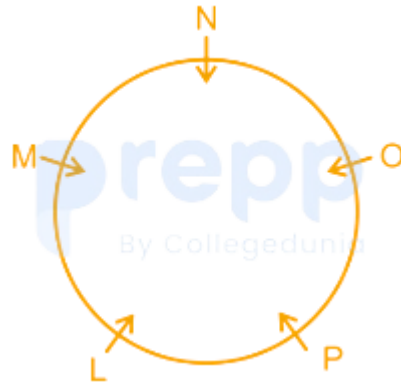
Statement 2 : O is standing to the right of P

Here, information about L, M and N is not given. Thus, statement 2 alone is not sufficient.

Statement 3 : O is standing to the left of N

Here, information about L, M and P is not given. Thus, statement 3 alone is not sufficient.

On combining statement 1 and 2



Note: Here by combining the statements as given we cannot deduce the required answer. But by considering options given we are assuming 'right' as 'immediate right' and can deduce the answer.

Hence, "Statements 1 and 2 together are sufficient".

64. Answer: a

Explanation:

The pattern followed here is as follows,

F	A	T	E
↓	↓	↓	↓
6	1	20	5

The letters are assigned with their positional values.

L	E	A	N
↓	↓	↓	↓
12	5	1	14

Hence, "125114" is the correct answer.

65. Answer: b

Explanation:

$$\Rightarrow (1024)^{(1/10)} = (2^{10})^{(1/10)} = 2$$

$$\Rightarrow (1024)^{(1/4)} = (2^{10})^{(1/4)} = 4 \times 2^{(1/4)}$$

$$\Rightarrow (1024)^{(1/2)} = (32^2)^{(1/2)} = 32$$

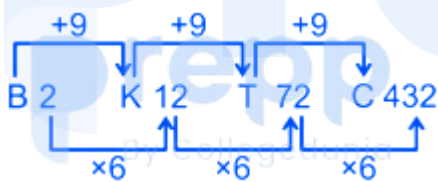
$$\Rightarrow (1024)^{(1/5)} = (4^5)^{(1/5)} = 4$$

$\therefore \sqrt[4]{1024}$ is irrational.

66. Answer: a

Explanation:

The pattern followed here is as follows,



Hence, "C432" is the correct answer.

67. Answer: a

Explanation:

The correct answer is Manipur.

★ Key Points

- Irom Sharmila is known as the 'Iron Lady' of Manipur.
- She is a civil rights and political activist, and poet from Manipur.

- Irom Chanu Sharmila was an Intern at the Human Rights Alert , A Human Rights Group In Imphal .
- She helped document cases of abuse through interviews of Women who had Survived Gang Rapes , as well as of the parents and children of Slain Civilians.
- She fought for what she believed in, and her fight and forms of resistance changed after the hunger strike ended.
- Her fight began with resistance against AFSPA, but now she also fights patriarchy, structural sexism, and other forms of oppression.
- She's fighting against systems that tried to control her and dictate her life.
- But the act of choosing what she wanted, was the first step towards liberation.
- She was famous for her hunger strike against the Armed forces Special Powers Act which she started in the year 2000 and ended her fast in 2016.



68. Answer: b

Explanation:

- The ciliary body helps the eye to adjust the focal length of the lens.

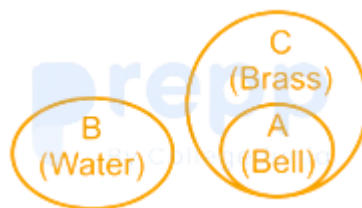
- The ciliary body is a circular structure that produces the fluid in the eye called aqueous humour.
- It also contains the ciliary muscle, which changes the shape of the lens when the eyes focus on a near object and this process is called accommodation.

Lens	It facilitates the Image formation.
Retina	It receives light from lens and covert light energy into Neural Signals
Eyeball	It is structure that houses all the structure that are responsible for vision in humans.

69. Answer: a

Explanation:

We know that "bell" are made of "brass" but we cannot find any relation between "water" and "brass or bell". Thus, the following venn diagram represent relationship between given information.



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

70. Answer: d

Explanation:

- **K. Chandra Shekar Rao**, the Chief Minister of Telangana was honoured with the global Agricultural Leadership Award 2017.
 - This award is given by the Indian Council of Food and Agriculture (IFCA).
 - He belongs to Telangana Rashtra Samiti (TRS) party and its election symbol is CAR.
-

71. Answer: a

Explanation:

- **Associated Chambers of Commerce and Industry** is the full form of ASSOCHAM.
 - ASSOCHAM is headquartered in New Delhi.
 - It was founded in 1920 and It is one of the apex trade associations of India.
 - The organisation represents the interests of trade and commerce in India and acts as an interface between industry, government and other relevant stakeholders on policy issues and initiatives.
-

72. Answer: c

Explanation:

- **Anupam Kher** was the Bollywood actor that received Kala Ratan Award in March 2017.
 - He resigned as the chairman of the film and television institute of India (FTII) in 2018.
 - Anupam Kher was awarded the Padma Shri award in 2004 and the Padma Bhushan award in 2016
-

73. Answer: d

Explanation:

- The Mature Sperm is produced in **Testes**.
- Along with sperm, the male sex hormone Testosterone is produced in testes.
- Testosterone is responsible for puberty in males, mass muscle growth etc.
- Testes are also called Gonads.

Scrotum	• The scrotum helps in maintaining the low temperature of the testes up to 2–2.5 °C lower than the normal internal body temperature which is necessary for spermatogenesis (Sperm Production).
Vas Deferens	• It is a muscular tube that transports sperm from the testes to the penis.
Prostate Gland	• It secretes fluids into the urethra during sperm ejaculation.

74. Answer: d

Explanation:

- Asexual reproduction takes place in **lower animals and plants**.
- It is a type of reproduction in which off springs are produced from a single parent cell and has the same genetic code as the parent.
- The new organisms are produced by somatic cells, hence it has another name called Somatogenic Reproduction.
- It occurs through Mitotic division and fusion of gametes do not takes place.
- Examples of asexual reproduction are plants, Protozoans, Sponges, Planaria etc.

75. Answer: d

Explanation:

⇒ Distance travelled in 2.5 hour = speed $\times$ time = $58 \times 2.5 = 145$ km

⇒ Distance left = $175 - 145 = 30$ km

⇒ time taken in travelling = 2.5 hours + 20 min = 170 min

⇒ Time left = 3.5 hour - 170 min = $210 - 170 = 40$ min = $(\frac{2}{3})$ hour

⇒ Speed = $30 / (\frac{2}{3}) = 45$ km/hr

76. Answer: b

Explanation:

- N Biren Singh was sworn in as the Chief Minister of Manipur in the year 2017.
- He is a member of the Bhartiya Janata Party (BJP).
- He won the 2017 Manipur Legislative Assembly Election from Heingang Assembly Constituency.

77. Answer: a

Explanation:

⇒ Total distance = $23 + 15 = 38$ m

⇒ Total time = $3 + 2 = 5$ sec

⇒ Average speed = Total distance/Total time = $38/5 = 7.6$ m/sec

78. Answer: a

Explanation:

$$\Rightarrow (-12)[11 + \{7 \times (-3)\}] \div [4 \{13 - (-3) \times (-6)\}],$$

$$\Rightarrow (-12)[11 + \{-21\}] \div [4 \{13 - 18\}],$$

$$\Rightarrow (-12)[-10] \div [4 \times (-5)],$$

$$\Rightarrow 120 \div (-20),$$

$$\Rightarrow -6$$

79. Answer: d

Explanation:

Concept :

When a force is applied on an object which cause displacement along the direction of force then the work is said to be done by that force.

The work done by a force is defined as: The product of component of the applied force on the block in the direction of the displacement and the magnitude of this displacement is called work done.

$$\text{i.e., } W = \vec{F} \cdot d\vec{x} = F dx \cos \theta$$

or in terms of magnitude, it can be given as

$$W = F \times s$$

Also, if work is done against the gravitational force the force acting can be given as mass times gravitational force whereas instead of distance, we can express it as height

$$\text{i.e., } W = (mg) \times h = mgh$$

this expression is similar to potential energy for a system

Here both force and displacement will be along the same direction since force is causing this displacement thus Work done is a scalar quantity .

Here,

Force applied on object = F

Displacement of object = dx

Distance travelled by an object = s

The angle between Force and displacement = θ

Explanation:

From the above explanation, we can see that potential energy is the potential to do work and both work and potential energy has the same unit and dimension.

Also, the total amount of work done by the system will directly depend on the amount of potential energy

An **object having the capability to do work** is said to possess potential **energy**

Extra point:

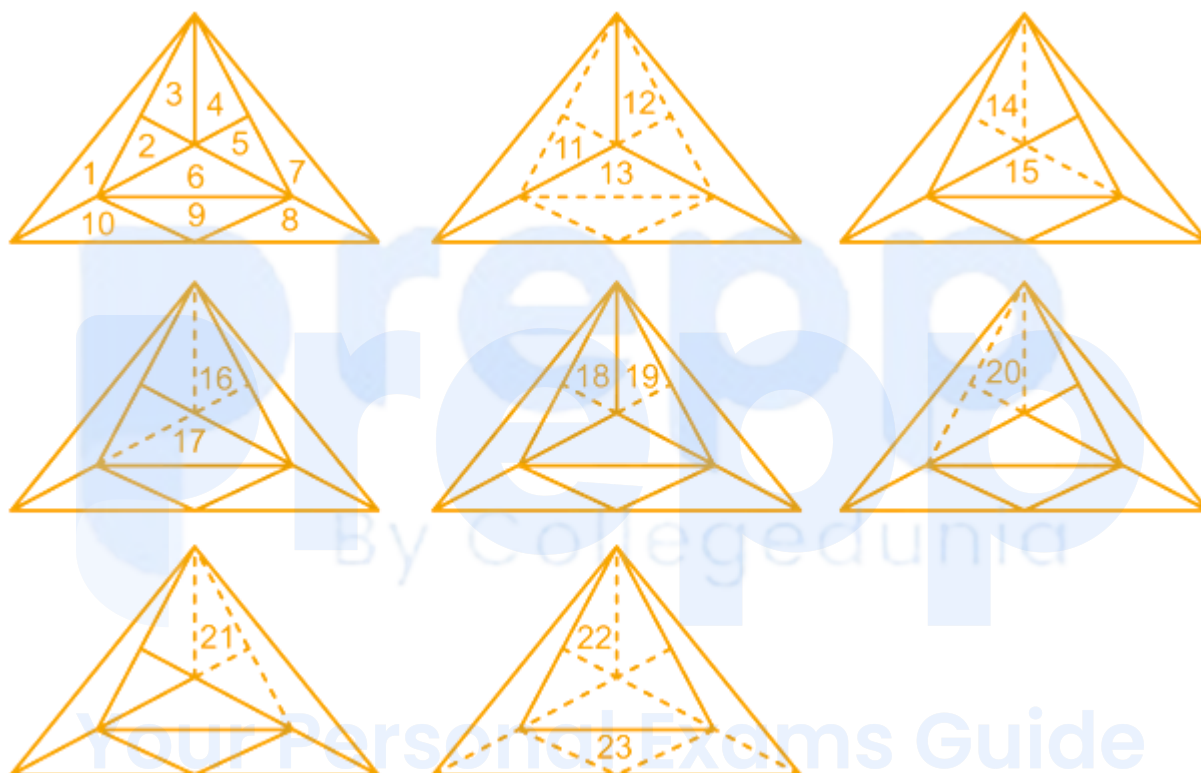
The following table represents the quantity and its formula

Quantity	Formula	Definition
Inertia	-	a tendency to do nothing or to remain unchanged.
Force	$F = \text{mass} \times \text{acceleration}$	A push or pull applied on an object of some mass which causes it to accelerate at the rate a
Energy	$P.E = mgh$, $K.E = \frac{mv^2}{2}$	Energy is a conserved quantity which has a different form, but it is classified based on potential and kinetic energy
Pressure	$P = F/A$	It is defined as the force applied per unit area

80. Answer: b

Explanation:

We can count triangles as given below,



Hence, there are "23" triangles in the given figure.

81. Answer: a

Explanation:

- **Copper** is displaced when zinc is added to the solution of copper sulphate.
- Zinc is more reactive than copper hence copper is displaced by Zinc.
- This reaction is given by $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
- This reaction is an example of a displacement reaction.

- A chemical reaction in which a less reactive element is displaced from its compound by a more reactive element is known as a displacement reaction.

82. Answer: b

Explanation:

- Atomic Radius is measured in **Nanometres** (10^{-9} m).
- Atomic Radius is defined as the shortest distance from Nucleus to its Outermost Orbit.
- It can also be measured in Angstroms ($\text{\AA}$).
- The Atomic radius decreases from left to right and increases from top to bottom in a period in a periodic Table.
- Atomic radii can be measured by X-ray or any other spectroscopic methods.

83. Answer: a

Explanation:

- **Calcium oxide (CaO)** compound is used as a drying agent.
- Drying agent is used to remove water form an organic compound.
- Calcium oxide is used to dry ammonia gas.
- When Limestone (CaCO_3) is heated, it gives Calcium oxide.



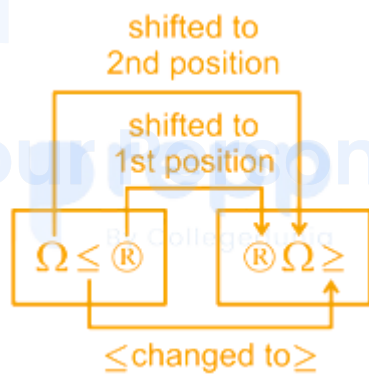
- It also known as quick lime.
- It used for manufacturing of cement, paper, Caustic Soda etc.

Compound	Chemical Formula
Calcium Carbide	CaC_2
Calcium Carbonate	CaCO_3
Gypsum	$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

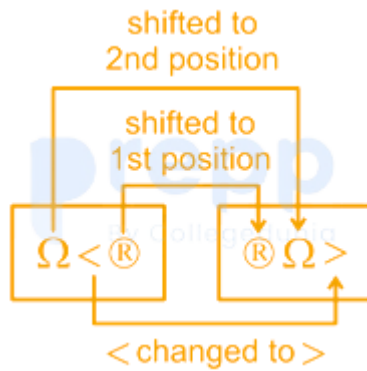
84. Answer: d

Explanation:

The pattern followed here is as follows,



Similarly,



Hence, "option figure C" is the correct answer.

85. Answer: b

Explanation:

The assumption I is talking about the fact that "there are friendly bacteria in the gut". Therefore, assumption I implicit. But we cannot assume that "gut health is foremost for overall health" because only gut health is not responsible for overall health and their no information provided in the statement about "gut health".

Hence, "Only assumption I is implicit".

86. Answer: a

Explanation:

- Mass of the body (m) = 20 kg.
- Height above the ground = 8 m
- The gravity of the earth is taken as 9.8 m/s^2 .
- Potential energy is given by $P.E = m g h$
- Now by substituting the above values, we get

$$= (20) (8) (9.8)$$

$$= 1568 \text{ J}$$

- The potential energy is given by **1568 Joules**.

87. Answer: d

Explanation:

- 1 Kilo Watt Hour = 3.6×10^6 Joules.
- 1 Joule is equal to 1 watt-second.
- Hence 1 kWh is equal to $1 \times 1000 \times 60 \times 60 \Rightarrow 3600000$ J
- It can also be written as 3.6×10^6 Joules.
- Hence 1kWH is equal to **3.6×10^6 Joules**.

88. Answer: a

Explanation:

In the question figure, three holes are punched in a pentagon-shaped plate.

The option figure consisting of three holes in a pentagon plate with an orientation resembling the question figure is option figure B.

Hence, **option figure B** is the correct answer.

89. Answer: b

Explanation:

$$\Rightarrow \text{Average price of 1}^{\text{st}} \text{ year} = (40 + 40 + 40)/3 = 40$$

$$\Rightarrow \text{Average price in 2}^{\text{nd}} \text{ year} = (35 + 50 + 35)/3 = 40$$

$\therefore$ There is no difference in the average price

90. Answer: d

Explanation:

the lateral mirror image of 'TEETH' as shown in the following figure,



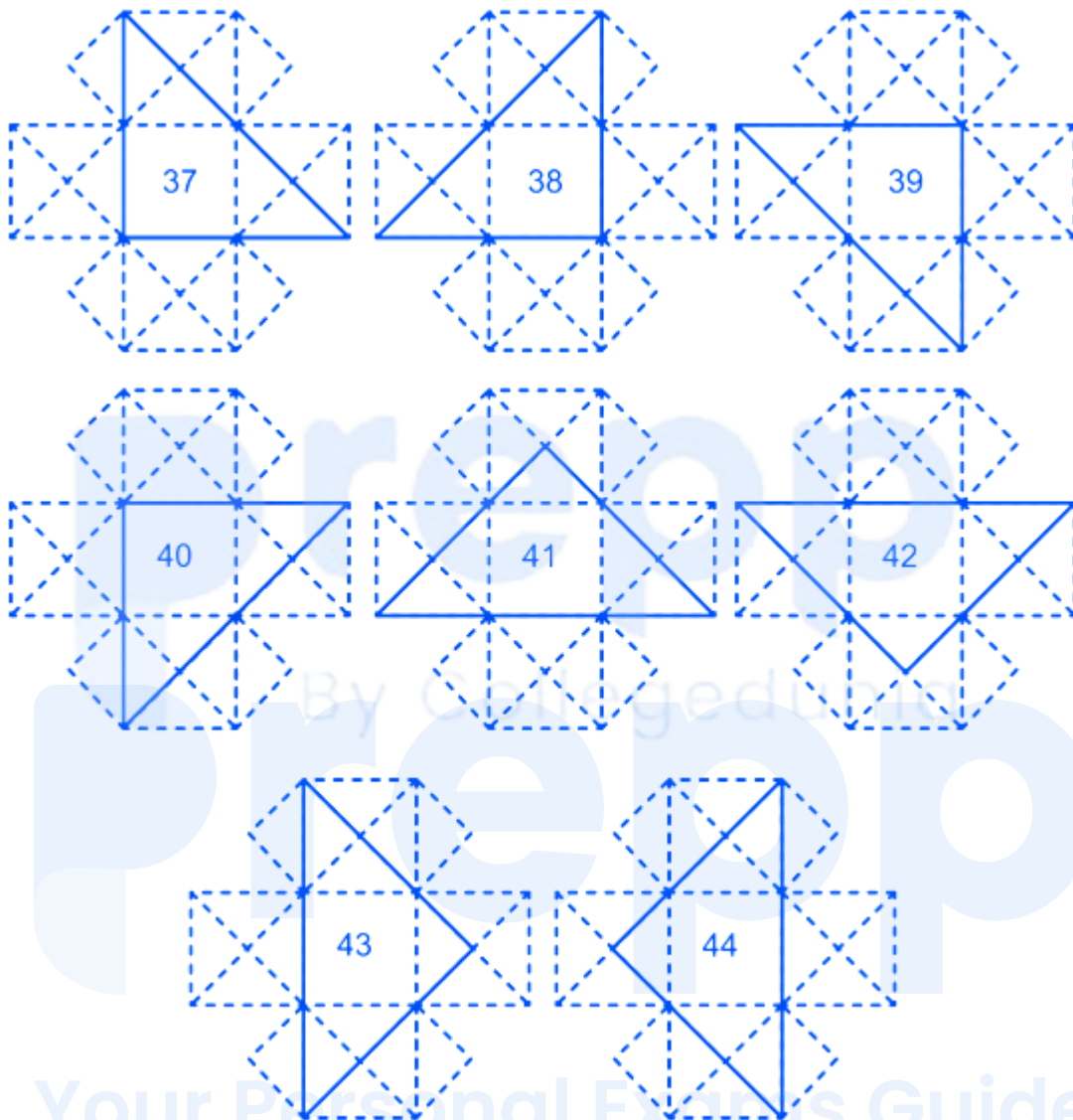
Hence, "option figure B" is the correct answer.

91. Answer: a

Explanation:

We can count triangles as given below,





Hence, there are "44" triangles in the given figure.

92. Answer: c

Explanation:

On folding the given transparent sheet, the following figure will be seen,



Hence, "option figure B" is the correct answer.

93. Answer: a

Explanation:

We know that 2016 is a leap year,

Therefore, number of days in a leap year = 366 days

Number of days in 52 weeks $\Rightarrow 52 \times 7 = 364$ days

Remaining days $\rightarrow P$

days = $366 - 364$

= 2 days

Therefore, P days = 2 days.

Hence, "2" is the correct answer.

94. Answer: b

Explanation:

Using reduced form,

$\Rightarrow 32/88 = (4 \times 8) / (11 \times 8) = 4/11$

$\Rightarrow 84/219$ has no reduced form

$\Rightarrow 64/176 = (4 \times 16) / (4 \times 11) = 4/11$

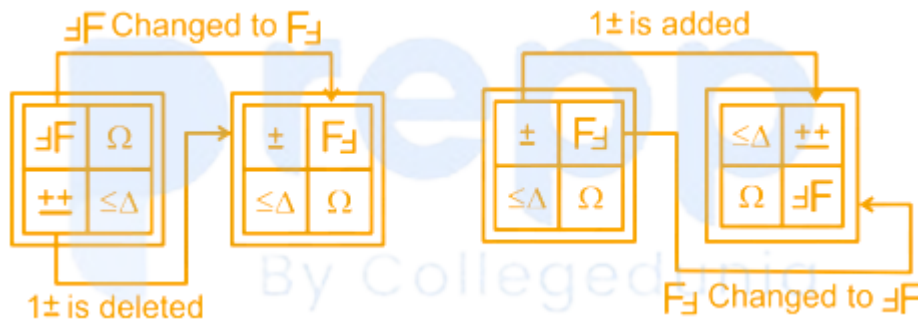
$\Rightarrow 20/55 = (4 \times 5) / (11 \times 5) = 4/11$

$\therefore 84/219$ is not equal to $4/11$

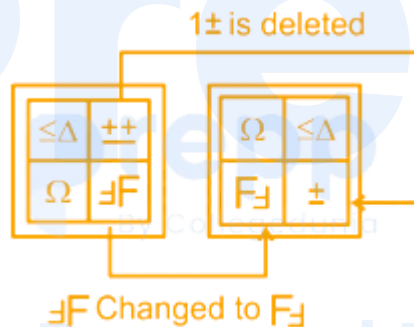
95. Answer: c

Explanation:

The pattern followed here is as follows,



Similarly,



Hence, "option figure D" is the correct answer.

96. Answer: a

Explanation:

⇒ Time after which the 3 clocks will ring together = LCM (2, 4 and 6) = 12 hours

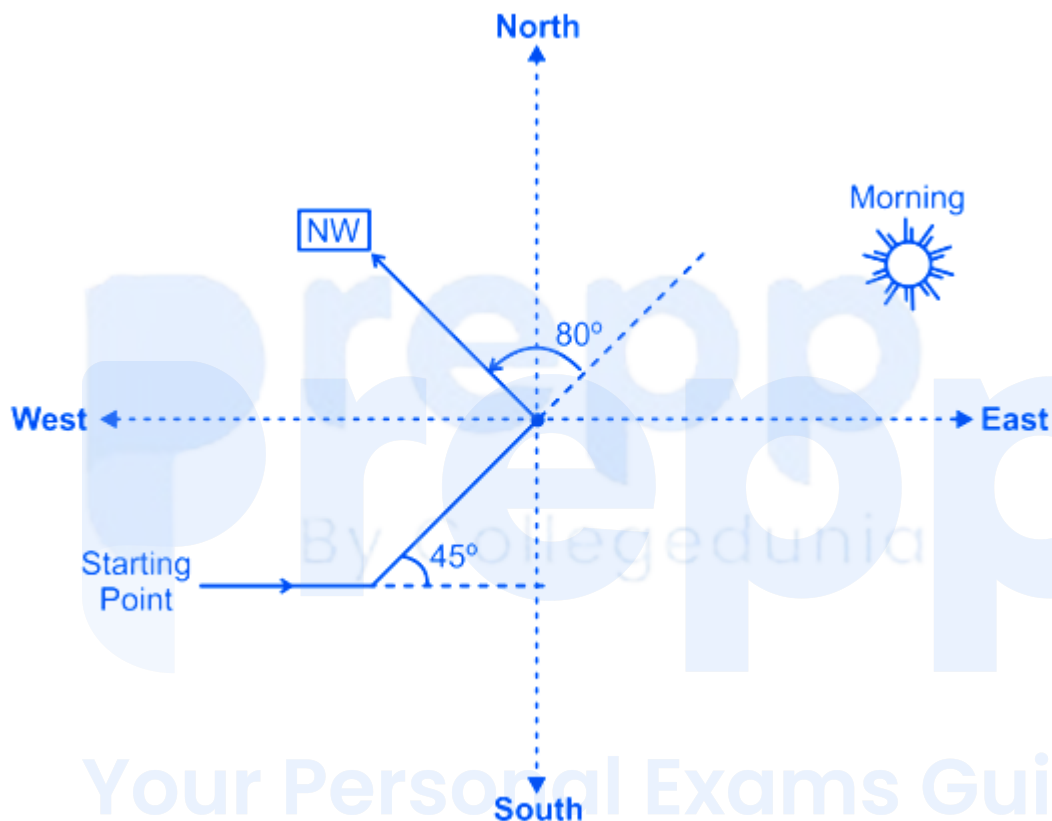
⇒ Total time = 3 days = 3 × 24 hours = 72 hours

⇒ Number of times the alarms will ring together = 72/12 = **6 times**

97. Answer: c

Explanation:

From the given information we can draw a diagram as given below,



Clearly, Meet is facing in the North-West direction.

Hence, "North – West" is the correct answer.

98. Answer: c

Explanation:

- As of August 2018, **Law and Telecommunications** is the portfolio held by the Union Minister Ravi Shankar Prasad.

- But as of May 2019, The Union Minister Ravi Shankar Prasad held the post of Minister of Electronics and Information Technology, Ministry of Law and Justice.
 - As of May 2019, Ministry of Telecommunications is led by Minister of State (Independent Charge) Manoj Sinha.
-

99. Answer: b

Explanation:

In the question figure, a star is attached to a rectangle which has a triangle inscribed in it.

The option figure which consists of the same figure and orientation is option figure C.

Hence, **option figure C** is the correct answer.

100. Answer: b

Explanation:

Using BODMAS rule,

$$\Rightarrow (-18) [36 \div \{7 - (-2)\}] \div [(-4)\{19 - (-3) \times (-5)\}]$$

$$\Rightarrow (-18) [36 \div 9] \div [(-4)\{19 - 15\}]$$

$$\Rightarrow (-18) \times 4 \div [(-4) \times 4]$$

$$\Rightarrow (-72) \div (-16)$$

$$\Rightarrow 4.5$$