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- RRB NTPC
- SSC GD
- RBI GRADE B
- RBI Assistant
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RRB Group D 2018 Previous Year Paper (19-Sep-2018) (Shift 2)

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.

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CBT

1. To change a temperature from the Kelvin scale to the Celsius-scale, you have to : **(+1, -0.33)**

   a. multiply the given temperature by 273

   b. divide the given temperature by 273

   c. subtract 273 from the given temperature

   d. add 273 to the given temperature

---

2. The sum of the lengths of the edges of a cube is equal to three-fifths of the perimeter of a square. If the numerical value of the volume of the cube is equal to the numerical value of the area of the square, the perimeter of the square is: **(+1, -0.33)**

   a. 360 units

   b. 480 units

   c. 500 units

   d. 300 units

---

3. Read the statements below followed by two arguments. **(+1, -0.33)**

   Statement:

   Should Yoga be made compulsory in schools?

   Arguments:

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1. Yes, it would help in overall development of a child, both physically and mentally
2. No, parents will not object to their children learning Yoga

Which argument(s) of the below is/are strong in the context of the statement?

a. Only argument I is strong

b. Neither argument I nor II is strong

c. Both arguments I and II are strong

d. Only argument II is strong

---

4. Consider a planet whose mass and radius are one-third the mass and radius of the Earth. If g is the value of acceleration due to gravity on the earth, then its value on the planet will be__ **(+1, -0.33)**

a. 9g

b. 3g

c. 1/9 g

d. 1/3 g

---

5. During the free fall of an object, which of the following energies increases at any point in its path? **(+1, -0.33)**

a. Mechanical energy

b. Chemical energy

c. Potential energy

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d. Kinetic energy

---

6. Uma arranges for a terrace party. She divides the total expected expenditure into 5 broad segments. Here is the distribution: **(+1, -0.33)**

Expense Segments	%Expense
1	30
2	20
3	10
4	25
5	15

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If she spends Rs. 850 on segment 3, what will be her total expense on segment 2 and segment 5?

a. Rs. 1795

b. Rs. 2975

c. Rs. 1175

d. Rs. 1275

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7. In the last ten years, FDI inflows are highest in which sector of India? **(+1, -0.33)**

   a. Services

   b. food processing

   c. Telecommunications

   d. Pesticides

8. Mahima started a journey 12 minutes late and as a result, had to drive @54 km/hr instead of @45 km/hr to reach on time. Find the distance covered during the journey. **(+1, -0.33)**

   a. 67.5 km

   b. 75 km

   c. 90 km

   d. 54 km

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9. $0.\overline{047619},$ when written as a vulgar fraction, is equal to **(+1, -0.33)**

   a. 1/19

   b. 1/23

   c. 1/17

   d. 1/21

10. Name the country which will host the 2019 Combined World cup for shooting? **(+1, -0.33)**

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a. Sri Lanka

b. Nepal

c. Pakistan

d. India

---

11. Consider the following question and statements and decide which of the statements is sufficient to answer the question. **(+1, -0.33)**

What is the total weight of 10 boxes of Mangoes? Each of them weighs equal.

Statements:

1. One-third of each boxes weight is 12 kg

2. Total weight of 6 boxes is 72 kg more than the total weight of 4 boxes

a. Statement 1 and 2 are not sufficient

b. Statement 1 alone is sufficient

c. Statement 2 alone is sufficient

d. Either of the statements 1 or 2 is sufficient

---

12. Which assumptions are implied from the below statement **(+1, -0.33)**

Statement: "The real impact of water crisis would be felt in 2 years," Says the Panchayat chief.

Assumptions:

I. The water level has started depleting

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II. Water bodies need maintenance

a. Only assumption II is implicit

b. Both assumptions I and II are implicit

c. Only assumption I is implicit

d. Neither assumption I nor II is implicit

---

13. The kinetic energy of the particles is maximum in the case of _____. **(+1, -0.33)**

a. liquids

b. gases

c. solids

d. plasma

---

14. Read the statements and conclusions below. **(+1, -0.33)**

Statements:

No cats are lions

All lions are majestic animals

Conclusions:

1. All majestic animals are lions

2. Some majestic animals are lions

3. No majestic animal is cat

Which conclusion(s) follow (s) the given statement?

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a. Only conclusion 1 follows

b. Only conclusion 3 follow

c. All the conclusions follow

d. Only conclusion 2 follows

---

15. To push which initiative is the Govt. of India planning 'rent a roof policy'? **(+1, -0.33)**

a. To Promote Foreign Travellers and Students

b. To Promote Solar Power Generation

c. To Abolish Homelessness

d. To Promote Hospitality

---

16. Who won the Golden Glove Award at the 2018 FIFA World Cup event? **(+1, -0.33)**

a. Rani Patricio

b. Hugo Lloris

c. Thibaut Courtois

d. Fernando Muslera

---

17. From a cloth store, 15 customers bought an orange dress, 15 bought red dress, 20 bought a blue dress, 2 bought all the three coloures and 8 bought at least two of these. How many bought at least one dress from the store? **(+1, -0.33)**

a. 25

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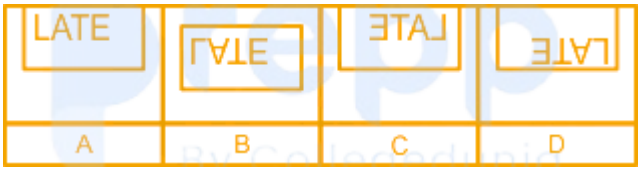
b. 39

c. 40

d. 45

---

18. What is the lateral mirror image of LATE? **(+1, -0.33)**



a. A

b. D

c. B

d. C

---

19. If the number x3208 is divisible by 3, what can be the face value of x? **(+1, -0.33)**

a. 6

b. 5

c. 4

d. 3

---

20. Which State Election Commission had decided in January 2017 to print voters list in Urdu as well? **(+1, -0.33)**

a. Bihar

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b. Himachal Pradesh

c. Punjab

d. Uttar Pradesh

---

21. Why does a stone thrown up into the sky fall back to the earth? **(+1, -0.33)**

a. Work done by the object pulls it down towards the Earth.

b. There exists a centripetal force that pulls it down towards the Earth.

c. There is a downward pressure that pulls it down towards the Earth.

d. There exists a force that pulls it down towards the Earth.

---

22. A car is moving at a high speed. Which energy does it possess? **(+1, -0.33)**

a. Potential energy

b. Frictional energy

c. Gravitational force

d. Kinetic energy

---

23. When did the British make English the medium of instruction in India? **(+1, -0.33)**

a. 1835

b. 1834

c. 1836

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d. 1833

---

24. Find the next term in the below series. **(+1, -0.33)**

3E, 9G, 27I,

a. 80K

b. 81L

c. 80L

d. 81K

---

25. Which of the following correctly represents the relationship between **(+1, -0.33)**

1. Woollen sweater
2. Cotton
3. Wool

a.

b.

c.

d.

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26. _____ is used as a fuel in cars with petrol. **(+1, -0.33)**

a. Ethanol

b. Alcohol

c. Benzene

d. Butane

---

27. Three identical resistors, each of 6, are connected in parallel. The equivalent resistance of the combination will be _____. **(+1, -0.33)**

a. 6Ω

b. 18Ω

c. 2Ω

d. 3Ω

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28. Solder is an alloy of _____. **(+1, -0.33)**

a. Cu and Sn

b. Ni, Cu and Zn

c. Cu and Zn

d. Pb and Sn

---

29. Pratyay bought a set of cups for 195, but then had to sell it later to clear old stocks for 171.6 What is the loss percentage? **(+1, -0.33)**

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a. 12

b. 14

c. 13

d. 15

---

30. A and B can complete a task together in 15 days, while A alone can complete it in 18.75 days. They start working together but A leaves 12.5 days before the completion of the work. For how many days did A and B work together? **(+1, -0.33)**

a. 10

b. 13.75

c. 12.5

d. 11.25

---

31. Which of the fractions given below, when added to 13/5, gives 1? **(+1, -0.33)**

a. 8/15

b. – 7/5

c. – 26/10

d. – 48/30

---

32. When a ray of light travels from a denser medium to a rarer medium, the ray will: **(+1, -0.33)**

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a. slow down and bend away from the normal

b. slow down and bend towards the normal

c. speed up and bend away from the normal

d. speed up and bend towards the normal

---

33. Who portrayed the character of Allauddin Khilji in the controversial movies 'Padmavat'? **(+1, -0.33)**

a. Ranbir Kapoor

b. Shahid Kapoor

c. Rana Daggubati

d. Ranveer Singh

---

34. The elements present in any one group have the same_____. **(+1, -0.33)**

a. atomic size

b. number of valence electrons

c. atomic number

d. atomic mass number

---

35. The mean score of three students in a test out of 45 is 38. Two new students take the test. What is the lowest mark that can be obtained by the newcomer who scores less than the other new student for the overall average of the five students to rise to 40? **(+1, -0.33)**

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a. 40

b. 42

c. 41

d. 43

---

36. The initial ratio of sugar and flour in a recipe was 17:28 With 27 kg of the recipe, Sunita added more flour to make the sugar to flour ratio 2:5 How much flour did Sunita later add? **(+1, -0.33)**

a. 8.1 Kg

b. 8.5 Kg

c. 8.7 Kg

d. 8. Kg

---

37. The LCM of 112, 72 and 90 is? **(+1, -0.33)**

a. 7560

b. 2520

c. 5040

d. 3780

---

38. As the pH value increases from 7 to 14, it represents: **(+1, -0.33)**

a. an increase in the OH- ion concentration

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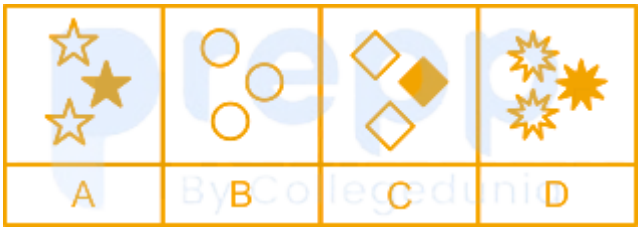
b. no change in the H+ ion concentration

c. an increase in the H+ ion concentration

d. a decrease in the OH- ion concentration

---

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



a. A

b. B

c. C

d. D

---

40. How many right angled triangles are there in this figure? **(+1, -0.33)**

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a. 4

b. 6

c. 7

d. 8

---

41. An object travels northwards with a constant velocity. The net force acting on the object will be (+1, -0.33)

a. towards the south

b. towards the east

c. zero

d. towards the north

---

42. Which of the below does not belong to this group? (+1, -0.33)

A) Broccoli

B) Carrot

C) Ridge gourd

D) Bitter gourd

a. A

b. B

c. D

d. C

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43. An object travel 18 m in 4 s and then another 16 m in 2 s. What is the average speed of the object? **(+1, -0.33)**

a. 5067 s^{-1}

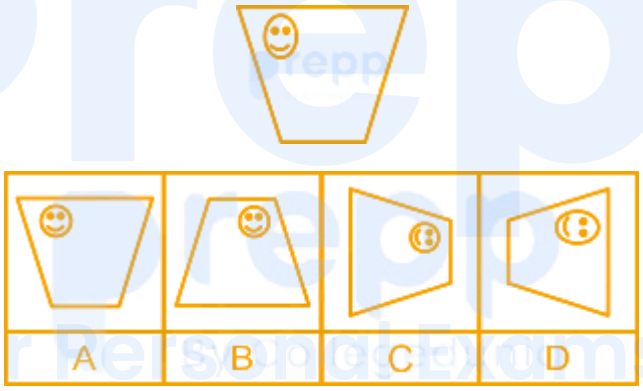
b. 6.67 ms^{-1}

c. 5.67 m

d. 5.67 ms^{-1}

---

44. Which pattern, of the ones shown in the below options, resembles closest to: **(+1, -0.33)**



a. D

b. B

c. A

d. C

---

45. Shoes are related to Legs in the same way Gloves are related to: **(+1, -0.33)**

a. Hands

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b. Wrists

c. Knees

d. Head

---

46. Consider the given statements to be true even if they seem to be at variance with the commonly known facts and decide which of the given conclusions logically follow (s) from the statements. **(+1, -0.33)**

Statements:

All dresses are clothes.

All clothes are yarns.

Conclusions:

1. All dresses are yarns.

2. Some yarns are clothes.

a. Only conclusion 2 follows

b. Only conclusion 1 follows.

c. No conclusions follow.

d. All the conclusions follow.

---

47. What sport is Limba Ram known for? **(+1, -0.33)**

a. Boxing

b. Archery

c. Wrestling

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d. Athletics

---

48. Which state government has recently set up toll-free helpline number '14417' to provide information to students **(+1, -0.33)**

a. Rajasthan

b. Tamil Nadu

c. Gujarat

d. Kerala

---

49. A source of 6 V maintains a current of 0.5 A in a resistor. The power supplied by the source to the source to the resistor will be _____. **(+1, -0.33)**

a. 0.5 W

b. 3.0 W

c. 1.0 W

d. 1.5 W

---

50. The Maharashtra government launched the Asmita Yojana on the occasion of_____. **(+1, -0.33)**

a. International Cancer Day

b. International Men's Day

c. International Aids Day

d. International Women's Day

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51. Tooth decay starts when the pH of the mouth is: **(+1, -0.33)**

a. in the range 5.5 – 6.5

b. less than 5.5

c. is in the range of 8 - 9

d. is in the range of 6.5 – 7.5

---

52. Find the next term in the below series. **(+1, -0.33)**

25, 31, 38, 46, _____.

a. 58

b. 55

c. 54

d. 60

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53. The transmission of traits, physical or mental, from parents to offspring is called____ **(+1, -0.33)**

a. Progeny

b. heredity

c. evolution

d. variation

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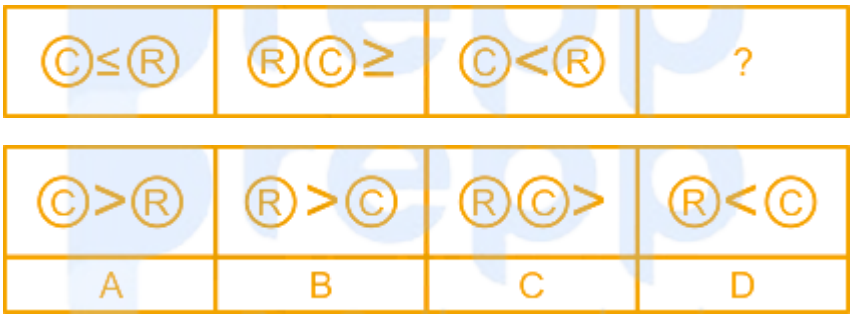
54. What will come in the place of question mark in the below series? **(+1, -0.33)**



a. C

b. A

c. B

d. D

---

55. Which tissue helps in the transportation of the material away from the photosynthetic parts of the plants? **(+1, -0.33)**

a. Xylem vessels

b. Meristematic tissue

c. phloem

d. Ground tissue

---

56. Puni is the daughter of Avani and Amit is the son of Avani's brother. How is Amit's father related to Puni? **(+1, -0.33)**

a. Brother

b. Father

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c. Cousin

d. Uncle

---

57. The third Indian Council for Cultural Relations (ICCR) distinguished Indologist award for the year 2017 was awarded to _____. **(+1, -0.33)**

a. Kamil Zvelebil

b. Professor Hiroshi Marui

c. Bettina Baumer

d. Madeleine Biardeau

---

58. Who launched the Pulse Polio programme for 2018? **(+1, -0.33)**

a. Ram Nath Kovind

b. Narendra Modi

c. Venkaiah Naidu

d. Ahmed Ansari

---

59. The given date below shows information about the manufacturing of engine vehicles for a company "ABC" over the last 5 years. **(+1, -0.33)**

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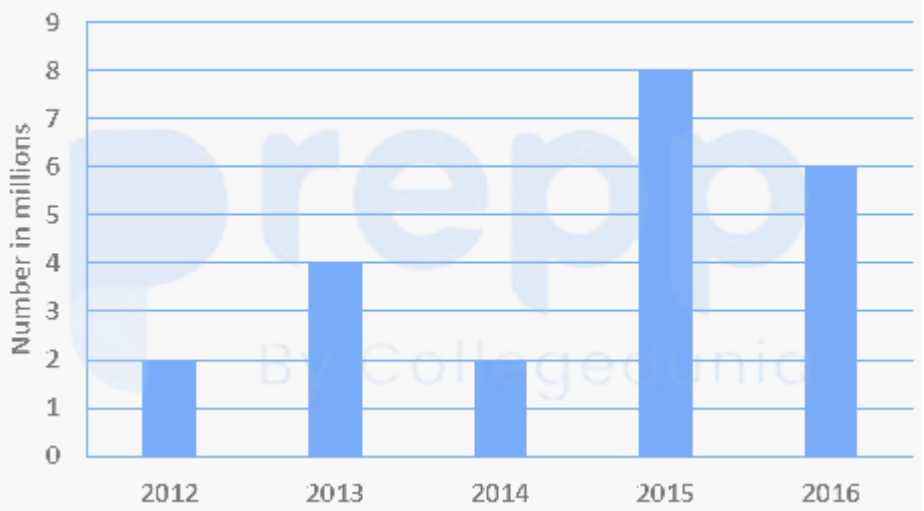

In which year was the production of engines were the highest?

a. 2016

b. 2015

c. 2014

d. 2012

---

60. Which of the following is the chief banker to the Government of India? **(+1, -0.33)**

a. Punjab National Bank

b. State Bank of India

c. Reserve Bank of India

d. Bank of India

---

61. Consider the given statements and decide which of the conclusions logically follow follow from the statements. **(+1, -0.33)**

Statement:

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All laptops are electronics.

All electronics emit radiation.

Conclusions:

1. All laptops emit radiation.

2. Some radiation is due to electronics.

a. None of the conclusions follow

b. Only conclusion 2 follows

c. All the conclusions follow

d. Only conclusion 1 follows

---

62. One pipe can fill an empty cistern in 7.8 hours while another can drain the cistern when full in 19.5 hours. Both the pipes were turned on when the cistern was half-empty. How long will it take for the cistern to be full? **(+1, -0.33)**

a. 3.9 hours

b. 7.8 hours

c. 6.5 hours

d. 5.2 hours

---

63. 17 trainees can do as much work as 4 experts can do in a day. It takes 12 experts and 9 trainees 5 days to dig a pond. How many trainees will one need alongside 4 experts to dig a similar pool in 15 days? **(+1, -0.33)**

a. 3

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b. 5

c. 4

d. 6

---

64. Indicate the wrong pair among the following: **(+1, -0.33)**

a. Khatri – Iron

b. Kashmir - Saffron

c. Moradabad – Brass

d. Surat – Diamonds

---

65. The boundary line between India and China is called ____ **(+1, -0.33)**

a. Radcliffe Line

b. Line of Control

c. Palk Strait

d. McMahon line

---

66. Who is the author of the book 'Jinnah Often Came to Our House"? **(+1, -0.33)**

a. Kiran Doshi

b. Sunita Narain

c. Dinanath Gopal Tendulkar

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d. Sowvendra Shekhar

---

67. Who was conferred with the 2018 Padma Shri award in the field of Art-Acting from Maharashtra? **(+1, -0.33)**

a. SS Rathore

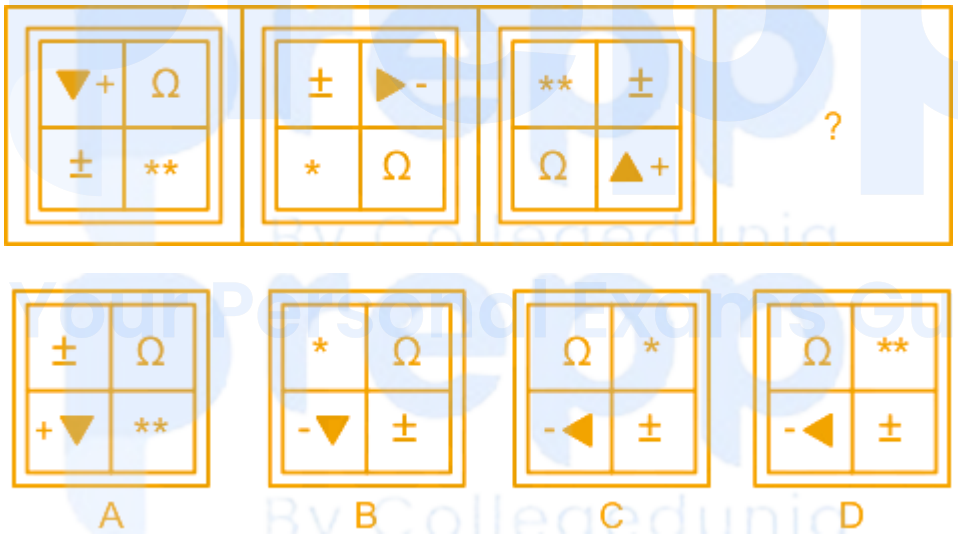
b. Lakshmi Kutty

c. Manoj Joshi

d. Subhashini Mistry

---

68. Which figure follows next in the below series? **(+1, -0.33)**



a. B

b. A

c. D

d. C

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69. The seed of a plant contains the future plant in the form of a/an _____. (+1, -0.33)

a. embryo

b. ovule

c. stigma

d. ovary

---

70. Shiva switched on a bulb at 1 : 37 : 39 hours and switched it off on the same day at 11 : 28 : 32 hours. For how long was the bulb in switched-on mode? (+1, -0.33)

a. 10 hours 09 mins 54 secs

b. 9 hours 09 mins 06 secs

c. 9 hours 50 mins 53 secs

d. 12 hours 40 mins 07 secs

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71. What is the square root of 11881? (+1, -0.33)

a. 111

b. 109

c. 119

d. 101

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

Statement:

"Monkey is the funniest of all animals, as they mimic human behaviour", says Z to A.

Conclusions:

I. Z is amazed at monkeys' behaviour.

II. A likes monkeys.

a. Conclusion I alone follows.

b. Neither conclusion I nor II follows.

c. Both the conclusions follow

d. Conclusion II alone follows.

---

73. If, in a code language, LIQUID is written as PMUYMH, then how SPACE would be written in that code language? **(+1, -0.33)**

a. WTBGI

b. WEIGH

c. TEGIW

d. WTEGI

---

74. In a test, Chitra secured 58.5 marks that were also equivalent to obtaining 78% marks. How many marks was the test out of? **(+1, -0.33)**

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a. 85

b. 65

c. 80

d. 75

---

75. Which of the following scientists suggested a mechanism for organic evolution in his book "Origin of Species". (+1, -0.33)

a. Carl Woese

b. Ernst Haeckel

c. Robert Whittaker

d. Charles Darwin

---

76. _____was the founder of the City of Agra. (+1, -0.33)

a. Sikandar Lodi

b. Abraham Lodi

c. Mumtaz Mahal

d. Shah Jahan

---

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

Statement:

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"Mobile phones are addictive", Y said to Z.

Assumptions:

I. Mobile phones have many attractive features and games.

II. People spend more time with their mobile phones.

a. Only II is implicit.

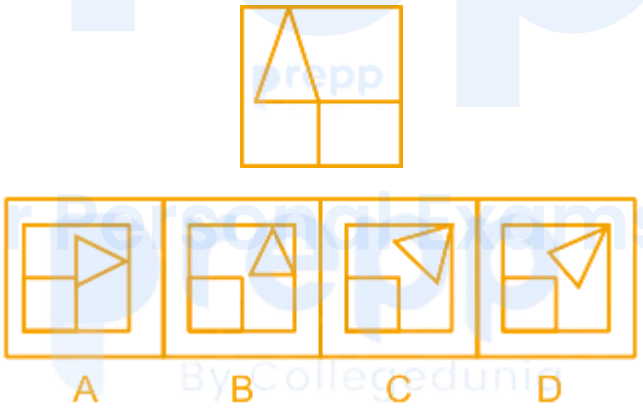
b. Neither I nor II is implicit.

c. Both I and II are implicit.

d. Only I is implicit.

---

78. Which pattern, of the ones shown in the below options, resembles closest to: **(+1, -0.33)**



a. D

b. B

c. C

d. A

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79. The product of two numbers is 0.646 and one of the numbers is 1.7 what is the other number? **(+1, -0.33)**

a. 0.38

b. 0.038

c. 3.8

d. 38

---

80. Read the statement below along with two conclusions. **(+1, -0.33)**

Statement: Naina looks at Sunita and compliments her looks.

Conclusions:

I. Sunita is more beautiful than Naina

II. Naina is impressed by Sunita's dressing sense

Which conclusion(s) follow (s) the given statement?

a. Conclusion I alone follows

b. Neither I nor II follows

c. Both the conclusions follow

d. Conclusion II alone follows

---

81. In July 2018, which country was formally announced as the 69th shareholder of the European Bank for Reconstruction and Development (EBRD)? **(+1, -0.33)**

a. India

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b. Pakistan

c. Sri Lanka

d. Germany

---

82. The mean of the three numbers is 21. The range of this data set is 19 while the difference between the two smallest numbers is 5. Greatest of the three numbers is **(+1, -0.33)**

a. 28

b. 32

c. 26

d. 29

---

83. An object is placed in front of a concave mirror at a point between its curvature and focus. The image will be formed at: **(+1, -0.33)**

a. A point between the focus and the centre of curvature

b. The centre of curvature

c. A point beyond the centre of curvature

d. The focus

---

84. 2/3 of my current age is the same as 3/4 of that of one of my cousins'. **(+1, -0.33)**

My age three years ago will be his age four hence. My current age is _____ years.

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a. 81

b. 42

c. 63

d. 72

---

85. Which of the Following Does not Belong to this group? **(+1, -0.33)**

A.Mauve

B.Purple

C.Green

D.Pole

a. D

b. B

c. C

d. A

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86. Which period of the modern periodic table has the minimum number of shells? **(+1, -0.33)**

a. 3

b. 6

c. 4

d. 5

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87. Which of the following classification of elements is based on atomic numbers? **(+1, -0.33)**

a. Dobereiner's Triads

b. Modern periodic table

c. Newland's Octaves

d. Mendeleev's periodic table

---

88. If $2x^2 + ax + b$, when divided by $x - 3$, leaves a remainder of 31, $x^2 + bx + a$, when divided by $x - 3$, leaves a remainder of 24, then $a + b$ equals. **(+1, -0.33)**

a. 7

b. -7

c. 23

d. -23

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89. Pavan sold an item at a loss of 12.5% If he could have sold it for Rs. 56 more, he would have made a profit 22.5% What should be the selling price of the item to make a profit of 25%? **(+1, -0.33)**

a. Rs. 200

b. Rs. 185

c. Rs. 182

d. Rs. 190

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90. Nanu and Ninu start cycling early in the morning in the opposite direction to each other. Nanu goes in the direction of Sun. After sometime, Nanu takes a left turn and Ninu takes a right turn. They are now travelling parallel to each other. Towards which direction are they moving? **(+1, -0.33)**

a. East

b. North

c. West

d. South

---

91. Two objects A and B are moving with the same velocity. The mass of object A is twice that of B. The ratio of the kinetic energy of A to that of B, (K_A/k_B) will be ____. **(+1, -0.33)**

a. 4

b. 2

c. 1

d. 1/2

---

92. $140 \div [61 - \{36 - (40 - 60 \div 12 \times 6)\}] = ?$ **(+1, -0.33)**

a. 2

b. 5

c. 4

d. 10

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93. Goitre is caused due to the deficiency of _____. **(+1, -0.33)**

a. iodine

b. iron

c. sodium

d. calcium

---

94. The number of diagonals in a 27-sided polygon is **(+1, -0.33)**

a. 325

b. 320

c. 322

d. 324

---

95. The time duration that would elapse between elapse between 12:46 p.m. of 15^{th} July 2019 and 12:38 p.m. of 16^{th} July 2020 is **(+1, -0.33)**

a. 367 days 8 mins

b. 366 days 8 mins

c. 366 days 23 hours 52 mins

d. 365 days 23 hours 52 mins

---

96. Which of the following India State Political parties is led by Omar Abdullah? **(+1, -0.33)**

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a. Jammu & Kashmir State Conference

b. Jammu & Kashmir National Panthers Party

c. Jammu & Kashmir National Conference

d. Jammu and Kashmir People's DemocraticParty

---

97. $77 \div [46 - \{66 - (52 - 63 \div 9 \times 3)\}] = ?$ **(+1, -0.33)**

a. 5

b. 6

c. 11

d. 7

---

98. What is the next term in the below series? **(+1, -0.33)**

3T, 3A, 6S, 6B, 12R, 12C,?

a. 24T

b. 24Q

c. 24S

d. 24U

---

99. A company's expenditure heads are given as follows (all figures are in lakhs of rupees) **(+1, -0.33)**

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Year	Salary	Bonus	Taxes	Interest On loans
Year 1	200	10	70	20
Year 2	200	10	70	22
Year 3	450	10	120	20

The total expenditure of Year 1 was approximately what percent of the total expenditure of Year 3?

a. 50%

b. 5%

c. 100%

d. 0.5%

---

100. If sec θ + tan θ = 12.5, then sec θ − tan θ = ? **(+1, -0.33)**

a. 0.4

b. 1

c. 0.8

d. 0.08

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Answers

1. **Answer: c**

Explanation:

CONCEPT :

Celsius scale:

- In this scale, a lower fixed point (ice point) is designated as 0° and the upper fixed point(steam point) is designated as 100° .
- The temperature measured on this scale was all in degree Celsius (° C) .

Fahrenheit scale:

- On this scale of the temperature scale, the melting point of ice is considered to be 32° F and boiling point of water is 212° F .
- The change in temperature of 1° F corresponds to a change of less than 1° C on the Celsius scale .

Kelvin scale:

- We also know the Kelvin temperature scale as the thermodynamic scale .
- On the Kelvin scale, the boiling point of the water is considered to be 373 K and its freezing point is 273 K
- Whereas it was assumed that at 0 K there is no relative motion of particles,
- The change in temperature of 1° K corresponds to a change of less than 1° C on the Celsius scale .

Whereas all these units of temperatures are related to each other by the following relationship:

$\frac{F-32}{9} = \frac{C}{5} = \frac{K-273}{5}$

Here,

The temperature in degree Celsius scale = C

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The temperature in degree Kelvin scale = K

The temperature in degree Fahrenheit scale = F

EXPLANATION :

Whereas the relation between degree Celsius and Kelvin scale can be expressed as:

K - 273 = C

So, to change the temperature from the Kelvin scale to Celsius you have to subtract 273 from the given temperature.

The correct answer is Option 3.

---

2. Answer: c

Explanation:

Let, length of edge of a cube = x unit

Length of side of a square = a unit

Number of edges of a cube = 12

According to the question,

$\Rightarrow 12x = 4a \times 3/5$

$\Rightarrow a = 5x$ ..... (1)

According to the question,

$\Rightarrow x^3 = a^2$..... (2)

From (1) and (2) we get,

$\Rightarrow x^3 = (5x)^2$

$\Rightarrow x^3 = 25x^2$

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⇒ x = 25

∴ Length of side of the square = a = 5 × 25 = 125 units

∴ Perimeter of the square = 4 × 125 = 500 units

---

3. **Answer: a**

Explanation:

(Argument – a reason or set of reasons given in support of an idea, action or theory)

Yes, it would help in overall development of a child, both physically and mentally.

The argument points out the benefits of practicing yoga.

Therefore, argument I is strong.

Parents will not object means they will support if school make yoga compulsory for students.

A decision cannot be considered right just because it is supported by parents.

Therefore, argument II is not strong.

Hence, only argument I is strong.

---

4. **Answer: b**

Explanation:

- Given- A planet whose mass and radius are one-third the mass and radius of the earth and g is the value of acceleration due to gravity on the earth.
- Acceleration due to gravity- It is the acceleration of free-fall of the object under the influence of the gravity of the planet.
- Please see the formula for calculating acceleration due to gravity:-

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- **$g=GM/R^2$. G= Gravitational constant, M= Mass of the earth, R=Radius of the earth.**
- To find the value of g for the given planet, we can put the values with respect to the planet earth-

$g'=G(M/3)/(R/3)^2$.

- g' of the given planet would be $3GM/R^2$.

It is clear that g' (acceleration due to gravity of a given planet) is three times the g(acceleration due to gravity of the earth).

- $g'=3g$.

---

5. **Answer: d**

Explanation:

- During the free fall of an object, Kinetic energy increases at any point in its path.
- Please note that energy can neither be created nor be destroyed. It only changes from one form to another.
- The kinetic energy is the energy possessed by an object by virtue of being in motion.
- Gravitational potential energy is the energy which an object possesses because of its position in a gravitational field. The higher the object, the more is the gravitational potential energy and the lower the object, the less is the gravitational potential energy.
- When an object falls from a height, the kinetic energy increases and gravitational Potential energy decreases. Hence, the conservation of energy is there.
- If an object is thrown upwards, the kinetic energy would decrease and gravitational Potential energy would increase. Hence, the conservation of energy is again there.

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6. **Answer: b**

Explanation:

Let, her total expense = Rs 100x

∴ Expenditure on segment 3 = Rs (100x × 10/100) = Rs 10x

∴ Expenditure on segment 2 = Rs (100x × 20/100) = Rs 20x

∴ Expenditure on segment 5 = Rs (100x × 15/100) = Rs 15x

According to the question,

⇒ 10x = 850

⇒ x = 85

∴ Total expense on segment 2 and segment 5 = Rs (20x + 15x) = Rs (35 × 85) = Rs 2975

---

7. **Answer: a**

Explanation:

- In the last ten years, FDI inflows are highest in the Services sector of India.
- FDI- Foreign Direct Investments. These investments are made by an individual or a company residing in one country into another company located in a different country.
- These investments not only bring money but also skills, technology and knowledge.
- As per the Department for Promotion of Industry and Internal Trade, the services sector (financial, banking, insurance, non-financial / business, outsourcing, R&D, etc) received 17.66 % (Rs. 462,114.07) of the total FDI received in the country from April 2000 to December 2019.

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- The IT services stands at second at 9.54% (Rs. 266,385.18) and telecommunications sectors stands at third highest FDI at 8.13% (218,047.28).
- As per Ministry of Commerce, Investment outreach activities are being carried out for enhancing international cooperation and promoting FDI in the country.

---

8. **Answer: d**

Explanation:

Let, the distance covered = x km

According to the question,

⇒ x/45 – x/54 = 12/60

⇒ (6x – 5x)/270 = 1/5

⇒ x = 270/5 = 54

∴ Distance covered during the journey = 54 km

---

9. **Answer: d**

Explanation:

⇒ $0.\overline{047619}$

⇒ 47619/999999

⇒ 1/21

---

10. **Answer: d**

Explanation:

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- India was scheduled to be hosting the 2019 Combined World cup for shooting.
- It was to take place in New Delhi and Baku (Azerbaijan). It had earlier been postponed from March to May.
- However, due to pandemic COVID-19, this event has now been cancelled.
- Combined World Cup comprised the three categories — shotgun, rifle and pistol. It was a qualifying event for the 2020 Tokyo Olympic.
- The Tokyo Olympics 2020 has been postponed. The Opening Ceremony of the games is expected to be held on 23 July 2021 as per official notification.
- Tokyo 2020 mascot is Miraitowa. It embodies both the old and the new style. This name is chosen to promote a future full of eternal hope in the hearts of people all over the world.

---

11. Answer: d

Explanation:

1. Let, weight of each box = x kg

According to the statement,

⇒ x/3 = 12

⇒ x = 36

∴ Weight of each box = 36 kg

∴ Total weight 10 boxes = 36 × 10 = 360 kg

2. let, the weight of each box = y kg

According to the statement,

⇒ 6y = 4y + 72

⇒ 2y = 72

⇒ y = 36

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∴ Total weight of 10 boxes = 36 × 10 = 360 kg

∴ Either of the statements 1 or 2 is sufficient

---

12. Answer: b

Explanation:

(Implicit - suggested though not directly expressed)

Water crisis can be considered as a consequence of depletion of water level.

Therefore, assumption I is implicit

The statement by the Panchayat chief is an indirect suggestion that the water bodies need maintenance.

Therefore, assumption II is implicit

Hence, both assumptions I and II are implicit.

---

13. Answer: d

Explanation:

- The kinetic energy of the particles is maximum in the case of **Plasma**.
- There are four fundamental states of matter-Solid, Liquid, Gas and Plasma.
- Plasmas are made up of atoms in which some electrons or all of the electrons have been taken away and positively charged nuclei (ions) roam freely. It can be produced in the laboratory by heating a gas to an extremely high temperature.
- The kinetic energy is the energy possessed by an object by virtue of being in motion.
- The kinetic energy is maximum in plasma because particles can move freely with almost no force of attraction to tie them down.

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14. **Answer: d**

Explanation:

The least possible Venn diagram is:

1. All majestic animals are lions → False (It is possible but not definite)

2. Some majestic animals are lions → True (All lions are majestic animals)

3. No majestic animal is cat → False (It is possible but not definite)

Hence, only conclusion 2 follows.

---

15. **Answer: b**

Explanation:

- To Promote Solar Power Generation, the Govt. of India has planned 'rent a roof policy'.
- Under this, solar developers rent rooftop space to install a PV array. The developers offer to lease PV array to each household and then feed the solar power to the grid.
- The Central Government planned to generate 40 gigawatts of power from solar rooftop projects by 2022. However, the target is unlikely to be met.
- The country installed rooftop capacity of only 1,896 MW in 2019 taking the total rooftop capacity to 5.5 GW.
- In 2019, 380 MW was added. However, it was expected that 1 GW of open access projects would come up in 2020. But because of pandemic-COVID 19, the plans are halted.

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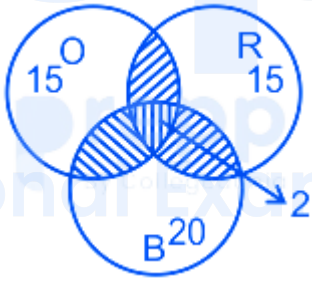
16. **Answer: c**

Explanation:

- Thibaut Courtois won the Golden Glove Award at the 2018 FIFA World Cup event.
- He is from Belgium. He was awarded for being the best goalkeeper of the tournament.
- Harry Kane -Golden Boot award
- Luka Modric- Golden Ball award
- Fair Play Award-Spain
- Best Young Player Award- Kylian Mbappé

17. **Answer: c**

Explanation:



The shaded portion represent customer who bought atleast two dresses.

⇒ Customers who bought exactly 2 dresses

= 8 - (2 × 2) = 8 - 4 = 4

Thus we have,

n (O) = 15, n (R) = 15, n (B) = 20

n (O ∩ R ∩ B) = 2

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$n(O \cap R) = n(R \cap B) = n(B \cap O) = 4$

$\therefore n(O \cup R \cup B) = n(O) + n(R) + n(B) - n(O \cap R) - n(R \cap B) - n(B \cap O) + n(O \cap R \cap B)$

$= 15 + 15 + 20 - 4 - 4 - 4 + 2$

$= 50 - 10 = 40$

⭐ **Shortcut Trick**

Total customers who bought more than at least two colors

$\Rightarrow 8 + 2 = 10$

Customers bought clothes of at least one color from the store

$\Rightarrow (15 + 15 + 20) - 10$

$\Rightarrow 50 - 10 = 40$

$\therefore$ 40 Customers bought clothes of at least one color from the store.

---

18. Answer: d

Explanation:

The image of an object as seen in a mirror is its mirror reflection or mirror image. In such an image, the right side of the object appears on the left side and vice versa. A mirror-image is therefore said to be laterally inverted and the phenomenon is called the lateral inversion.

The lateral mirror image of the word 'LATE' is shown below:

Hence, figure 'C' is the correct answer.

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19. **Answer: b**

Explanation:

Sum of the digits of the number = (x + 3 + 2 + 0 + 8) = (x + 13)

Among the options, for x = 5 we get, (x + 13) = (5 + 13) = 18

18 is divisible by 3,

∴ 53208 is divisible by 3

∴ Face value of x is 5

20. **Answer: d**

Explanation:

- Uttar Pradesh had decided in January 2017 to print voters list in Urdu as well.
- There were almost 46 constituencies in Uttar Pradesh where Assembly elections took place and the voters' list was printed in urdu as well.
- Please note that it was the first time the State Election Commission decided to include Urdu. Usually, there are English and Hindi.
- It is believed that western Uttar Pradesh has large pockets of Muslim population.
- However, in the case of a dispute, the Hindi version of the rolls was held as authentic.
- Uttar Pradesh CM- Yogi Adityanath
- Uttar Pradesh Governor- Anandiben Patel

21. **Answer: d**

Explanation:

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- A stone thrown up into the sky falls back to the earth because there exists a force that pulls it down towards the Earth.
- This force is nothing but gravity. It is always attracting the object towards it
- As per Newton's first law of motion, "an object either remains at rest or continues to move at a constant velocity, unless acted upon by an external force".
- When an object is thrown up, it can not remain in motion as the force of gravity acts on it and since it is an attractive force; object comes down.
- This is the reason that the stone will decelerate (slow down) till it reaches a maximum height and then starts accelerating towards the surface of the earth.

---

22. Answer: d

Explanation:

- A car is moving with a high speed. It possesses Kinetic energy.
- The kinetic energy is the energy possessed by an object by virtue of being in motion.
- Kinetic energy (joules) = 1/2 x mass (kg) x velocity ^{2}(m/s).
- Even a small change in velocity can increase the Kinetic energy to a large extent.
- Potential energy- It is the energy possessed by an object by virtue of its position.

---

23. Answer: a

Explanation:

- In 1835, British made English the medium of instruction in India.
- William Bentinck, the Governor-General of India and Lord Macaulay decided to introduce English in India.
- The English Education Act 1835 was a legislative Act made by Lord William Bentinck.

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- Wood's Dispatch, 1854 is considered as the "Magna Carta of English Education in India". It contained a comprehensive plan for spreading education in India. It was recommended that English should be the language of medium to teach in schools and colleges.

---

24. Answer: d

Explanation:

The logic is:

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

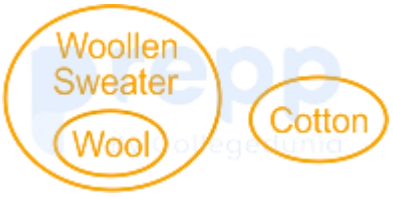
Hence, '81K' is the correct answer.

---

25. Answer: d

Explanation:

The Venn diagram that correctly represents the relationship between Woolen sweater, Cotton and Wool is shown below:



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Woollen sweater is made of wool. Cotton is used to make clothes. There is no common relation between cotton and woollen sweater or cotton and wool.

Hence, option '4' is the correct answer.

---

26. Answer: a

Explanation:

- **Ethanol** is used as a fuel in cars with petrol.
- Ethanol(ethyl alcohol) has a chemical formula of C_2H_6O.
- It is produced by microbial fermentation of the sugar.
- Ethanol without water can be blended with petrol in varying quantities in order to reduce the consumption of petroleum fuels, as well as to reduce air pollution.
- Ethanol provides high quality, high octane for exceptional engine performance and reduced emission.
- Other uses of ethanol- cosmetics and beauty products, sanitizers, food additives,etc.

---

27. Answer: c

Explanation:

- Three identical resistors, each of 6, are connected in parallel. The equivalent resistance of the combination will be**2 Ω**.
- When the resistors are connected in parallel connection, the equivalent resistance is
- 1/R= 1/R1 +1/R2 +1/R3
- 1/R=1/6 + 1/6 +1/6
- 1/R= 3/6
- 1/R=1/2
- Equivalent resistance in this case is 2Ω.

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28. **Answer: d**

Explanation:

- Solder is an alloy of Pb and Sn.
- Soldering is a process of joining different types of metals together. Solder is a metal alloy which is melted by using a hot iron. The iron is heated to temperatures above 600 degrees fahrenheit which then is cooled to create a strong bond.
- Copper and Zinc make hard solder.
- Tin and Lead make soft solder.
- Other metals used in Soldering- antimony, bismuth, brass, indium, tin or silver.

29. **Answer: a**

Explanation:

Cost price = 195

Selling Price = 171.6

∴ Loss = (195 – 171.6) = 23.4

∴ loss percentage = 23.4/195 × 100% = 12%

30. **Answer: c**

Explanation:

A and B can complete a task in = 15 days

∴ In 1 day A and B can do = 1/15

A can complete the task in = 18.75 days = 75/4 days

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∴ In 1 day A can do = 4/75

∴ In 1 day B can do = 1/15 – 4/75 = (5 – 4)/75 = 1/75

A leaves 12.5 days before the completion of the work.

∴ For these 12.5 days B worked alone

Let, A and B worked together for x days.

According to the question,

⇒ x/15 = 1 – 12.5/75

⇒ x/15 = 1 – 25/150

⇒ x/15 = 5/6

⇒ x = 75/6

⇒ x = 12.5

∴ A and B worked together for 12.5 days

---

31. Answer: d

Explanation:

Let, the fraction = x

According to the question,

⇒ x + 13/5 = 1

⇒ x = 1 – 13/5

⇒ x = (5 – 13)/5

⇒ x = - 8/5

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∴ The fractions = − 8/5 = - (8 × 6)/(5 × 6) = - 48/30

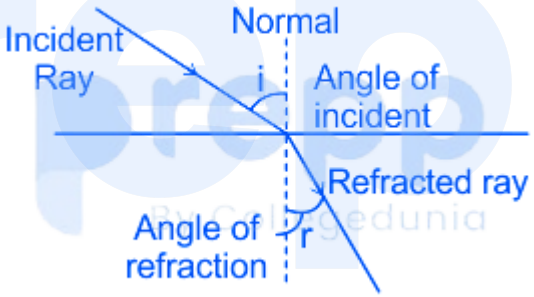
---

32. Answer: c

Explanation:

CONCEPT:

- Refraction: When a ray of light passes from one medium to another it suffers a change in direction at the boundary of two media is called refraction.
- The change in direction because the speed of light travels at different speeds in different mediums. Refractive Index of a medium defines that it is denser or rarer



- Snell's law of refraction: "The ratio of the sine of the angle of incidence to the sine of the angle of refraction is a constant, for the light of a given colour and for the given pair of media".

$$\frac{Sin\ i}{Sin\ r} = \frac{n_2}{n_1} = constant$$

Where n2 and n1 are the refractive indexes of the two mediums 2 and 1 respectively.

Explanation:

As explained above,

- Snell's Law: "The ratio of the sine of the angle of incidence to the sine of the angle of refraction is a constant, for the light of a given colour and for the given pair of media".

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- And how much the light ray refracts can be calculated as per Snell's Law.
- Refraction is the bending of the path of a **light wave** as it **passes from one media to another media**. It is caused by the **change in speed** experienced by the light ray.
- When a ray of light travels from a denser medium to a rarer medium, the ray will speed up and bend away from the normal.
- Hence option 3 is correct among all

Extra points :

The angle of refraction for the different condition can be expressed as

- When a light ray passes from a rarer medium to a denser medium, the angle of incidence is greater than the angle of refraction, because the light ray bends towards the normal.
- When a light ray passes from a denser medium to a rarer medium, the angle of incidence is smaller than the angle of refraction, because the light ray bends away from the normal.

---

33. Answer: d

Explanation:

- Ranveer Singh portrayed the character of Allauddin Khilji in the controversial movies 'Padmavat'.
- Director- Sanjay Leela Bhansali
- Actress- Deepika Padukone (played Rani Padmavati)
- Supporting Actor- Shahid Kapoor (played Ratan Singh)

---

34. Answer: b

Explanation:

The correct answer is number of valence electrons

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- The elements present in any one group have the same number of valence electrons.
- Valence electron is an outer shell electron with an atom. These electrons participate in the formation of a chemical bond.
- Number of valence electrons decide whether an element is electronegative or electropositive in nature.
- Atomic size gradually decreases from left to right across a period of elements.
- Atomic number increases down a group.

---

35. Answer: c

Explanation:

Sum of the marks scored by three students = 3 × 38 = 114

Sum of the marks scored by five students = 5 × 40 = 200

Maximum marks can be scored by one of the newcomer = 45

∴ Lowest marks that can be scored by one of the newcomer = 200 − (114 + 45) = 41

⭐ Confusion Points

Question already mentions the highest number 45. new commer lowest marks tracking by using maximum marks 45.

200 − (114 + 45) = 41

---

36. Answer: c

Explanation:

Weight of the mixture = 27 kg

∴ Weight of sugar = 27 × (17/45) = 10.2 kg

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∴ Weight of flour = 27 × (28/45) = 16.8 kg

Let, Sunita added x kg more flour

According to the problem,

⇒ 10.2/(16.8 + x) = 2/5

⇒ 51 = 33.6 + 2x

⇒ 17.4 = 2x

⇒ x = 8.7 kg

---

37. Answer: c

Explanation:

112 = 2 × 2 × 2 × 2 × 7

72 = 2 × 2 × 2 × 3 × 3

90 = 2 × 5 × 3 × 3

∴ LCM of 112, 72, 90 is = 2 × 2 × 2 × 2 × 3 × 3 × 5 × 7 = 5040

---

38. Answer: a

Explanation:

- As the pH value increases from 7 to 14, it represents an increase in the OH- ion concentration.
- pH scale determines the acidity or basicity of the solution.
- The pH value below 7 represents that solution is acidic and above 7 represents that solution is basic.
- The pH of pure water at room temperature is 7. It means it is neither acidic nor basic, it is neutral.

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- The pH value of Battery Acid is zero which means it is highly acidic. The pH value of Liquid drain cleaner is 14 which means it is highly basic.

---

39. Answer: b

Explanation:

All option except 'B' has one of the images shaded, while option B has no image shaded.

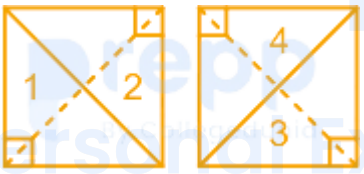
Hence, option B is the odd one out.

---

40. Answer: a

Explanation:

The number of right-angled triangles in the figure is shown below:



Hence, the figures has total 4 right-angled triangles.

---

41. Answer: c

Explanation:

The correct answer is Option **3**, i.e**Zero**.

Key Points

- An object travels northwards with a constant velocity. The net force acting on the object will be**zero**.

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- Please note that constant velocity means **there is no acceleration.** (Acceleration literally means change in velocity).
- As per Newton's second law of motion, **Force= mass x acceleration.**
- **As acceleration = zero.**
- **Net acting force is also zero.**

---

42. Answer: b

Explanation:

- Carrot does not belong to the group of given options.
- Carrot is a root vegetable whereas Broccoli, Ridge gourd and bitter gourd are found well above the roots.
- We eat the taproot part of the carrot plant. The roots contain high quantities of alpha- and beta-carotene, and are a good source of vitamin K and vitamin B6.
- Broccoli is from a family of Cabbage. It is a great source of vitamins K and C.
- Ridge gourd-It is called Turai in hindi. It is extremely rich in dietary fibre.
- Bitter gourd- It belongs to the gourd family and is closely related to zucchini, squash, pumpkin, and cucumber. It in maintaining blood sugar levels

---

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43. Answer: d

Explanation:

Total distance covered = (18 + 16) = 34 m

Total time taken = (4 + 2) = 6 s

∴ Average speed of the object = 34/6 = 5.67 ms^{-1}

---

44. Answer: a

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Explanation:

In the question figure, the small figure inside the trapezium is present at the corner, near to the longer side of the trapezium.

So answer figures B and C are eliminated as the small figure inside the trapezium in these two figures are present near to the shorter side of the trapezium.

Now, in answer figures A and D, there is a slight difference, through which we will find out the correct answer.

The small figure inside the trapezium in the question figures, is not a complete circle, it's like an oval shape, while in answer figure A, the small figure inside the trapezium is a perfect circle and in figure D, the small figure inside the trapezium is oval in shape

So clearly answer figure D bears the closest resemblance to the question figure.

Hence, answer figure D is the correct answer.

---

45. Answer: a

Explanation:

The relation is:

Shoes are related to Legs → We put on the shoes in our legs.

Similarly,

We put on the gloves in our hands.

Hence, 'hands' is the correct answer.

---

46. Answer: d

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Explanation:

The least possible Venn diagram is:

1. All dresses are yarns. → True (as shown in the figure)

2. Some yarns are clothes. → True (all clothes are yarns)

Hence, all the conclusions follow.

---

47. Answer: b

Explanation:

- Limba Ram is known for **Archery**.
- He represented India in many international competitions (including three Olympics games).
- He is famous for equalling an archery world record in 1992 at the Asian Archery Championships in Beijing.
- He was also appointed as National Archery Coach for 2010 Commonwealth Games.
- However in 1996, he suffered from shoulder injury and he has not been able to get his efficiency back.
- He is also a recipient of the Arjuna award in 1991 and Padma Shri Award in 2012.

---

48. Answer: b

Explanation:

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- Tamil Nadu State Government had set up toll-free helpline number '14417' to provide information to students.
- This is a 24 hour toll free helpline number. It provides information on education and offers guidance to students.
- It was launched by Chief Minister of Tamil Nadu- K Palaniswami.
- The Education Guidance Centre was set up at the Secretariat that also offers information relating to school and other academic institutes owned by the government.
- Tamil Nadu Capital- Chennai
- Tamil Nadu Governor- Banwarilal Purohit

---

49. Answer: b

Explanation:

- Given- A source of 6 V maintains a current of 0.5 A in a resistor.
- What is required to be found?- Power
- Power= Voltage x Current
- Power= 6 X 0.5 = **3 Watts**.
- Other formulas for power= $R \times I^2 = V^2 / R$

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50. Answer: d

Explanation:

- The Maharashtra government launched the Asmita Yojana on the occasion of**International Women's Day**.
- This scheme was launched by then Maharastra CM Devendra Fadnavis And Akshay Kumar.
- Under this scheme, sanitary napkins are provided at a discounted rate. It was announced that rural school girls could avail sanitary napkin packet for just Rs. 5 and rural women could get the same at a subsidised rate of Rs. 24 and Rs. 29.
- International Women's Day is celebrated each year on 8 th March.

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- Theme 2020: I am Generation Equality: Realizing Women's Rights
- International Cancer Day : 4 th February
- International Men's Day : 19 th November
- International Aids Day : 1 st December

---

51. Answer: b

Explanation:

- Tooth decay starts when the pH of the mouth is **less than 5.5**.
- pH scale is used to specify how much acidic or basic the solution is. If the pH value of solution is less than 7, it is acidic. If the pH value is more than 7, it is basic.
- In the given case, if pH of the mouth gets less than 5.5, it means that our mouth is very acidic.
- The acid in our mouth has started to attack the enamel of our teeth and has started to corrode it. The sugar and food particles which get stuck in teeth are degraded by Bacteria and acid is produced as a result.
- Please note that enamel of teeth is made up of calcium phosphate which is the hardest substance in the body.
- Saliva has a pH normal range of 6.2-7.6 .Normal resting pH of mouth does not fall below 6.3.

---

52. Answer: b

Explanation:

The logic is:

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Hence, '55' is the correct answer.

---

53. Answer: b

Explanation:

- The transmission of traits, physical or mental, from parents to offspring is called **heredity**.
- Every member of a species has a set of genes an offspring inherits that set of genes from both parents. The combination of the genetic material of each parent is called genotype.
- The features are passed to other generations by DNA. It encodes genetic information.
- The DNA is copied before a cell divides through mitosis. Hence, each of the resulting two cells inherit the DNA sequence.
- A portion of a DNA molecule that specifies a single functional unit is called a gene.
- Please note that heredity can exist through asexual reproduction as well as sexual reproduction.

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54. Answer: a

Explanation:

Given series:

In 1st figure, 'less than equals to' sign is present, in 2nd figure, ''greater than equals to' sign is present, in 3rd figure, 'less than' sign is present, so following the same pattern, in '?' figure, '>' i.e, 'greater than' sign will be present and the position of 'R'

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and 'C' will be similar as in 2nd figure, because in 1st and 3rd figure, the position of 'R' and 'C' is same.

All these conditions are satisfied by option C figure.

Hence, option C is the correct answer.

---

55. Answer: c

Explanation:

- Phloem tissue helps in the transportation of the material away from the photosynthetic parts of the plants.
- This tissue is composed of various specialized cells called sieve tubes, companion cells, phloem fibres, and phloem parenchyma cells. It conducts foods made in the leaves to all other parts of the plant.
- Xylem vessels- These are long tubes and formed by end to end union of a large number of short, wide, lignified dead cells. Nucleus and cytoplasm are absent in these cells. Xylem vessels and tracheids for xylem tissue which helps in transportation of water and minerals within a plant.
- Meristematic tissue-It contains living cells with varied shapes. The cells divide actively to form specialized structures such as buds of leaves and flowers, tips of roots, etc. These tissues help plants to increase in length and achieve thickness.
- Ground tissue- The plant tissue which are neither dermal nor vascular are called Ground tissue. It is responsible for storing the carbohydrates produced by the plant. Parenchyma cells and Sclerenchyma cells are Ground Tissue.

---

56. Answer: d

Explanation:

The family tree diagram is shown below:

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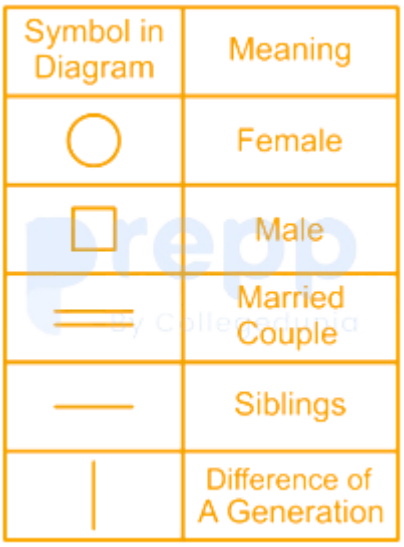

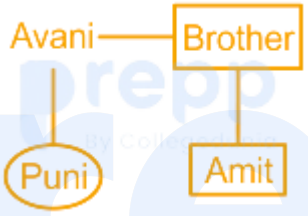

So, Amit's father is either paternal or maternal uncle of Puni.

Maternal uncle is the option given to us.

Hence, 'maternal uncle' is the correct answer.

---

57. **Answer: b**

Explanation:

- The third Indian Council for Cultural Relations (ICCR) distinguished Indologist award for the year 2017 was awarded to **Professor Hiroshi Marui**.
- Professor Hiroshi Marui is a Japanese. He was awarded for making significant contributions to Indology or academic study of the history and cultures, languages, and literature of India.
- President Ram Nath Kovind conferred the award at Rashtrapati Bhavan.
- Professor Hiroshi had worked on Indian philosophy and Buddhist Studies for many decades.

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- Indian Council for Cultural Relations is an autonomous government body. It was founded in 1950 by Maulana Abul Kalam Azad who was the independent India's first Education Minister.
- The organisation actively participates in the formulation and implementation of policies and programmes pertaining to India's external cultural relations; to promote cultural exchanges with other countries and people, etc.

---

58. Answer: a

Explanation:

- President Ram Nath Kovind launched the Pulse Polio programme for 2018.
- The programme was launched on the eve of the National Immunization Day (16^{th} March).
- Under this programme, it was decided that more than 17 crore children of less than five years across the country would be given polio drops as part of the drive of the Government of India to sustain polio eradication from the country.
- It was emphasised that our country needs to maintain the population immunity and sensitive surveillance till polio is eradicated globally.
- The Government introduced the injectable Inactivated Polio Vaccine (IPV) into its routine immunization program in order to maintain the immunity against polio infection.

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---

59. Answer: b

Explanation:

As per the given graph, production of engines highest in 2015 = 8 million

---

60. Answer: c

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Explanation:

- The Reserve Bank of India is the chief banker to the Government of India.

⭐ Important Points

- It was established on April 1, 1935, in accordance with the Reserve Bank of India Act, 1934.
- It controls the monetary and important banking policies of the Indian government. RBI is also known as banker's bank.
- RBI is entrusted with many crucial responsibilities- regulating the issue of Banknotes, securing monetary stability in India, modernising the monetary policy framework to meet economic challenges.
- RBI also promotes and performs promotional functions to support national banking and financial objectives.
- RBI also indirectly curbs inflation by setting its policy rate conducive to the monetary environment.

---

61. Answer: c

Explanation:

1. All laptops emit radiation. → Follows (As, all laptops are electronics and all electronics emit radiation)

2. Some radiation is due to electronics. → Follows (As, all laptops are electronics and all electronics emit radiation)

Hence, all the conclusions follow.

---

62. Answer: c

Explanation:

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One pipe can fill a cistern in = 7.8 hours = 78/10 = 39/5 hours

∴ In 1 hour one pipe can fill = 5/39

Another pipe can drain the cistern in = 19.5 hours = 195/10 = 39/2 hours

∴ In 1 hour another pipe can drain = 2/39

∴ In 1 hour they together can fill = 5/39 – 2/39 = 3/39

Let, they can fill a half-empty cistern in x hours

According to the question,

⇒ 3x/39 = 1/2

⇒ x = 39/6 = 6.5

∴ They together can fill a half-empty cistern in 6.5 hours

---

63. Answer: a

Explanation:

Let, a trainee's efficiency = x/day

An expert's efficiency = y/day

According to the question,

⇒ 17x = 4y

⇒ x = 4y/17 ..... (1)

According to the question,

⇒ 5(9x + 12y) = 1

⇒ 5(36y/17 + 12y) = 1

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⇒ (36y + 204y) × 5/17 = 1

⇒ 1200y = 17

⇒ y = 17/1200

∴ x = 4/17 × 17/1200 = 1/300 = 4/1200

Let, number of trainees required = k

According to the question,

⇒ 15 × [(17 × 4)/1200 + 4k/1200] = 1

⇒ 17/20 + k/20 = 1

⇒ k + 17 = 20

⇒ k = 3

∴ 3 trainees will be needed

---

64. Answer: a

Explanation:

- The given options are a pair of Places in India and what is predominantly found in that place.
- A high quality saffron (a spice derived from the crocus flower) is found in Kashmir. The quality found here is considered the best in the world.
- Moradabad is known as the Brass city of India. The city is famous for its brass handicrafts industry. It is in Uttar Pradesh.
- Surat city is a hub for diamond cutting and polishing. Many raw diamonds from the world are sent here for polishing. It is a city in Gujarat.
- However, Khatri (as given in the first option) is not a name of the place in India. Khatri is a hindu caste. That is why,**Khatri-Iron**is a wrong pair.

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65. **Answer: d**

Explanation:

McMahon Line	• This is a boundary line between India and China. • It was proposed by Henry McMahon (British colonial administrator) at the 1914 Simla Convention which was signed between British and Tibetan representatives. • However, China does not accept this demarcation.
Radcliffe Line	• This is a boundary line between India and Pakistan. • It was demarcated by Sir Cyril Radcliffe who was the head of Border Commissions. • He was commissioned to equitably divide 4,50,000 km sq of territory with 88 million people.
Line of Control	• It is the line where the region of Kashmir is divided for the purpose of military control. • This is not a legally recognized international boundary. • The other region of Kashmir is occupied by Pakistan.
Palk Strait	• It is a strait that divides Tamil Nadu in India and Jaffna District of Sri Lanka. • It connects the Bay of Bengal in the northeast with Palk Bay in the southwest.

---

66. **Answer: a**

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Explanation:

- Kiran Doshiis the author of the book “Jinnah Often Came to Our House”.
- This book is about the lives of upper-class Muslims in Bombay at the turn of the 19th century.
- Kiran Doshi is a retired Indian diplomat. He received The Hindu Prize for the best work of fiction published in India, 2016.
- Books by Sunita Narain-Excreta matters, Conflicts Of Interest: My Journey Through India's Green Movement, etc.
- Books by Dinanath Gopal Tendulkar- Gandhi in Champaran, Eight books- Mahatma: Life of Mohandas Karamchand Gandhi,etc.
- Books by Sowvendra Shekhar- Jwala Kumar and the Gift of Fire: Adventures in Champakbagh, The Adivasi Will Not Dance, etc.

---

67. Answer: c

Explanation:

- Manoj Joshi was conferred with the 2018 Padma Shri award in the field of Art-Acting from Maharashtra.
- He is an Indian film and television actor. He has acted in more than 60 films and he has given many theatrical performances.
- Padma Shri is the fourth highest civilian award in the Republic of India.The other civilian awards are- Bharat Ratna, the Padma Vibhushan and the Padma Bhushan
- The 2018 list included 3 Padma Vibhushan, 9 Padma Bhushan and 73 Padma Shri Awardees.

---

68. Answer: d

Explanation:

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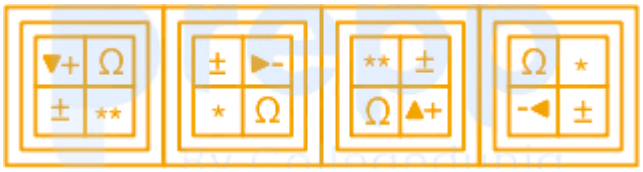
Given series:

Solution figure:



There are one/two stars in alternate steps. Therefore, we eliminate A and D.

The triangle is rotating by 90^0 in the anticlockwise direction.

Therefore, B is eliminated.

Hence, C is the correct answer.

---

69. **Answer: a**

Explanation:

The correct answer is **embryo.**

- The seed of a plant contains the future plant in the form of a/an **embryo**.
- The seed embryo is the part of a seed or bud that contains the earliest forms of roots, stem, and leaves of plants.
- Most of the plant embryo develops from the apical cell.
- The embryo later develops after a fertilized adult plant flowers.
- The ovule is part of the female reproductive organ in seed plants.
- The stigma is important in reproduction. It receives pollen. When pollen reaches the stigma, it begins to grow a tube through the style called a pollen tube and it eventually reaches the ovary.

---

70. **Answer: c**

Explanation:

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Formula used:

1 hour = 60 minutes

1 minute = 60 seconds

Calculation:

11 hours 28 mins 32 secs

⇒ (10 hours + 1 hour) + (27 mins + 1 min) + 32 secs

⇒ (10 hours + 60 mins) + (27 mins + 60 secs) + 32 secs

⇒ 10 hours 87 mins 92 secs

The bulb was in the switched-on mode for,

⇒ (10 hours 87 mins 92 secs – 1 hour 37 mins 39 secs)

⇒ 9 hours 50 mins 53 secs

⭐ Alternate Method

11 : 28 : 32 hours = 11 : 27 : 92 hours

= 10 : 87 : 92 hours

The bulb was in switched on mode for

$$\begin{array}{rcrcrl} 10 & : & 87 & : & 92 & \text{hours} \\ -1 & : & 37 & : & 39 & \text{hours} \\ \hline 9 & : & 50 & : & 53 & \text{hours} \end{array}$$

---

71. Answer: b

Explanation:

the square root of 11881

⇒ √11881

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⇒ √(109 × 109)

⇒ 109

---

72. Answer: a

Explanation:

Z finds monkey funnier than 'all animals' due to its similarities with human behaviour.

Thus, we can conclude that he is amazed with the monkey's behaviour.

Therefore, conclusion I follows.

However, the point of view of A about the monkeys finds no mention in the given statement.

Therefore, conclusion II does not follow.

Hence, conclusion I alone follows.

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73. Answer: d

Explanation:

The logic is:

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

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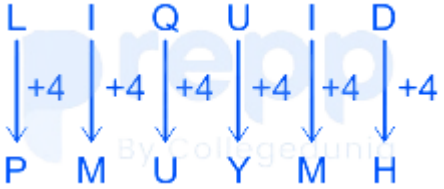
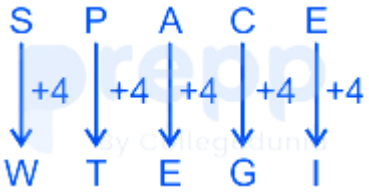


Similarly,



Hence, 'WTEGI' is the correct answer.

---

74. Answer: d

Explanation:

Let, The test was out of = 100x

Chitra secured = 100x × 78/100 = 78x

According to the question,

⇒ 78x = 58.5

⇒ x = 0.75

∴ The test was out of = 0.75 × 100 = 75

---

75. Answer: d

Explanation:

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- Charles Darwin suggested a mechanism for organic evolution in his book "Origin of Species".
- As per Darwin's theory, the mechanism of evolution begins with the variation which exists among organisms within a species.
- The individuals in one generation are qualitatively different from the other generation.
- The evolution of species results from the differential rates of survival and reproduction of the various types, hence, the relative frequencies of the types change over the period of time.
- As per Darwin, Evolution is a sorting process.

---

76. Answer: a

Explanation:

- Sikandar Lodhiwas the founder of the City of Agra.
- It was founded in the 16 th century and Sikander shifted the capital from Delhi to Agra.
- Bahlul Khan Lodhi founded the Lodhi dynasty and overthrew the Sayyid dynasty.
- Ibrahim Lodhi was the last ruler of the Lodhi dynasty.
- He was overthrown by Babur in the first battle of Panipat in 1526.

---

77. Answer: a

Explanation:

(Implicit - suggested though not directly expressed)

The statement doesn't suggest anything about the features of mobile phones.

Therefore, assumption I is not implicit.

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Addiction means a condition of being addicted to a particular substance or activity, and when we get addicted to something we spend time or money for it. The statement says 'Mobile phones are addictive', which means it makes a suggestion that people spend more time with their mobile phones.

Therefore, assumption II is implicit.

Hence, only II is implicit.

---

78. **Answer: d**

Explanation:

The pattern followed here is:

When we rotate the given figure 90° Clockwise direction.

Thus, only figure A resembles closest to the given figure.

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

⭐ Alternate Method

In the figures B, C, and D, no vertex of the triangle touches the lines.

Therefore, they are eliminated.

Hence, A is the correct answer.

---

79. **Answer: a**

Explanation:

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Let, the other number = x

According to the problem,

⇒ 1.7 × x = 0.646

⇒ x = .38

---

80. Answer: b

Explanation:

The statement does not provide any information to compare the looks of Naina and Sunita.

Therefore, conclusion I does not follow.

Naina compliments Sunita for her 'looks'.

In this context, 'Looks' means appearance.

Appearance can be related to the person's facial expressions, hair, skin tone, clothes etc.

Thus, it need not be exactly the dressing sense of Sunita that impressed Naina.

Therefore, conclusion II does not follow.

Hence, neither I nor II follows.

---

81. Answer: a

Explanation:

- India was formally announced as the 69th shareholder of the European Bank for Reconstruction and Development in July 2018.

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- European Bank for Reconstruction and Development was founded in 1991. It is an international financial institution.
- All the existing EBRD shareholders voted India unanimously for the position.
- The EBRD promotes environmentally sustainable development and does not finance activities or projects related to the tobacco industry, defense, certain alcoholic products, stand-alone gambling facilities, or substances banned by international law.
- President- Suma Chakrabarti
- HQ-London, UK

---

82. Answer: b

Explanation:

Let, smallest number = x, middle number = y and greatest number = z

According to the question,

$\Rightarrow x + y + z = 21 \times 3$

$\Rightarrow x + y + z = 63$ ..... (1)

According to the question,

$\Rightarrow z - x = 19$

$\Rightarrow z = 19 + x$ ..... (2)

According to the question,

$\Rightarrow y - x = 5$

$\Rightarrow y = x + 5$ ..... (3)

From (1), (2) and (3) we get,

$\Rightarrow x + x + 5 + x + 19 = 63$

$\Rightarrow 3x = 63 - 24 = 39$

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⇒ x = 13

∴ The greatest number = z = 13 + 19 = 32

---

83. Answer: c

Explanation:

The correct answer is Option3.

CONCEPT:

Different positions of the object and their image by a concave mirror :

Position of the object (Concave mirror)	Position of image	size of the image in comparison to the object	Nature of image
At Infinity	At focus	Highly diminished	Real, inverted
Between Infinity and the centre of curvature	Between the focus and centre of curvature	Diminished	Real, inverted
At the centre of curvature	At the centre of curvature	Of the same size	Real, inverted
At focus	At Infinity	Highly enlarged	Real, inverted
Between the focus and centre of curvature	**Between the centre of curvature and infinity**	**Enlarged**	**Real, inverted**

EXPLANATION:

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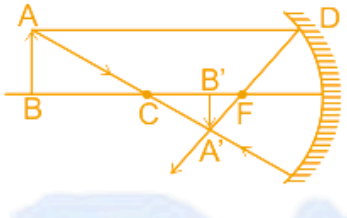
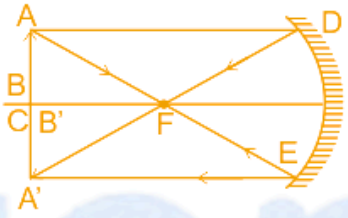
- An object is placed in front of a concave mirror at a point between its curvature and focus. The **image will be formed at a point beyond the center of curvature** . So option 3 is correct.

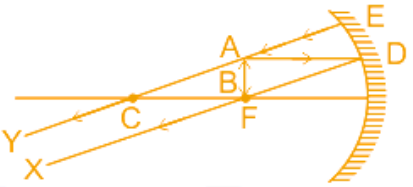
Important Points



When the object is placed beyond the centre of curvature

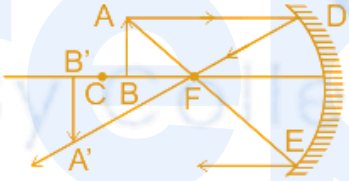


When the object is placed at the centre of curvature

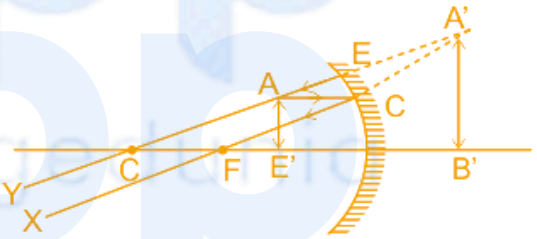


When the object is placed at Principal Focus

Image formed by a Concave mirror when the object is placed at infinity



When the object is placed between the centre of curvature and principal focus



When the object is placed between the principal focus and the pole

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84. Answer: c

Explanation:

Let my current age be X and one of cousins age be Y.

Two third of my age is three fourth of my cousins age. That means,

(2/3) X = (3/4)Y

8 X - 9 Y = 0

My three years ago age is his age after four years

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X - 3 = Y + 4

X - Y = 7

By solving these two equations we get,

X = 63 and Y = 56

So my current age will be 63 years.

---

85. Answer: a

Explanation:

Mauve is a pale purple color named after the mallow flower.

Purple and Green are also Colors.

Pole is not a color.

Hence, "Pole" does not belong to this group.

---

86. Answer: a

Explanation:

- In the options given, **third period** of the modern periodic table has the minimum number of shells.
- A period is a horizontal row of the periodic table and there are seven periods in the periodic table.
- The third period includes- Sodium, Magnesium, Aluminium, Silicon, Phosphorus, Sulphur, Chlorine, and Argon (atomic number 11 to atomic number 18).
- Sodium and Magnesium are members of the s-block of the periodic table. From aluminium to Argon are members of the p-block of the periodic table.

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87. **Answer: b**

Explanation:

- Modern periodic table of elements is based on atomic numbers. Atomic number is the number of protons in an atom.
- Johann Döbereiner in 1817 stated that many of the known elements could be arranged by their similarities into groups of three triads. He singled out triads of the elements lithium, sodium and potassium as well as chlorine, bromine and iodine.
- John Newlands in 1864 suggested that the elements arranged in order of atomic weight showed properties similar to those of the elements placed at eight places ahead.
- In 1869, Mendeleev completed the first draft of his periodic charts. He included 63 known elements arranged according to increasing atomic weight and left spaces for undiscovered elements at that time. His periodic table showed repetition in the properties of the elements at certain regular intervals. Henry Moseley later suggested arranging the elements according to their atomic Number rather than their Atomic mass.

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88. **Answer: a**

Explanation:

$F(x) = 2x^2 + ax + b$ when divided by $x - 3$ leaves a remainder of 31

$\therefore F(3) = 31$

$\Rightarrow 2 \times 3^2 + 3a + b = 31$

$\Rightarrow 3a + b = 13$ ..... (1)

$f(x) = x^2 + bx + a$ when divided by $x - 3$ leaves a remainder of 24

$\therefore f(3) = 24$

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$\Rightarrow 3^2 + 3b + a = 24$

$\Rightarrow 3b + a = 15$ ..... (2)

$\Rightarrow 4a + 4b = 28$

$\Rightarrow a + b = 7$

---

89. Answer: a

Explanation:

Let, cost price of the item = Rs. 100x

Selling price at 12.5% loss = Rs. (100x – 100x × 12.5/100) = Rs. 87.5x

According to the question,

$\Rightarrow 100x + 100x \times 22.5/100 = 87.5x + 56$

$\Rightarrow 122.5x - 87.5x = 56$

$\Rightarrow 35x = 56$

$\Rightarrow x = 1.6$

$\therefore$ Cost price = Rs 100 × 1.6 = Rs. 160

$\therefore$ Selling price at 25% profit = Rs. (160 + 160 × 25/100) = Rs. 200

---

90. Answer: b

Explanation:

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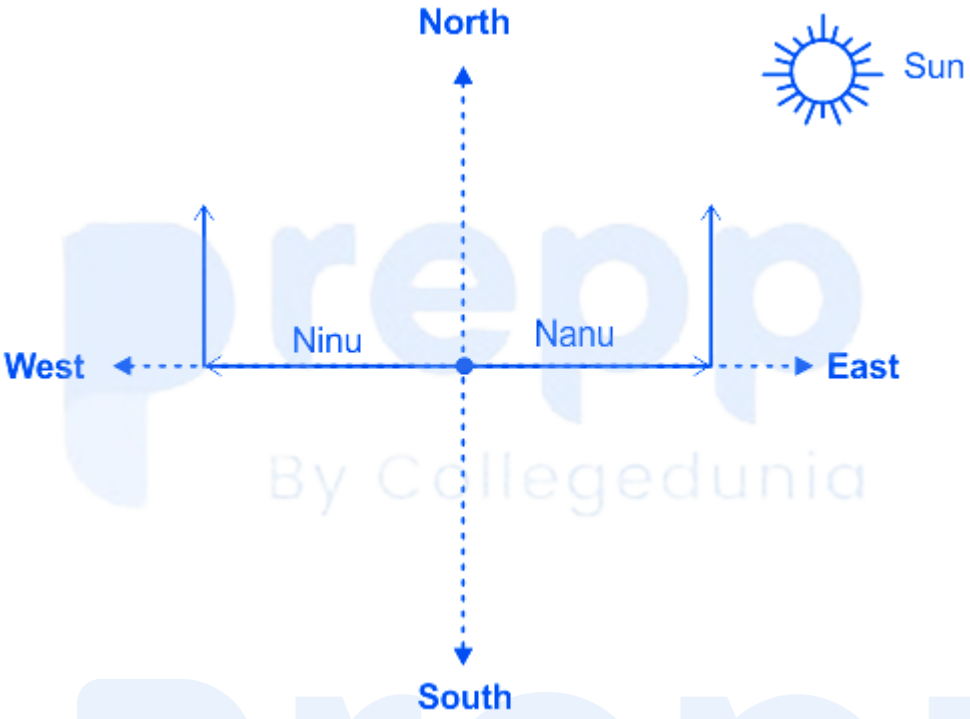

So, both of them are heading towards north.

Hence, 'north' is the correct answer.

---

91. Answer: b

Explanation:

- Given- Two objects A and B are moving with the same velocity. The mass of object A is twice that of B.
- To find- The ratio of the kinetic energy of A to that of B.
- **Kinetic energy** in an object **exists due to virtue of its motion.**
- The formula for kinetic energy is- $1/2 \times m \times v^2$.
- The velocity for both the objects are the same = v.
- **Mass of object A= Twice of mass of object B**
- **Ma=2Mb**
- Ratio of the kinetic energy of A to that of B, $(K_A/k_B) = ½ \times 2 \times Mb \times v^2 / ½ \times Mb \times v^2$
- **Ratio = 2/1 = 2**

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92. **Answer: c**

Explanation:

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

$140 \div [61 - \{36 - (40 - 60 \div 12 \times 6)\}]$

$\Rightarrow 140 \div [61 - \{36 - (40 - 5 \times 6)\}]$

$\Rightarrow 140 \div [61 - \{36 - (40 - 30)\}]$

$\Rightarrow 140 \div [61 - \{36 - 10\}]$

$\Rightarrow 140 \div [61 - 26]$

$\Rightarrow 140 \div 35$

$\Rightarrow 4$

93. **Answer: a**

Explanation:

- Goitre is caused due to the deficiency of**Iodine**.
- Goitre is the abnormal enlargement of thyroid gland.It can also be caused due to over- or underproduction of thyroid hormones or to nodules in the gland itself.

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- Deficiency of iron causes Anaemia. It is the decrease in the number of red blood cells.
- Deficiency of sodium causes Hyponatremia. It can happen from excess fluid in the body relative to a normal amount of sodium. A loss of sodium and body fluid caused by chronic conditions like kidney or congestive heart failure can also cause it.
- Deficiency of calcium means Hypocalcemia. It occurs when calcium levels in the blood are low. If deficiency continues to exist for a long time, it can lead to dental changes, cataracts, alterations in the brain, and osteoporosis.

---

94. Answer: d

Explanation:

Formula:

Number of diagonals in n-sided polygon = $n(n-3)/2$

Number of diagonals = $27 \times (27-3)/2 = 324$

---

95. Answer: c

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Explanation:

1 year = 365 days

2020 is a leap year and a leap year has 1 day extra i.e, it has 366 days.

Number of days between 12:46 p.m. of 15^{th} July 2019 and 12:38 p.m. of 16^{th} July 2020 = 366 days.

Number of hours between 12:46 p.m. of 15^{th} July 2020 and 12:38 p.m of 16^{th} July 2020 = 23 hours 52 minutes.

So, total time duration = 366 days 23 hours 52 mins.

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Hence, '366 days 23 hours 52 mins' is the correct answer.

---

96. **Answer: c**

Explanation:

- Jammu& Kashmir National Conference was led by Omar Abdullah.
- Omar is the former Chief Minister of Jammu and Kashmir.
- Sheikh Abdullah founded this political party. This party had advocated for the autonomy of former jammu and kashmir state.
- Farooq Abdullah (father of Omar) succeeded Sheikh Abdullah.
- The party won the maximum number of seats, and formed a coalition government with the Congress party in 2008 elections.
- However, Congress broke its alliance with JKNC during the 2014 Jammu and Kashmir Legislative Assembly election and the party lost.

---

97. **Answer: d**

Explanation:

$77 \div [46 - \{66 - (52 - 63 \div 9 \times 3)\}]$

$\Rightarrow 77 \div [46 - \{66 - (52 - 7 \times 3)\}]$

$\Rightarrow 77 \div [46 - \{66 - (52 - 21)\}]$

$\Rightarrow 77 \div [46 - \{66 - 31\}]$

$\Rightarrow 77 \div [46 - 35]$

$\Rightarrow 77 \div 11$

$\Rightarrow 7$

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98. **Answer: b**

Explanation:

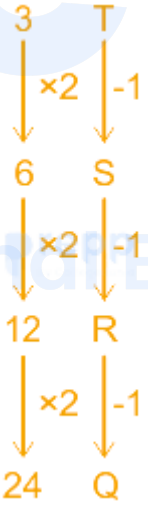
The logic is:

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

Given series: 3T, 3A, 6S, 6B, 12R, 12C,?

Split the series as their position, i.e, even and odd position.

Odd series: 3T, 6S, 12R, ?



Even series: 3A, 6B, 12C

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Hence, '24Q' is the correct answer.

---

99. Answer: a

Explanation:

Total expenditure of year 1 = (200 + 10 + 70 + 20) = Rs 300 lakhs

Total expenditure of year 3 = (450 + 10 + 120 + 20) = Rs 600 lakhs

∴ Required percentage = 300/600 × 100% = 50%

---

100. Answer: d

Explanation:

$\sec^2\theta - \tan^2\theta = 1$

$\Rightarrow (\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 1$

$\Rightarrow 12.5 \times (\sec\theta - \tan\theta) = 1$

$\Rightarrow (\sec\theta - \tan\theta) = 1/12.5$

$\Rightarrow (\sec\theta - \tan\theta) = 0.08$

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