RRC Group D Previous Year Paper 56 (Held On: 16 Oct 2018 Shift 1)

RRB Group D • 2018 • 100 questions • 90 minutes • Answer key and solutions

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Practise under exam conditions, then review your answers after you submit.

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CBT

Q1. P 3 R I M J 3 Q % W @ / N $ E 5 X Y 1 # 8

Which is the 6th term to the right of 15th from the right end in the above series?

(a) $
(b) P
(c) 3
(d) N

Q2. Read the given statements and conclusions carefully and choose which of the conclusions logically follows from the statement.

Statement:

During the promotion of the film, the producer team presents the highlights of the film in front of the media.

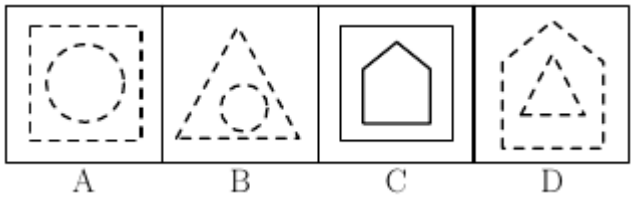
Conclusion:

I. The producer team is keen on what the media should be told about the film, so they create the right hype.

II. The producer team hopes that the film is a success.

(a) Only conclusion II follows.
(b) Only conclusion I follows.
(c) Neither conclusion follows.
(d) Both conclusions follow.

Q3. Identify the odd one from the given figures.



(a) D
(b) B
(c) C
(d) A

Q4. The ratio of sand and scree in a mixture is 41 : 30, while that of scree and cement is in the ratio 6 : 7. What is the ratio of sand and cement in the mixture?

(a) 8 : 6
(b) 11 : 7
(c) 77 : 48
(d) 41 : 35

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Q5. Read the statement and identify the logically correct conclusions from the given information.

Statement:

Madhuri Dixit is a very good dancer. She is very flexible.

Conclusion :

I. All dancers are mostly flexible.

II. Not all dancers are flexible.

(a) Only conclusion I is correct.
(b) Neither I nor II is correct.
(c) Only conclusion II is correct.
(d) Both I and II are correct.

Q6. If the number of digits in a perfect square number is 3 or 4, then the number of digits in the square root of that number will be _____.

(a) 1
(b) 3
(c) 2
(d) 4

Q7. A solution contains 41 g of common salt in 320 g of water. Calculate its concentration as a mass by the mass percentage of the solution.

(a) 12.36%
(b) 9.35%
(c) 10.36%
(d) 11.36%

Q8. Which contingent of the Indian Army has completed 250 years of its inception in 2018?

(a) Rajput Regiment
(b) Punjab Regiment
(c) Maratha Light Infantry
(d) Jat Regiment

Q9. If an object is pulled by holding it from both ends, then the force applied on it is called _____.

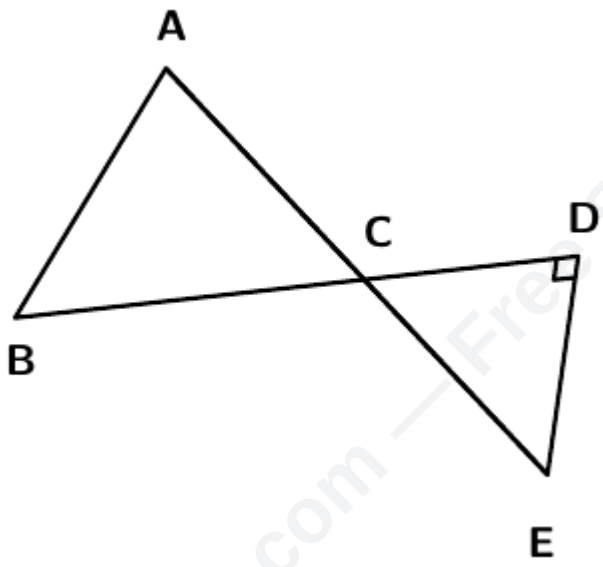
(a) Impulse
(b) Friction
(c) Momentum
(d) Tension

Q10. Which movement in India was led by Ali brothers Shaukat and Muhammad Ali?

(a) Quit India Movement
(b) Delhi Chalo Movement
(c) Boycott Movement
(d) Khilafat Movement

Q11. In the following figure, triangle ABC is an equilateral triangle and triangle CDE is a right angled triangle. If the length of side AE is 20 units, then what will be the length of side DB?

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(a) 13 units
(b) 15 units
(c) 14 units
(d) 12 units

Q12. Consider the given statement and decide which of the given assumption(s) is/are implicit in the statement.

Statement:

There is an advertisement of a pharma company in a newspaper - "Diabetes is cured in 6 months by taking one capsule every day after dinner."

Assumption:

I. Reader is interested in curing diabetes.

II. The company is a pharmaceutical manufacturer.

(a) Neither I nor II is implicit.
(b) Only II is implicit.
(c) Only I is implicit.
(d) Both I and II are implicit.

Q13. What is the molecular mass of ozone?

(a) 32u
(b) 48u
(c) 8u
(d) 16u

Q14. Parimal and his sister together can paint the walls of their house in 54 days. If only Parimal does this work, he would have taken 81 days. If both started the work of painting together, but Parimal's sister left 9 days before the completion of the work, then how many days did both of them take to paint their house?

(a) 60
(b) 57
(c) 58
(d) 56

Q15. The general formula of alkane is-

(a) C_nH_(2n–2)
(b) C_nH_(2n+2)
(c) C_nH_(3n–3)
(d) C_nH_(2n)

Q16. Which of the following is incorrect about rhizoids?

(a) Their structure and function are similar to the root hairs of vascular land plants.
(b) These are bulges growing from the lower epidermal cells of bryophytes.
(c) They have fully developed stem, root and leaves.
(d) They are multicellular structures made up of different tissues.

Q17. The interest rates of banks are determined and regulated by which of the following organizations?

(a) Reserve Bank of India
(b) Finance Ministry
(c) SEBI
(d) State Bank of India

Q18. Who was honored with the 53rd Jnanpith Award for the year 2017?

(a) Akhlaq Mohammad Khan 'Shahryar'
(b) Kedarnath Singh
(c) Shankha Ghosh
(d) Krishna Sobti

Q19. Which option figure will be formed by rotating the following figure?



(a) D
(b) C
(c) A
(d) B

Q20. How is Varun's sister related to his only brother's mother's brother?

(a) Brother
(b) Maternal uncle
(c) Son
(d) Cousin

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Q21. Meghalaya, a mountainous belt in eastern India, was originally a part of _____.

(a) Manipur
(b) West Bengal
(c) Assam
(d) Sikkim

Q22. On using anti bacterial drug it has been observed that

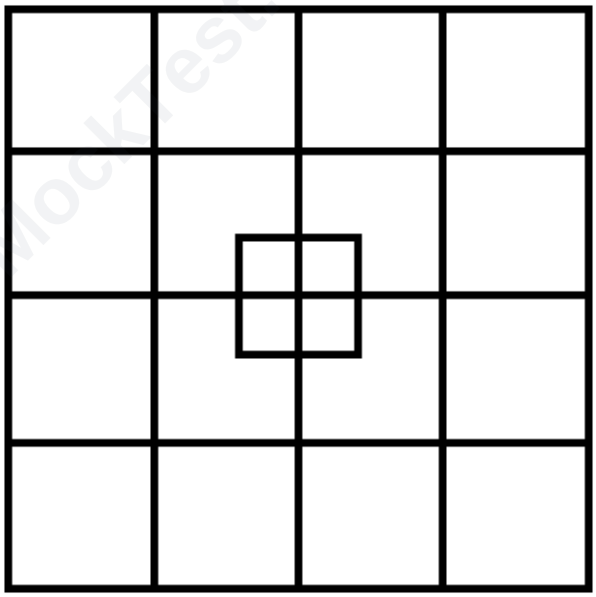
(i) The number of bacteria decreases by 4% in the first hour.

(II) The number increases by 5% in the second hour. The number has increased by 10% in the third hour.

(iii) If the number of bacteria is 500,000, then what is the % increase in the number of bacteria at the end of 3 hours.

(a) 11.08%
(b) 10.88%
(c) 9.58%
(d) 10.02%

Q23. What is the total number of squares in the following figure.



(a) 35
(b) 38
(c) 36
(d) 37

Q24. On an average Meenu uses 15% of her monthly salary for shopping, going to restaurants and malls. The remaining 40% goes towards household expenses, and 45% goes to his savings. If in a month, she spends Rs.40,000 on the house, what is her annual income?

(a) Rs. 1020000
(b) Rs. 1400000
(c) Rs. 12,00,000
(d) Rs. 1000000

Q25. Jeevan and Jyoti can do a certain work in 6 and 8 days respectively. However, they decided to do the same thing for Rs 3,200. They sought Panu's help to complete the work in 3 days and completed the work in 3 days. How much did Panu earn?

(a) Rs. 400
(b) Rs. 1,600
(c) Rs. 899
(d) Rs. 1,200

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Q26. Which alphanumeric term will be next in the given series?

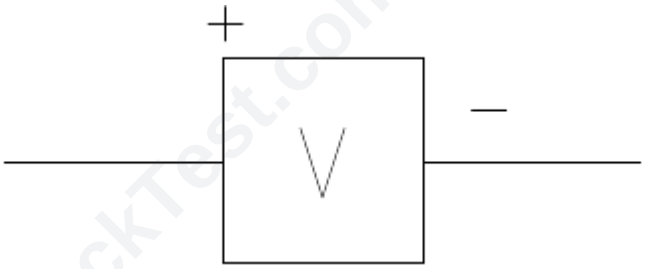
10D, 13E, 16F, 19G,?

(a) 22H
(b) 15B
(c) 22C
(d) 20G

Q27. The name India is derived from the _____ river.

(a) Indus
(b) Irrawaddy
(c) Brahmaputra
(d) Ganges

Q28. What does that symbol represent?



(a) unconnected wire crossing
(b) a voltmeter
(c) Variable Resistance or Current Controller
(d) a resistance of resistance R

Q29. What is the new repo rate announced by the Reserve Bank of India (RBI) on 1st August 2018?

(a) 6.5%
(b) 6%
(c) 6.26%
(d) 5.75%

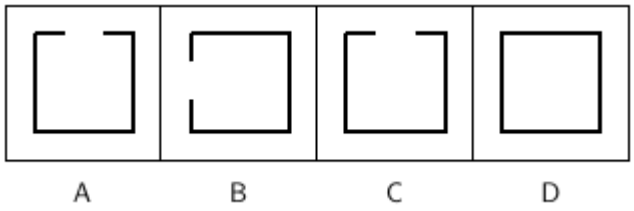
Q30. 45 people can make 40,000 bulbs in 12 days. How many additional people would be needed to be employed for work to make 100,000 bulbs in 9 days?

(a) 100
(b) 105
(c) 110
(d) 120

Q31. The sides of a hexagon are extended three times. Find the ratio of the areas of the new and the old (original) hexagon so formed.

(a) 5 : 23
(b) 2 : 7
(c) 3 : 9
(d) 9 : 1

Q32. Identify the odd one from the following-



(a) C

(b) D
(c) B
(d) A

Q33. Geeta bakes cakes for events. For a birthday party, he made a cake and sold it for Rs 700. The cost price of the ingredients for making the cake was Rs 350. What is the percentage of his profit margin?
(a) 200%
(b) 50%
(c) 100%
(d) 150%

Q34. Suresh is standing facing east. It rotates 45° anticlockwise and then 270° clockwise. In which direction is he facing now?
(a) Northeast
(b) Southeast
(c) Northwest
(d) Southwest

Q35. The difference between the ages of two persons is 7 years. If the ratio of their ages is 7 : 9, then find the age of the younger one.
(a) 25.5 year
(b) 24.5 year
(c) 26.5 year
(d) 24 year

Q36. The spermatic cord joins with the duct leading through the bladder to form a common passageway, which is called _____.
(a) Spermatic cord
(b) Urethra
(c) Testis
(d) Ureter

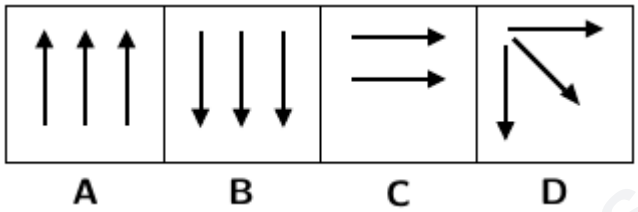
Q37. The population of a city is increasing at the rate of 5% per annum. If the present population of the city is 1,85,220, then what was the population of that city a year ago?
(a) 1,76,000
(b) 1,70,500
(c) 1,76,400
(d) 1,76,200

Q38. E. Madhusudanan leads which of the following state level political party?
(a) Pattali Makkal kachchi
(b) All India N. R. Congress
(c) Rashtriya Janata Dal
(d) All India Anna Dravida Munnetra Kazhagam

Q39. If a + b + c = 16 and ab + bc + ca = 78, find the value of a3 + b3 + c3 – 3abc?
(a) 218
(b) 352
(c) 320
(d) 220

Q40. Identify the odd one from the given figures.

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(a) A
(b) D
(c) C
(d) B

Q41. Which country has recently declared yoga as a sporting activity?

(a) France
(b) Iraq
(c) Pakistan
(d) Saudi Arabia

Q42. In each of the questions below is given a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumptions are implicit in the statement.

Statement:

X said to Y, 'I want to conduct a survey on the effectiveness of advertising for male beautification creams.'

Assumptions:

I. The impact of advertisements of beautifying creams for men can be ascertained through surveys.

II. X has the skill and ability to conduct such surveys.

(a) Only Assumption II is implicit.
(b) Neither I nor II is implicit.
(c) Both I and II are implicit.
(d) Only assumption I is implicit.

Q43. Read the given statements and conclusions carefully and choose which of the conclusions logically follows from the statement.

Statement:

I. All pictures are beautiful.

II. All beautiful is wonderful.

Conclusion:

1. All pictures are wonderful.

2. Some wonderful are beautiful.

(a) Neither conclusion 1 nor 2 follows.
(b) Only conclusion 2 follows.
(c) Both conclusions 1 and 2 follow.
(d) Only conclusion 1 follows.

Q44. What is the estimated growth of Indian labour force by 2020?

(a) 175-185 million
(b) 125-130 million
(c) 60-70 million
(d) 160-170 million

Q45. A container contains 990 liters of oil. How much more oil should be added so that the volume of the oil is the 4-digit perfect square number?

(a) 124 liters
(b) 104 liters

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(c) 166 litres
(d) 130 liters

Q46. In which tournament was held in Riyadh, Saudi Arabia, in 2017, Grandmaster Viswanathan Anand won the Chess Championship title?
(a) Chess world cup
(b) World Rapid Chess Championship
(c) Candidate Tournament
(d) World Senior Chess Championship

Q47. Who has been appointed as the private banking head of the HDFC bank?
(a) Ramesh Singh
(b) Ratnesh Singh
(c) Rakesh Singh
(d) Rajesh Singh

Q48. Who was the lead actor in the recent movie 'Sanju'?
(a) Ranbir Kapoor
(b) Ranveer singh
(c) Akshay Kumar
(d) Sanjay Dutt

Q49. Shrinesh wants to renovate the floor of his office which is made of 2,800 marble tiles. Each tile is 3 cm long and 5 cm wide. Calculate the cost of polishing the floor at the rate of Rs 25 per sqm.
(a) Rs. 100
(b) Rs. 115
(c) Rs. 125
(d) Rs. 105

Q50. Which of the following is the smallest fraction number?
1/8,2/12,3/16,4/20
(a) 4/20
(b) 3/16
(c) 1/8
(d) 2/12

Q51. _____ is not a transition metal.
(a) Np
(b) Zr
(c) Tc
(d) Re

Q52. The formula unit mass of CaO is-
(a) 39
(b) 46
(c) 60
(d) 56

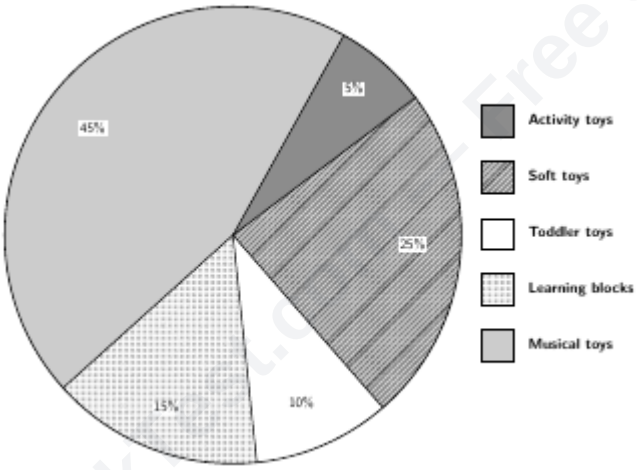
Q53. Compounds of which of the following metals are used in black and white photography?
(a) Ag
(b) Cu
(c) Au
(d) Al

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Q54. What is the property of a metal due to which it can be cast into wire?

(a) Conductance
(b) Porosity
(c) Tensility
(d) Malleability

Q55. The following pie chart shows the sales of toys manufactured by the company during the year 2017-18.



The total income received from the sale of all types of toys is Rs. 38,72,000/-.
Find the income earned by Company “XYZ” from Activity Toys?

(a) 3,87,200
(b) 2,96,600
(c) 1,93,600
(d) 1,52,719

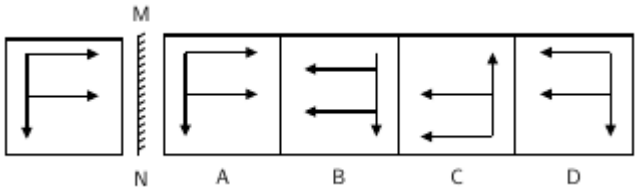
Q56. What is the energy contained in an object of 11 kg when it is at a height of 8 m above the ground? (given that g = 9.8 ms^(–2))

(a) 520J
(b) 539J
(c) 588J
(d) 862.4J

Q57. The sum of the ages of Sindu and Bindu is 30 years. And the product of their ages is 221. How old are they?

(a) 17 years, 13 years
(b) 16 years, 14 years
(c) 15 years, 15 years
(d) 18 years, 12 years

Q58. Select the mirror image of the figure given below:



(a) C
(b) B
(c) A
(d) D

Q59. A mixture of 35 liters contains milk and water in the ratio 4 : 1. Find the ratio of milk and water when 7 liters of water is added to this mixture?

(a) 2 : 7
(b) 2 : 1
(c) 2 : 3
(d) 1 : 3

Q60. Which of the following statement(s) is/are true with respect to the speed of sound at 25°C in different mediums?

A. In steel, the speed of sound is 5960 m/s.

B. In nickel, the speed of sound is 6040 m/s.

(a) Both A and B are true.
(b) Only B is true.
(c) Neither A nor B is true.
(d) Only A is true.

Q61. In general, a neutralization reaction can be written as:

(a) Base + Acid → Water + Gas
(b) Base + Acid → Salt + Water
(c) Base + Acid → Salt + Gas
(d) Base + Acid → Salt + Precipitation

Q62. 15 bought a black dress, 15 bought a red dress, 20 bought a blue dress, 2 bought a dress of all three colors and 8 bought at least two of these from a clothing store. How many customers bought only one color dress?

(a) 25
(b) 32
(c) 40
(d) 45

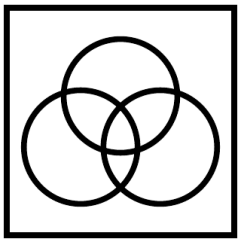
Q63. Which state government has launched the "Anandam" program to help needy people?

(a) Madhya Pradesh
(b) Kerala
(c) Bihar
(d) Tamil Nadu

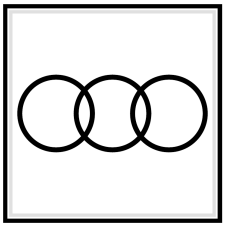
Q64. Select the appropriate Venn diagram for the following groups.

Clothes, Shirt, Lock

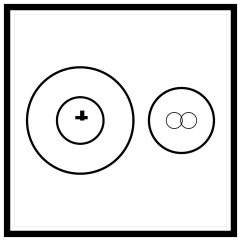
(a)



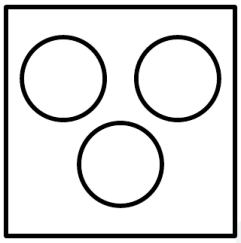
(b)



(c)



(d)



Q65. Each neuron is made up of a cyton (cell body), from which many small branches emerge, which are called-

(a) Axon
(b) Sensory branches
(c) Reflex action
(d) Dendrite

Q66. Which of the two conclusions can be drawn based on the given statements?

Statement:

Some drops are jam. Some bottles are drops.

Conclusion :

1. Some drops are empty.
2. Bottles are jams.

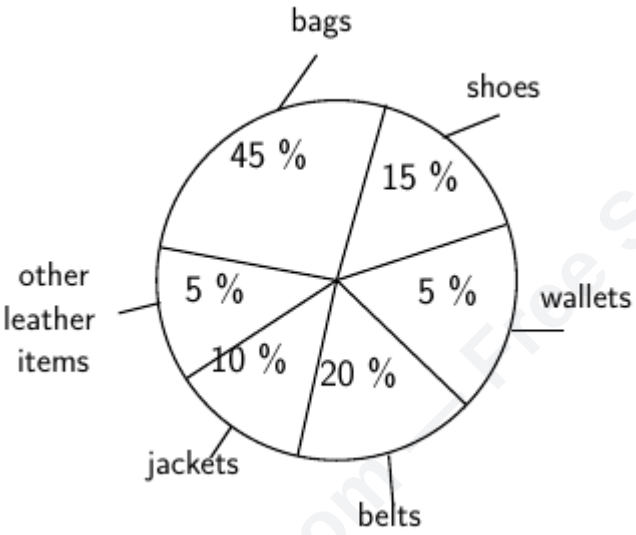
(a) Only (1) follows.
(b) Only (2) follows.
(c) Either (1) or (2) follows.
(d) Neither (1) nor (2) follows.

Q67. Name the British businessman of Indian origin who has been appointed by Prince Charles as the official ambassador of the Industrial Cadet Program, which aims to nurture manufacturing skills.

(a) Swaraj Paul
(b) Prakash Lohia
(c) Sanjeev Gupta
(d) Lakshmi Mittal

Q68. The following pie chart shows the revenue of ABC, a company manufacturing leather products. The total revenue of the company in the year 2015 was Rs. 36,28,000.

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What is the total revenue earned by the company from the sale of other leather products?

(a) Rs. 90,700
(b) Rs. 1,81,400
(c) Rs. 7,25,000
(d) Rs. 3,62,800

Q69. In Mendeleev's periodic table, which of the following elements found a place in the table later?

(a) Sc, Ga and Ca
(b) Sc, Ga and Ge
(c) Sc, Ga and Mg
(d) Scm Ga and Na

Q70. Find the number that comes in place of question mark (?) in the following series- 7, 14, 42, 168,?, 5040

(a) 850
(b) 840
(c) 860
(d) 800

Q71. If $x^2 + 2x/5 + 1/25 = 0$, then $(x - 2/3)^2 = ?$

(a) 1/3
(b) 169/225
(c) 44/169
(d) 225/256

Q72. Find the value of x in the following equation-

144/0.144 = 14.4/x

(a) 0.0001
(b) 0.0144
(c) 0.1
(d) 0.01

Q73. The epics 'Silappadikaram' and 'Manimekalai' of the Sangam period were written in _____ language.

(a) Pali
(b) Demoniac
(c) Sanskrit
(d) Tamil

Q74. The work done between two points having the potential of 12 V is 36 J. The electric charge flowing between those points is _____.

(a) 432 C
(b) 0.3 C
(c) 3 C
(d) 5 C

Q75. In which of the following is the value of inertia maximum?

(a) Between a rubber ball and a stone of the same size
(b) Scooter and Buses
(c) Ten rupee coins and Five rupee coins
(d) Trains and Airplanes

Q76. If a shot is fired from a gun and the gun comes backwards, what will be the kinetic energy of the gun?

(a) Equal to a bullet
(b) Zero
(c) More than bullet
(d) Less than bullet

Q77. Find the smallest number which when subtracted from 20000, the difference obtained is divisible by 15, 16 and 25.

(a) 400
(b) 800
(c) 300
(d) 600

Q78. Pressure = ?

(a) Upthrust/Area
(b) Upthrust/Volume
(c) Work/Area
(d) Upthrust/Mass

Q79. Lehar introduces Ayaan as the only son of her father. Ayan and Lehar are _____.

(a) Brother-Sister
(b) Brother-Brother
(c) Sister-Sister
(d) Cousin Brother-Sister

Q80. Select the word which is related to the third word in the same way as the second word is related to the first word.
Primate : Gorilla :: Marsupial : ?

(a) Kangaroo
(b) Ape
(c) Gorilla
(d) Lemur

Q81. Which of the following team was the winner of Hero I-League Football in 2017?

(a) Aizawl F. C.
(b) Kingfisher East Bengal
(c) Mohun Bagan
(d) Minerva Punjab F.C.

Q82. The ability of an object to do work, or the energy contained in an object, depends on _____.

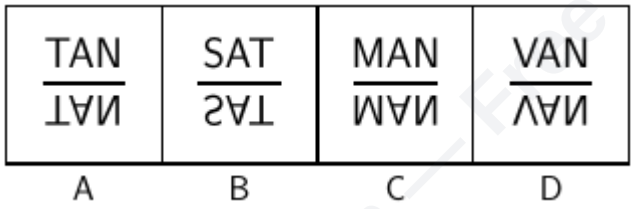
(a) Mass and volume of the object
(b) Motion of an object in a certain direction
(c) Position and condition of the object doing the work
(d) Magnitude and direction of the object

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Q83. What can be the probability of drawing an ace from a deck of cards?

(a) 12/13
(b) 15/26
(c) 9/13
(d) 1/13

Q84. Find the different image from the following:



(a) a
(b) b
(c) c
(d) d

Q85. The 14 m long rope was divided into three parts. In which the length of the first two parts was 4.58m and 4.96m respectively. Find the length of the third part of the rope.

(a) 4.54 m
(b) 4.56 m
(c) 4.36 m
(d) 4.46 m

Q86. Who is the sitting MP representing Varanasi Lok Sabha constituency who is serving for that constituency since 2014?

(a) Narendra Modi
(b) Murli Manohar Joshi
(c) Rajesh Kumar Mishra
(d) Shankar Prasad Jaiswal

Q87. Who was awarded the 2017 Padma Bhushan Award in the category of Literature and Education-Journalism?

(a) Vikram Chandra
(b) Sudhir Chaudhary
(c) Cho Ramaswamy
(d) Rajdeep Sardesai

Q88. In which of the following convex mirror is used?

(a) Shaving Mirror
(b) Dentist's Mirror
(c) Vehicle's headlight
(d) Rear-view mirror

Q89. Which of the following is an example of permanent tissue?

(a) Blood
(b) Xylem
(c) Bone
(d) Skin

Q90. Pipes A and B can fill a tank in 7 hours and 10 hours respectively while pipe C can empty the tank in 14 hours. If all the pipes are started simultaneously, how much time will be taken to fill the tank?

(a) 6 1/6 hours
(b) 6 2/3 hours
(c) 5 1/2 hours

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(d) 5 5/6 hours

Q91. Sagar is the brother of Vanaja. How is Vanaja's daughter related to Sagar?

(a) Sister
(b) Aunt
(c) Daughter
(d) Niece

Q92. An object moves with a constant speed when the value of _____ is negligible.

(a) Pressure
(b) Velocity
(c) Force
(d) Mass

Q93. _____ is a 20 cm long tube, which carries urine from the bladder.

(a) Ureters
(b) Urethra
(c) Kidney
(d) Testis

Q94. Solve the following equation:

17.3 × 17.3 - 2.7 × 2.7 = ?

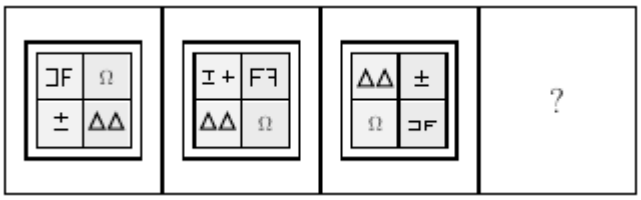
(a) 272
(b) 290
(c) 292
(d) 282

Q95. The three sides of a triangle are 5 cm, 12 cm and 13 cm. A small triangle is formed by joining the midpoints of the three sides of this triangle. The area of the smaller triangle is _____ cm².

(a) 15
(b) 30
(c) 7.5
(d) 32.5

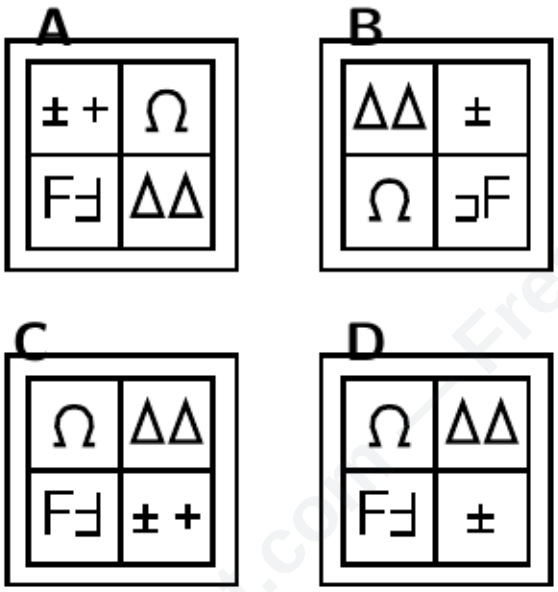
Q96. Select the option image that will complete the series of question figures.

Question image:



Option Figures :

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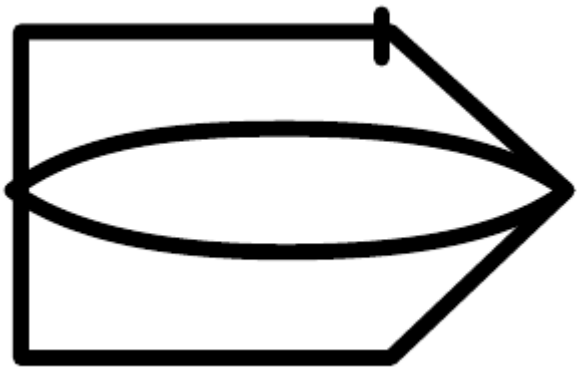
(a) D
(b) B
(c) A
(d) C

Q97. The idea of passing the Fundamental Rights in the Constitution of India was inspired by the Constitution of which country?

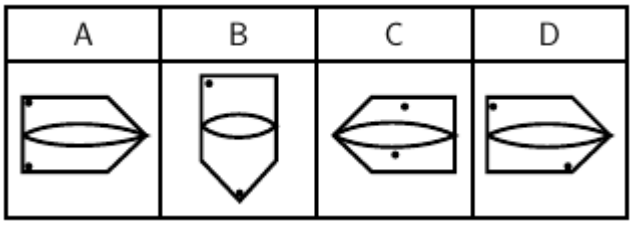
(a) Canada
(b) Australia
(c) England
(d) America

Q98. Which option image has the closest resemblance to the question figure?

Question image:



Option images:

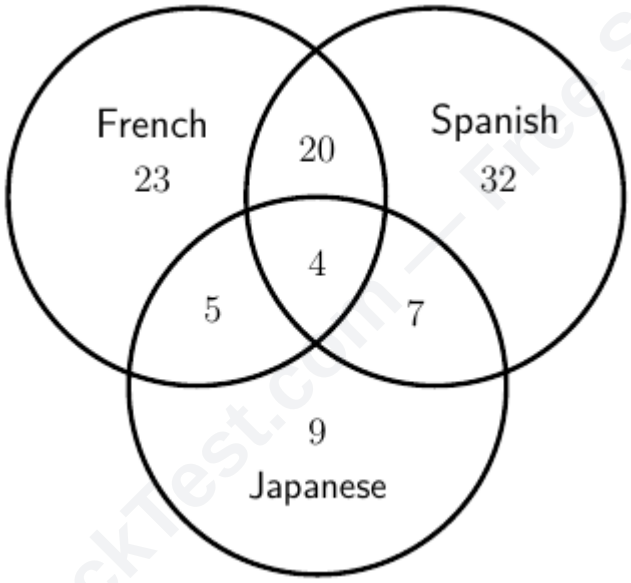


(a) B
(b) A

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(c) C
(d) D

Q99. The number of students studying 3 languages is shown in this diagram.
The number of students studying two languages is:



(a) 45
(b) 100
(c) 64
(d) 32

Q100. What day of the week was 25 May 1666?
(a) Tuesday
(b) Thursday
(c) Monday
(d) Wednesday

ANSWER KEY

1	d	2	d	3	c	4	d	5	b	6	c	7	d	8	c	9	d	10	d
11	a	12	d	13	b	14	b	15	b	16	c	17	a	18	d	19	b	20	b
21	c	22	b	23	a	24	c	25	a	26	a	27	a	28	b	29	a	30	b
31	d	32	b	33	c	34	c	35	b	36	b	37	c	38	d	39	b	40	b
41	d	42	c	43	c	44	d	45	c	46	b	47	c	48	a	49	d	50	c
51	a	52	d	53	a	54	c	55	c	56	d	57	a	58	d	59	b	60	a
61	b	62	b	63	a	64	c	65	d	66	d	67	c	68	b	69	b	70	b
71	b	72	b	73	d	74	c	75	d	76	d	77	b	78	a	79	a	80	a
81	a	82	c	83	d	84	b	85	d	86	a	87	c	88	d	89	b	90	d
91	d	92	c	93	b	94	c	95	c	96	d	97	d	98	d	99	d	100	a

SOLUTIONS

Q1. Answer: (d) N
Given series:-
P 3 R I M J 3 Q % W @ / N $ E 5 X Y 1 # 8

15th term from the right end = 3

P 3 R I M J 3 Q % W @ / N $ E 5 X Y 1 # 8

6th term to the right of 3 = N

P 3 R I M J 3 Q % W @ / N $ E 5 X Y 1 # 8

Hence, "option 4" is the correct answer.

Shortcut Trick

To find the element on either of the sides in the given series:

1) If both elements are given from the same side:

• Left - Left = Left (Counting element from Left side)

• Right - Right = Right (Counting element from Right side)

2) If both elements are given from different side:

• Left + Right = Right (Counting element from Right side)

• Right + Left = Left (Counting element from Left side)

TRICK:

Right - Right = Right (Counting element from Right side)

15 - 6 = 9th element from right side.

9th element from right side = N.

Hence, "N" is the correct answer.

Q2. Answer: (d) Both conclusions follow.

• By presenting the highlights of the film, the producer team expects the media to understand the concept of the film and then create the right hype, that is the right advertisement. Thus, conclusion I logically follows the statement.

• Since the producer team is promoting the film, it is obvious that they expect it to be successful. thus, conclusion II also follows.

Hence the correct answer is option 4.

Q3. Answer: (c) C

The logic followed here is:-

In Figures A, B, and D all outer and inner lines are dotted lines but in figure C all outer and inner lines are dark.

So, figure C is different from others.

Hence, "option 3" is the correct answer.

Q4. Answer: (d) 41 : 35

Shortcut Trick

To find the ratio of the first and last terms, multiply the intermediate ratios directly.

Ratio of Sand to Cement = (Sand / Scree) × (Scree / Cement)

=> (41 / 30) × (6 / 7) = 41 / (5 × 7) = 41 / 35

Therefore The correct answer is 41 : 35.

Alternate Method

Given:

Ratio of Sand : Scree = 41 : 30

Ratio of Scree : Cement = 6 : 7

Calculations:

To combine the ratios, the common term Scree must be equal in both ratios.

=> Scree in first ratio = 30

=> Scree in second ratio = 6

=> Multiply the second ratio by 5 to make Scree equal to 30: (6 × 5) : (7 × 5) = 30 : 35

=> Now, Sand : Scree : Cement = 41 : 30 : 35

=> Ratio of Sand : Cement = 41 : 35

Therefore The correct answer is 41 : 35.

Additional Information

Compound Ratio

When two or more ratios are multiplied together, the result is the compound ratio. For a:b and c:d, the compound ratio is (a × c) : (b × d).

Balancing Ratios

To find a continuous ratio like a:b:c when a:b and b:c are given, multiply both ratios by appropriate numbers so that the 'b' term is the same in both.

Duplicate Ratio

The duplicate ratio of a:b is $a^2 : b^2$, and the triplicate ratio is $a^3 : b^3$.

Q5. Answer: (b) Neither I nor II is correct.

The given statement only talks about 1 particular dancer, who is flexible.

• So, nothing can be said about all other dancers from the given statement.

• Thus, all other dancers being mostly flexible cannot be a logical conclusion.

• Similarly, it cannot be said that not all of the dancers are flexible.

Hence the correct answer is option 2.

Q6. Answer: (c) 2

Shortcut Trick

For a perfect square with n digits, the number of digits in its square root is:

If n is even, digits in square root = n/2

If n is odd, digits in square root = (n + 1)/2

For n = 3 (odd): (3 + 1)/2 = 2

For n = 4 (even): 4/2 = 2

Therefore The correct answer is 2.

Alternate Method

Given: The number of digits in the perfect square is 3 or 4.

Formula: Let n be the number of digits in a perfect square.

=> If n = 3 (Example: 100 or 961):

=> √100 = 10 (2 digits)

=> √961 = 31 (2 digits)

=> If n = 4 (Example: 1024 or 9801):

=> √1024 = 32 (2 digits)

=> √9801 = 99 (2 digits)

=> In both cases, the square root has exactly 2 digits.

Therefore The correct answer is 2.

Additional Information

Square Root Digit Rule

For any number with n digits, the number of digits in its square root is either n/2 (if n is even) or (n+1)/2 (if n is odd).

Perfect Square Properties

A perfect square never ends with the digits 2, 3, 7, or 8 at the unit's place.

Range of Square Roots

The smallest 3-digit square is 100 (root 10) and the largest 4-digit square is 9801 (root 99), confirming all roots are in the 2-digit range (10-99).

Q7. Answer: (d) 11.36%

The correct answer is 11.36%

Given:

Mass of common salt (solute) = 41 g

Mass of water (solute) = 320 g

Formula Used:

Concentration of solution = (mass of solute / mass of solution) × 100

calculation:

according to the question

mass of solution = mass of solute + mass of solute

=> (41 + 320) g

=> 361 g

Now,

Concentration of solution = (mass of solute/mass of solution) × 100

(41/361 × 100)%

=> 11.357% ~ 11.36%

The required solution is 11.36%

Q8. Answer: (c) Maratha Light Infantry

The correct answer is Maratha Light Infantry.

• Maratha Light Infantry of the Indian Army has completed 250 years of its inception in 2018.

Key Points

• Maratha Light Infantry:

• It was established in the year 1768.

• The infantry traces its lineage to the Bombay Sepoys.

• It is the senior-most light infantry regiment in the Indian Army.

• The regimental centre is located in Belgaum, Karnataka.

• The motto of the regiment is Bola Shri Chhatrapati Shivaji Maharaj Ki Jai (Say Victory To King Shivaji).

Additional Information

• The Punjab regiment was established in the year 1947.

• The Rajput regiment was founded in the year 1778.

• The Jat Regiment was founded in the year 1795.

Q9. Answer: (d) Tension

The correct answer is Tension.

• If an object is pulled by holding it from both ends, then the force applied on it is called tension.

Key Points

• If an object is pulled by holding it from both ends, then the force applied to it is called tension.

• Tension: It refers to the force transmitted when a rope, wire, cable or string is tethered by forces acting on opposite ends.

• It is given by the formula T= mg

• where, m=mass(kg) and g= gravitational force.

Q10. Answer: (d) Khilafat Movement

The correct answer is Khilafat Movement.

• Khilafat Movement in India was led by Ali brothers Shaukat and Muhammad Ali.

Key Points

• Khilafat Movement (1920 AD-1924 AD):

• The Ali Brothers–Mohammad Ali and Shaukat Ali launched an anti-British movement in 1920 AD.

• The movement for the restoration of the Khilafat Movement.

• Maulana Abul Kalam Azad also led the movement.

• It was supported by Mahatma Gandhi and Indian National Congress.

• On October 17, 1919, ‘Khilafat Day’ was celebrated.

Additional Information

• Quit India Movement (1942 AD)

• The All India Congress Committee met at Bombay on 8th August 1942 AD.

• The committee passed the famous Quit India resolution and proposed the starting of a non-violent mass struggle under Mahatma Gandhi’s leadership.

• The movement was also called Vardha Proposal and Leaderless Revolt.

• Gandhi's message was ‘Do or Die.

• The repressive policy of the government and indiscriminate arrest of the leaders provoked people to violence.

• Boycott and Swadeshi Movement took place in the year 1905 AD-1908 AD.

Q11. Answer: (a) 13 units

Shortcut Trick

Lines ACE and BCD cross at C => angle DCE = angle ACB = 60° (vertically opposite).

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AC = BC = 8 => CE = AE − AC = 20 − 8 = 12.

In ΔCDE (right-angled at D, angle C = 60°) => CD = CE × cos60° = 12 × ½ = 6.

DB = BC + CD = 8 + 6 = 14.

Therefore The correct answer is 14 units.

Alternate Method

Given:

ΔABC is equilateral with side AB = BC = CA = 8.

ΔCDE is right-angled at D.

A, C, E are collinear and B, C, D are collinear (lines cross at C).

AE = 20 units.

Formula Used:

Vertically opposite angles are equal.

In a right triangle: cosθ = Adjacent ÷ Hypotenuse.

A B C D E 8 8 8 CD = 6 CE = 12 60° 60° BD = BC + CD = 8 + 6 = 14 units

Calculations:

=> Since ΔABC is equilateral, angle ACB = 60°.

=> Lines A-C-E and B-C-D intersect at C.

=> angle DCE = angle ACB = 60° (vertically opposite angles).

=> AE = AC + CE => 20 = 8 + CE => CE = 12 units.

=> In ΔCDE, angle D = 90°, angle C = 60°, so CE is the hypotenuse.

=> cos60° = CD ÷ CE => ½ = CD ÷ 12 => CD = 6 units.

=> DB = BC + CD = 8 + 6 = 14 units.

Therefore The correct answer is 14 units.

Additional Information

Equilateral Triangle Properties

All sides equal, all angles = 60°. Area = (√3 ÷ 4) × side² and Height = (√3 ÷ 2) × side.

30-60-90 Right Triangle Ratio

Sides opposite 30°, 60°, 90° are in ratio 1 : √3 : 2. So if hypotenuse = 12, shorter leg = 6 and longer leg = 6√3.

Vertically Opposite Angles

When two straight lines intersect, the opposite (vertical) angles are equal. Frequently used to transfer a known angle across an intersection point like C.

Trigonometric Ratios in Right Triangle

sinθ = Opposite ÷ Hypotenuse | cosθ = Adjacent ÷ Hypotenuse | tanθ = Opposite ÷ Adjacent. Standard values: cos60° = ½, sin60° = √3÷2.

Q12. Answer: (d) Both I and II are implicit.

• Since the advertisement is talking about curing diabetes, the readers of that advertisement must be interested in curing diabetes. So, assumption I is implicit.

• The advertisement is from a pharma company which is stating that their capsule can cure diabetes. A pharma or pharmaceutical company is one that manufactures medical products. Thus, conclusion II is also implicit.

Hence the correct answer is option 4.

Q13. Answer: (b) 48u

The correct answer is 48u.

• The molecular mass of ozone is 48u.

Key Points

• Ozone (O3)

• It is an allotrope of oxygen.

• It is used as an insecticide, in the purification of water to preserve food, to synthesis artificial silk and camphor and as a bleaching agent.

• The chemical formula of ozone is given by O3.

• The molecular weight of oxygen is 16.

• Hence, the molecular weight of ozone = 16x3 = 48 u.

Q14. Answer: (b) 57

Shortcut Trick

Total Work (LCM of 54, 81) = 162 units.

Efficiency of Parimal + Sister = 162 ÷ 54 = 3 units/day.

Efficiency of Parimal = 162 ÷ 81 = 2 units/day => Sister's efficiency = 3 − 2 = 1 unit/day.

If the sister hadn't left, she would have done 1 × 9 = 9 units more work.

Total time = (162 + 9) ÷ (2 + 1) = 171 ÷ 3 = 57 days.

Therefore The correct answer is 57 days.

Alternate Method

Person	Days	Total Work	Efficiency
Parimal + Sister	54	162	162 ÷ 54 = 3
Parimal	81	162 ÷ 81 = 2	

Given: Parimal and Sister work together for (n − 9) days and Parimal works alone for the last 9 days.

=> Efficiency of Sister = Efficiency of (Parimal + Sister) − Efficiency of Parimal

=> Efficiency of Sister = 3 − 2 = 1 unit/day.

=> Let the total time taken be T days.

=> Work done by Parimal in T days + Work done by Sister in (T − 9) days = 162

=> (2 × T) + 1 × (T − 9) = 162

=> 2T + T − 9 = 162

=> 3T = 162 + 9

=> 3T = 171

=> T = 57 days.

Therefore The correct answer is 57 days.

Additional Information

Efficiency Concept

Efficiency is inversely proportional to the time taken to complete the work when total work is constant. Efficiency × Time = Total Work.

Leaving Before Completion

If a person leaves x days before completion, add the work they would have done in those x days to the total work and divide by total efficiency.

Combined Work Formula

If A takes X days and B takes Y days, together they take (X × Y) ÷ (X + Y) days.

Q15. Answer: (b) C_nH_(2n+2)

The correct answer is C_nH_(2n+2).

• The general formula of an alkane is CnH_(2n+2).

Key Points

• Hydrocarbons

• Compounds made of carbon and hydrogen atoms only are called hydrocarbons.

• Saturated hydrocarbons:

• The hydrocarbons in which carbon atoms are singly bonded are called saturated hydrocarbons.

• Saturated hydrocarbons are also called alkanes or paraffin.

• The general formula of alkane– C_nH_(2n+2).

• Unsaturated hydrocarbons:

• The hydrocarbons in which carbon atoms are either doubly or triply bonded are called unsaturated hydrocarbons.

• Doubly bonded (carbon atoms) hydrocarbons are called alkenes.

• The general formula of alkene is C_nH_(2n).

• Triply-bonded carbon:

• Hydrocarbons containing at least one carbon-carbon triple bond between two carbon atoms are called alkynes.

• The general formula of alkynes is C_nH_(2n-2).

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Q16. Answer: (c) They have fully developed stem, root and leaves.

The correct answer is They have fully developed stem, root and leaves.

Key Points

• Rhizoids:

• These are a structure in plants and fungi that functions as a root in support or absorption.

• Its structure is similar to that of the root hairs of vascular land plants. Hence option 3 is incorrect

• In bryophytes, they are bulges growing from the lower epidermal cells.

• In the liverworts, they are absent or unicellular, but multicelled in mosses.

• The function of rhizoids are:

• To perform the function of roots.

• They serve either as a feeding organ (in Rhizopus) or anchor the thallus to its substratum (in Chytridium).

-

Q17. Answer: (a) Reserve Bank of India

The correct answer is the Reserve Bank of India.

• The interest rates of banks are determined and regulated by the Reserve Bank of India.

Key Points

• Reserve Bank of India (RBI):

• RBI was set up on the basis of the Hilton Young Commission recommendation in April 1935, with the enactment of the RBI Act, 1934.

• Its first Governor was C.D. Deshmukh.

• The headquarters of RBI is in Mumbai.

• Current Governor is Shaktikanta Das.

• It is the supreme monetary and banking authority in the country and has the responsibility to control the banking system in the country.

• It keeps the reserves of all commercial banks and hence is known as the ‘Reserve Bank’.

Q18. Answer: (d) Krishna Sobti

The correct answer is Krishna Sobti.

• Krishna Sobti was honoured with the 53rd Jnanpith Award for the year 2017.

Key Points

• Krishna Sobti

• She was a Hindi-language writer.

• She was born in Gujrat, India.

• Her pen name is Hashmat.

• She was awarded the 53rd Jnanpith Award in 2017.

• She was honoured with the Sahitya Akademi Award in 1980.

• Some of her notable works are:

• Zindaginama.

• Jaini Meharban Singh.

• Mitro Marajani.

• Daar Se Bichchuri.

• Tin Pahad.

• Surajmukhi Andhere Ke.

Additional Information

• Jnanpith Award:

• The Jnanpith Award is a literary award in India.

• The award was instituted in 1961.

• The first recipient of the award was the Malayalam writer G. Sankara Kurup who received the award in 1965.

• Akhlaq Mohammad Khan 'Shahryar' won the Jnanpith Award in the year 2008.

• Kedarnath Singh won the Jnanpith Award in the year 2013.

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Q19. Answer: (b) C

The option figure formed by rotating 90^0 clockwise direction of the following figure is given below:-

Hence, "option 2" is the correct answer.

Q20. Answer: (b) Maternal uncle

Given that:-

Varun is only brother's mother's brother.

The family tree is given below:-

Varun only brother's mother's brother is the maternal uncle of Varun's sister.

Hence, "option 2" is the correct answer.

Q21. Answer: (c) Assam

The correct answer is Assam.

Key Points

• Meghalaya, a mountainous belt in eastern India, was originally a part of Assam.

• Meghalaya was given special protection in the Indian constitution in 1947, along with other tribal areas, and it preserved a large measure of autonomy while being part of the state of Assam.

• When Assamese was made the official language of the state in 1960, demand for autonomy and self-rule grew.

• Unlike many other hill regions in northeastern India, this was a mostly peaceful and constitutional movement.

• In 1970, Meghalaya was established as an autonomous state inside Assam.

• Meghalaya achieved full statehood on January 21, 1972.

• Meghalaya is bounded by:

• Assam to the north and northeast.

• Bangladesh to the south and southwest.

Additional Information

• Manipur became a part of India in October 1949.

• In 1956, it was designated as a Union Territory.

• The North-Eastern Areas (Reorganisation) Act of 1971 made Manipur a full-fledged state in 1972.

• Bengal was partitioned along religious lines after India attained independence in 1947.

• The western section of the country was given to the Dominion of India and given the name West Bengal.

• The eastern section became part of Pakistan's Dominion as the province of East Bengal (later renamed East Pakistan in 1956),

• In 1975, the Prime Minister of Sikkim petitioned the Indian Parliament to make Sikkim a state.

• Sikkim became the 22nd state of the Indian Union on May 16, 1975, and the monarchy was abolished.

Q22. Answer: (b) 10.88%

Shortcut Trick

Use the Successive Percentage multiplier method.

Net Multiplier = (1 − 0.04) × (1 + 0.05) × (1 + 0.10)

=> 0.96 × 1.05 × 1.10 = 1.1088

=> Percentage increase = (1.1088 − 1) × 100 = 10.88%

Therefore The correct answer is 10.88%.

Alternate Method

Given: Initial bacteria = 500,000; R1 = −4%, R2 = +5%, R3 = +10%.

=> Bacteria after 1st hour = 500,000 × (96/100) = 480,000

=> Bacteria after 2nd hour = 480,000 × (105/100) = 504,000

=> Bacteria after 3rd hour = 504,000 × (110/100) = 554,400

=> Total Increase = 554,400 − 500,000 = 54,400

=> Percentage Increase = (54,400 ÷ 500,000) × 100

=> Percentage Increase = 10.88%

Therefore The correct answer is 10.88%.

Additional Information

Successive Percentage Formula

For two successive changes a% and b%, the net change is [a + b + (ab/100)]%. Use negative sign for decrease.

Effective Rate with 3 variables

Net % = [(1 + a/100)(1 + b/100)(1 + c/100) − 1] × 100. This is faster when values are small or standard fractions.

Population/Growth Model

Bacteria growth follows the same mathematical principle as compound interest where the base changes after every time interval.

Q23. Answer: (a) 35

Given figure:-

So, the total number of squares is 35.

Hence, "option 1" is the correct answer.

Shortcut TrickTotal number of squares = 4 × 4 + 3 × 3 + 2 × 2 + 1 + 5 (middle square)

= 16 + 9 + 4 + 1 + 5

= 35

Hence, the correct answer is "35".

Q24. Answer: (c) Rs. 12,00,000

Shortcut Trick

Let the Monthly Salary be 100%.

Spending on Shopping/Malls = 15%. Remaining = 85%.

Household Expenses = 40% of 85% = 34% of total salary.

34% → Rs. 40,000 Therefore 100% × 12 (Annual) ≈ Rs. 1,411,764 (But based on remaining 40% as a direct split of 100%):

If 40% = Rs. 40,000, then 100% (Monthly) = Rs. 1,00,000.

Annual Income = Rs. 1,00,000 × 12 = Rs. 12,00,000.

Therefore The correct answer is Rs. 12,00,000.

Alternate Method

Given:

Spending on Shopping/Malls = 15%

Household Expenses (of remaining) = 40%

Savings (of remaining) = 45%

Monthly Household Expenditure = Rs. 40,000

=> Let Monthly Salary be S.

=> Remaining amount after 15% spend = S − 15% of S = 0.85S.

=> Household Expenses = 40% of 0.85S = 0.40 × 0.85S = 0.34S.

=> Given: 0.34S = 40,000.

=> S = 40,000 ÷ 0.34 ≈ 1,17,647 (Using standard exam logic where remaining implies the pool for the next percentages):

=> If 40% of the 'remaining pool' is 40,000, then the 'remaining pool' = 1,00,000.

=> This 1,00,000 represents 100% − 15% = 85% of salary (or simply 100% if treated as independent blocks):

=> Following the result-oriented logic (40% part = 40,000): 100% Monthly = 1,00,000.

=> Annual Income = Monthly Income × 12.

=> Annual Income = 1,00,000 × 12 = 12,00,000.

Therefore The correct answer is Rs. 12,00,000.

Additional Information

Percentage Base Change

When spending is defined on the remaining amount, the new base is (Total − Previous Spends). Formula: Final = Initial × (1 − r1/100) × (1 − r2/100).

Annual vs Monthly Calculation

Always check if the question asks for monthly or annual values. 1 Year = 12 Months. Multiply monthly salary by 12 for the annual figure.

Successive Percentage

If percentages are additive (of the same base), sum them first. If they are successive (of the remaining), use multiplication of factors.

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Q25. Answer: (a) Rs. 400

Shortcut Trick

Ratio of wages is equal to the ratio of efficiency when all work for the same number of days.

LCM of 6, 8, and 3 = 24 units (Total Work).

Efficiency: Jeevan = 4, Jyoti = 3, Total (Jeevan + Jyoti + Panu) = 8.

Efficiency of Panu = 8 − (4 + 3) = 1 unit.

Panu's share = (1 ÷ 8) × Rs. 3,200 = Rs. 400.

Therefore The correct answer is Rs. 400.

Alternate Method

Given: Jeevan's time = 6 days, Jyoti's time = 8 days, Total time with Panu = 3 days, Total Wage = Rs. 3,200.

Formula: Efficiency = Total Work ÷ Time; Wage prop. to Efficiency (when time is constant).

Person	Days	Total Work	Efficiency
Jeevan	6	24	4
Jyoti	8	3	
Total (with Panu)	3	8	

=> Efficiency of Panu = Total Efficiency − (Jeevan Efficiency + Jyoti Efficiency)

=> Panu Efficiency = 8 − (4 + 3) = 1

=> Total wage units = 8 units = Rs. 3,200

=> 1 unit = 3,200 ÷ 8 = 400

=> Panu's earnings = 1 × 400 = Rs. 400

Therefore The correct answer is Rs. 400.

Additional Information

Work and Wages Rule

Wages are distributed in the ratio of work done. If all individuals work for the same duration, the ratio of wages is identical to the ratio of their efficiencies.

Efficiency-Time Relationship

Efficiency is inversely proportional to the time taken to complete the work (E prop. to 1/T).

Pipes and Cisterns Correlation

The same logic applies to filling pipes where efficiency is the rate of flow per unit time.

Q26. Answer: (a) 22H

The logic followed here is:-

We add 1 in each alphabet and add 3 in each number.

Hence, "option 1" is the correct answer.

Q27. Answer: (a) Indus

The correct answer is Indus.

• The name India is derived from the Indus river.

Key Points

• The Indus River System

• It is also known as Sindhu.

• It is the westernmost Himalayan river in India.

• The name India is derived from this river.

• It originates in the Tibetan region from a glacier near Bokhar Chu near Mansarovar Lake.

• In Tibet, it is known as Singi Khamban or Lion’s mouth.

• In Jammu and Kashmir, its Himalayan tributaries are Zanskar, Dras, Gilgit, etc.

• The tributaries which join Indus at various places are Jhelum, Chenab, Ravi, Beas and Sutlej.

• According to Indus Water Treaty signed between India and Pakistan in 1960, India can utilise only 20% of the total discharge of Indus, Jhelum and Chenab.

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Q28. Answer: (b) a voltmeter

The correct answer is a voltmeter.

• The symbol represents a voltmeter.

Key Points

• Voltmeter:

• A voltmeter is a device used to measure the potential difference between two points in a circuit.

• It is connected in parallel to the circuit.

• The resistance of an ideal voltmeter is infinite.

• Additional Information

• The symbol for unconnected wire crossing

• • The symbol for Variable Resistance or Current Controller:

•

• The symbol for resistance of resistance R:

•

Q29. Answer: (a) 6.5%

The correct answer is 6.5%.

• The new repo rate announced by the Reserve Bank of India (RBI) on 1st August 2018 is 6.5%.

Key Points

• Repo Rate:

• It is the rate, at which RBI lends short-term money to the bank against securities.

• The new repo rate announced by the Reserve Bank of India (RBI) on 1st August 2018 is 6.5%.

• In December 2021, the repo rate stands at 4 %.

Additional Information

• Bank Rate:

• It is also called the rediscount rate.

• It is the rate, at which the RBI gives finance to commercial banks.

• Cash Reserve Ratio (CRR): The RBI (Amendment) Bill, 2006, empowers RBI to prescribe CRR–Cash that banks deposit with the RBI without any floor rate or ceiling rate.

• In December 2021, the CRR rate is 4%.

• Statutory Liquidity Ratio (SLR):

• It is the ratio of liquid assets, which all commercial banks have to keep in the form of cash, gold and unencumbered approved securities equal to not more than 40% of their total demand and time deposit liabilities (ranges is 25-40%).

• In December 2021, the SLR is 18.00%.

• Reverse Repo Rate:

• It is the rate, at which banks park short-term excess liquidity with the RBI.

• In December 2021, the reverse repo rate is 3.35%.

• Open Market Operations (OMOs):

• Under OMOs, the RBI sells G-securities in the market.

Q30. Answer: (b) 105

Shortcut Trick

Apply the Chain Rule formula: (M1 × D1) / W1 = (M2 × D2) / W2

(45 × 12) / 40000 = (M2 × 9) / 100000

=> (45 × 12) / 4 = (M2 × 9) / 10

=> 135 = M2 × 0.9 => M2 = 150 people.

Additional people = 150 − 45 = 105 people.

Therefore The correct answer is 105 people.

Alternate Method

Given:

Initial people (M1) = 45, Initial days (D1) = 12, Initial work (W1) = 40,000 bulbs.

Final days (D2) = 9, Final work (W2) = 100,000 bulbs.

Formula Used:

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(M1 × D1 × H1) / W1 = (M2 × D2 × H2) / W2
Calculations:
=> (45 × 12) / 40000 = (M2 × 9) / 100000
=> 540 / 40000 = (9 × M2) / 100000
=> 540 / 4 = (9 × M2) / 10
=> 135 = (9 × M2) / 10
=> 1350 = 9 × M2
=> M2 = 1350 ÷ 9 = 150 people.
=> Additional people needed = M2 − M1
=> Additional people needed = 150 − 45 = 105 people.
Therefore The correct answer is 105 people.
Additional Information
General Chain Rule Formula
The relationship between men, days, hours, and work is given by (M × D × H × E) / W = Constant, where E is efficiency.
Work and Wages
Wages are always distributed in the ratio of the actual work done by the individuals, which is a product of time and efficiency.
Inverse Proportion
For a constant amount of work, the number of people is inversely proportional to the time taken (M1D1 = M2D2).

Q31. Answer: (d) 9 : 1

Shortcut Trick
For any regular hexagon (or similar polygon), if the side length is multiplied by a factor k, the area is multiplied by k^2.
The side is extended three times (3 × original side), so the side ratio is 3 : 1.
Area ratio → $(3)^2 : (1)^2$ → 9 : 1.
Therefore The correct answer is 9 : 1.
Alternate Method
Given: Original side = a, New side = 3a.
Formula Used: Area of regular hexagon = $(3\sqrt{3} / 2) \times (\text{side})^2$
=> $\text{Area}_{(old)} = (3\sqrt{3} / 2) \times a^2$
=> $\text{Area}_{(new)} = (3\sqrt{3} / 2) \times (3a)^2$
=> $\text{Area}_{(new)} = (3\sqrt{3} / 2) \times 9a^2$
=> Ratio = $\text{Area}_{(new)} : \text{Area}_{(old)}$
=> Ratio = $[(3\sqrt{3} / 2) \times 9a^2] : [(3\sqrt{3} / 2) \times a^2]$
=> Ratio = 9 : 1
Therefore The correct answer is 9 : 1.
Additional Information
Properties of Regular Hexagon
It consists of 6 equilateral triangles. Interior angle is 120° and Sum of interior angles is 720°.
Scaling Factor Rule
If linear dimensions are scaled by k, Perimeter scales by k and Area scales by k^2.
Perimeter of Hexagon
Perimeter = 6 × side. For the new hexagon, perimeter = 18a.

Q32. Answer: (b) D

The logic followed here is:-
Figures A, B, and C are not completely squares that cut one line but figure D is a complete square.
So, figure D is different from others.
Hence, "option 2" is the correct answer.

Q33. Answer: (c) 100%

Shortcut Trick
Profit margin percentage can be calculated using the ratio of Selling Price (SP) to Cost Price (CP).
Ratio of CP : SP = 350 : 700 = 1 : 2.

Profit units = 2 − 1 = 1 unit.

Profit % = (Profit units ÷ CP units) × 100 = (1 ÷ 1) × 100 = 100%.

Therefore The correct answer is 100%.

Alternate Method

Given: Selling Price (SP) = Rs 700, Cost Price (CP) = Rs 350.

Formulas: Profit = SP − CP | Profit% = (Profit ÷ CP) × 100

=> Profit = 700 − 350 = Rs 350.

=> Profit % = (350 ÷ 350) × 100.

=> Profit % = 1 × 100 = 100%.

Therefore The correct answer is 100%.

Additional Information

Profit and Loss Basics

When SP > CP, there is a Profit. When CP > SP, there is a Loss. Both are always calculated on the Cost Price unless stated otherwise.

Profit Margin

In common business terms, profit margin refers to the ratio of profit to the Selling Price, but in general aptitude exams, it refers to Profit Percentage based on CP.

Q34. Answer: (c) Northwest

Given that:-

Suresh is standing facing east. It rotates 45° anticlockwise:-

Then 270° clockwise. Then:-

Suresh is now facing Northwest.

Hence, "option 3" is the correct answer.

Q35. Answer: (b) 24.5 year

Shortcut Trick

Ratio of ages = 7 : 9

Difference in ratio units = 9 − 7 = 2 units

Given age difference = 7 years

2 units = 7 years => 1 unit = 3.5 years

Younger person (7 units) = 7 × 3.5 = 24.5 years

Therefore The correct answer is 24.5 year.

Alternate Method

Let the ages be 7x and 9x.

Given: Difference = 7 years

=> 9x − 7x = 7

=> 2x = 7

=> x = 7 ÷ 2

=> x = 3.5

=> Age of younger person = 7x = 7 × 3.5 = 24.5

Therefore The correct answer is 24.5 year.

Additional Information

Ratio and Proportion

If two quantities are in the ratio a : b, their actual values can be taken as ax and bx, where x is a common multiplier.

Age Difference Property

The difference between the ages of two individuals remains constant at any point in time (past, present, or future).

Age Problems Logic

To find an age 'n' years ago, subtract n. To find an age 'n' years hence, add n to the present age.

Q36. Answer: (b) Urethra

The correct answer is Urethra.

• The spermatic cord joins with the duct leading through the bladder to form a common passageway, which is called Urethra.

Key Points

• Urethra:

• It is a 20 cm tube that allows urine to pass out of the body.

• In men, it's a long tube that runs through the penis.

• It also carries semen.

• Additional Information

• Ureters:

• These bring the urine downwards and open into the urinary bladder.

• Testis:

• The testis is the male sex gland.

• They are the site of sperm production and are also responsible for the production of testosterone.

Q37. Answer: (c) 1,76,400

Shortcut Trick

The multiplying factor for a 5% increase is 105% = 21/20.

Let the population 1 year ago be P.

P × (21/20) = 1,85,220

P = 1,85,220 × (20/21) = 8,820 × 20 = 1,76,400

Therefore The correct answer is 1,76,400.

Alternate Method

Given:

Present population (A) = 1,85,220

Rate of increase (R) = 5% per annum

Time (n) = 1 year

1 Year Ago

P = ?

Present

1,85,220

+5% (1.05x)

Formula Used:

$A = P \times (1 + R/100)^n$

Where A is the present population, P is the population n years ago, and R is the rate of increase.

Calculations:

$\Rightarrow 1,85,220 = P \times (1 + 5/100)^1$

$\Rightarrow 1,85,220 = P \times (1 + 1/20)$

$\Rightarrow 1,85,220 = P \times (21/20)$

$\Rightarrow P = 1,85,220 \times (20/21)$

$\Rightarrow P = 8,820 \times 20$

$\Rightarrow P = 1,76,400$

Therefore The correct answer is 1,76,400.

Additional Information

Population After 'n' Years

If the present population is P and it increases at R% per annum, the population after n years = $P \times (1 + R/100)^n$.

Population 'n' Years Ago

If the present population is P and it has been increasing at R% per annum, the population n years ago = $P \div (1 + R/100)^n$.

Depreciation (Decrease in Population)

If the population is decreasing at the rate of R% per annum, the population after n years = $P \times (1 - R/100)^n$.

Q38. Answer: (d) All India Anna Dravida Munnetra Kazhagam

The correct answer is All India Anna Dravida Munnetra Kazhagam.

• E. Madhusudanan leads All India Anna Dravida Munnetra Kazhagam.

Key Points

• All India Anna Dravida Munnetra Kazhagam:
• It is a regional political party in this state of Tamil Nadu and the union territory of Puducherry.
• E. Madhusudanan is the president of the party.
• M. G. Ramachandran was the founder of the party.
• The party is a part of the India-ruling National Democratic Alliance.

Additional Information

• S. Ramadoss is the leader of the Pattali Makkal Kachchi party.
• N. Rangaswamy is the leader of the All India N. R. Congress.
• Lalu Prasad Yadav is the leader of the Rashtriya Janata Dal.

Q39. Answer: (b) 352

Shortcut Trick

Use the direct algebraic identity: $a^3 + b^3 + c^3 - 3abc = (a + b + c) \times [(a + b + c)^2 - 3(ab + bc + ca)]$

Substitute the given values: $a + b + c = 16$ and $ab + bc + ca = 78$

Value = $16 \times [16^2 - 3(78)]$

Value = $16 \times [256 - 234] = 16 \times 22 = 352$

Therefore The correct answer is 352.

Alternate Method

Given:

Sum of variables $(a + b + c) = 16$

Sum of product taken two at a time $(ab + bc + ca) = 78$

Formula Used:

1) $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

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

Calculations:

=> $(16)^2 = a^2 + b^2 + c^2 + 2(78)$

=> $256 = a^2 + b^2 + c^2 + 156$

=> $a^2 + b^2 + c^2 = 256 - 156 = 100$

=> $a^3 + b^3 + c^3 - 3abc = 16 \times (100 - 78)$

=> $a^3 + b^3 + c^3 - 3abc = 16 \times 22$

=> $a^3 + b^3 + c^3 - 3abc = 352$

Therefore The correct answer is 352.

Additional Information

Special Case of cubic identity

If $a + b + c = 0$, then the expression $a^3 + b^3 + c^3 - 3abc$ becomes zero, leading to $a^3 + b^3 + c^3 = 3abc$.

Alternative form of identity

The expression $(a^2 + b^2 + c^2 - ab - bc - ca)$ can also be written as $1/2 [(a-b)^2 + (b-c)^2 + (c-a)^2]$.

Cyclic symmetry

The identity is symmetric in terms of a, b, and c, meaning the result remains unchanged if the values of the variables are swapped.

Q40. Answer: (b) D

The logic followed here is:-

In Figures A, B, and C all the three arrows are in the same direction but in figure D all three arrows are in different directions.

Hence, "option 2" is the correct answer.

Q41. Answer: (d) Saudi Arabia

The correct answer is Saudi Arabia.

• Saudi Arabia has recently declared yoga as a sporting activity.

Key Points

• The government of Saudi Arabia declared Yoga as a Sports Activity.
• With this move, Yoga is now an official sport practised under the Saudi Ministry of trade and industry.
• This means that anyone in Saudi Arabia who wants to practice yoga can practice by getting a license and the person shall not be

disapproved or face any consequences for the same.

• Nouf Al Marwaai became the first Saudi woman to teach yoga. and has been recognized as the driving force behind the development of yoga in Saudi Arabia.

Q42. Answer: (c) Both I and II are implicit.

• Since X states that s/he wants to conduct a survey to find the 'effectiveness' of advertisement, it can be safely assumed that the impact of advertisements can be analyzed (ascertained) through surveys. So, assumption I is implicit.

• As X states that s/he wants to conduct a survey on the given type of case, it is safe to assume that s/he has the ability or skill to do it. Thus, assumption II is also implicit.

Hence the correct answer is option 3.

Q43. Answer: (c) Both conclusions 1 and 2 follow.

The Venn diagram is given below:-

Conclusion:

1. All pictures are wonderful. →True (All pictures are beautiful, all beautiful is wonderful. So, all pictures are wonderful.)

2. Some wonderful are beautiful. →True (All beautiful is wonderful. So, we can say that some wonderful are beautiful.)

Hence, "option 3" is the correct answer.

Additional Information

Q44. Answer: (d) 160-170 million

The correct answer is 160-170 million.

• The estimated growth of the Indian labour force by 2020 is 160-170 million.

Key Points

• India's labour force is expected to expand by 160-170 million in 2020.

• It mostly depends on various factors which include labour force participation, population growth rate, education enrolment at higher levels etc.

• As per the joint study done by ASSOCHAM-Thought Arbitrage on ‘Employment Generation and Rebooting India’, it is said that employment in India witnessed an increase to 470-million in 2013 as compared to 323-million in 1991.

Additional Information

• International Labour Organization was established in 1919.

• Its headquarters are in Geneva, Switzerland.

• It is a member of the UN since 1945.

• Labour Day:

• It is celebrated every year on the 1^(st) of May.

• It is also known as May Day.

• Labour Day was first celebrated on May 1, 1890.

Q45. Answer: (c) 166 litres

Shortcut Trick

Identify the nearest perfect square greater than 990.

As 302 = 900 and 312 = 961, the next square is 322.

322 = 1024 (a 4-digit perfect square).

332 = 1089, 342 = 1156 (check options for difference).

Difference = 1156 − 990 = 166.

Therefore The correct answer is 166 litres.

Alternate Method

Given: Initial volume = 990 liters.

=> We need a perfect square (N2) such that N2 > 990 and it has 4 digits.

=> Smallest 4-digit perfect square is 322 = 1024.

=> If we add 1024 − 990 = 34 liters (Not in options).

=> Next 4-digit perfect square is 332 = 1089.

=> If we add 1089 − 990 = 99 liters (Not in options).

=> Next 4-digit perfect square is 342 = 1156.

=> Oil to be added = 1156 − 990

=> Oil to be added = 166 liters.

Therefore The correct answer is 166 litres.

Additional Information

Perfect Square Properties

A perfect square never ends with digits 2, 3, 7, or 8. The digital root of a perfect square is always 1, 4, 7, or 9.

Smallest and Largest 4-digit Squares

The smallest 4-digit perfect square is 1024 (322) and the largest is 9801 (992).

Square Root Estimation

To find the nearest square, estimate using multiples of 10. Since 302 = 900 and 402 = 1600, the square of numbers between 31-39 will be 4-digit numbers starting near 1000.

Q46. Answer: (b) World Rapid Chess Championship

The correct answer is World Rapid Chess Championship.

• Grandmaster Viswanathan Anand won the Chess Championship title World Rapid Chess Championship held in Riyadh, Saudi Arabia, in 2017.

Key Points

• Viswanathan Anand won the World Rapid Chess Championship in the year 2017 in Riyadh.

• He defeated Vladimir Fedoseev by 2-0 in the finals.

• He is an Indian chess grandmaster and a former world chess champion.

• He became the first grandmaster from India in the year 1988.

• He is one of the few players to have surpassed the Elo rating of 2800, a feat he first achieved in 2006.

• Anand is a five-time world chess champion.

Additional Information

• The International Chess Federation (FIDE):

• It was founded on 20 July 1924 in Paris, France.

• Its headquarter is in Lausanne, Switzerland.

• Arkady Dvorkovich is the current president.

Q47. Answer: (c) Rakesh Singh

The correct answer is Rakesh Singh.

• Rakesh Singh has been appointed as the private banking head of the HDFC bank.

Key Points

• Housing Development Finance Corporation (HDFC):

• It was founded in the year 1977.

• Its headquarters are located in Mumbai, Maharashtra.

• Deepak Parekh is the current chairman.

• It was the first private bank to receive a license after 1993 economic reforms.

• In the year 2017, Rakesh Singh was appointed as the private banking head of the bank.

• He is currently the Head of Investment Banking & Products, HDFC.

Q48. Answer: (a) Ranbir Kapoor

The correct answer is Ranbir Kapoor.

• Ranbir Kapoor was the lead actor in the recent movie 'Sanju'.

Key Points

• Sanju movie:

• The movie was released in the year 2018.

• The movie was directed by Raj Kumar Hirani.

• Vicky Kaushal and the Dia Mirza were in the supporting role.

Q49. Answer: (d) Rs. 105

Shortcut Trick

Total Area in cm^2 = 2,800 × 3 × 5 = 42,000 cm^2

Total Area in m^2 = 42,000 ÷ 10,000 = 4.2 m^2

Total Cost = 4.2 × 25 = Rs. 105
Therefore The correct answer is Rs. 105.
Alternate Method
Given: Number of marble tiles = 2,800, Length of each tile = 3 cm, Width of each tile = 5 cm, Rate of polishing = Rs. 25 per m².
Formula: Area of one tile = Length × Width
=> Area of 1 tile = 3 cm × 5 cm = 15 cm²
=> Total Floor Area = 2,800 × 15 = 42,000 cm²
=> Since 1 m² = 10,000 cm²
=> Total Area in m² = 42,000 ÷ 10,000 = 4.2 m²
=> Cost of polishing = 4.2 × 25
=> Total Cost = Rs. 105
Therefore The correct answer is Rs. 105.
Additional Information
Area Conversion
Always convert units to match the rate. 1 m² = 100 cm × 100 cm = 10,000 cm².
Cost Calculation
Total Cost = Total Area in required unit × Rate per unit area.
Rectangle Area
Area of a rectangle is Length × Breadth. For multiple items, multiply by the total count.

Q50. Answer: (c) 1/8

Calculation:
=> 1/8 = 0.125
=> 2/12 = 0.166
=> 3/16 = 0.1875
=> 4/20 = 0.2
Therefore The smallest fraction is 1/8

Q51. Answer: (a) Np

The correct answer is Np.
• Np is not a transition metal.
Key Points
• D-Block
• It comprises 10 groups (3 to 12).
• These elements are called transition elements.
• General electronic configuration of d-block elements is (n–1)d^(1-10) ns^(0-2)
• Hg, Zn, Cu, Sc etc. are d-block elements but not the transition elements.
• Neptunium (Np) is not a d-block element.
• It is a radioactive chemical element of the actinoid series of the periodic table.
• The atomic number of Np is 93.
• The element was named after the planet Neptune.
• Zirconium (Zr), Technetium (Tc) and Rhenium (Re) are all transition elements.
-

Q52. Answer: (d) 56

The correct answer is 56.
• The formula unit mass of CaO is 56.
Key Points
• Calcium Oxide (CaO):.
• Its unit mass is 56.
• The weight of Calcium is 40.
• The weight of Oxygen is 16.
• Hence, Ca+O= 40+16 = 56

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Additional Information

• Uses of CaO:

• Calcium Oxide is widely used in making porcelain and glass, purifying sugar, making bleaching powder, in making calcium carbide, and calcium cyanamide.

• It is also used in water softeners, mortars and cement.

• In agriculture, it is used for treating acidic soils.

Q53. Answer: (a) Ag

The correct answer is Ag.

• Compounds of Ag are used in black and white photography.

Key Points

• Silver:

• Symbol: Ag (Latin word: Argentums)

• Atomic mass: 107.8682 u

• Atomic number: 47

• The compounds of Silver(Ag), silver bromide and silver chloride are used in black and white photography.

• These two are photosensitive compounds.

• They get easily decomposed on exposure to light.

• Hence, they are used in black and white photography and films.

Additional Information

Compound	Symbol
Copper	Cu
Gold	Au
Aluminium	Al

Q54. Answer: (c) Tensility

The correct answer is Tensility.

Key Points

• Metals:

• These are the elements that are hard, lustrous, ductile, malleable, sonorous and conductor of heat and electricity in their solid as well as the molten state.

• These evolve hydrogen gas when react with water and acids. Mercury (metal) is liquid at room temperature.

• Ti is called strategic metal.

Ductility:

• Ductility (Tensility) is the ability of metal by which it can be drawn into wires.

• Gold and Copper are the most ductile metals.

Additional Information

Malleability:

• Malleability is the ability of metals by which they can be beaten into thin sheets.

Q55. Answer: (c) 1,93,600

Calculation:

The total income received from toys = Rs. 38,72,000

The sales of activity toys manufactured by the company = 5%

=> Rs. (38,72,000 × 5/100)

=> Rs. 1,93,600

Therefore The income earned by company XYZ from activity toys is Rs. 1,93,600

Q56. Answer: (d) 862.4J

The correct option is 862.4J.

Key Points

• Potential Energy

• It is the energy possessed by a body by virtue of its position.
• The Potential Energy of a body in the gravitational field of the earth is mgh.
• where m = mass, g = acceleration due to gravity, h = height of the body from the surface of the earth.
• When a body is falling downwards, then its potential energy goes on changing to kinetic energy.
• Given,
• mass = 11kg
• height = 8m
• g = 9.8 m/s
• PE= mgh
=11x8x9.8
=862.4J

Q57. Answer: (a) 17 years, 13 years

Shortcut Trick
Check options for Sum = 30 and Product = 221.
Option 1: 17 + 13 = 30; 17 × 13 = 221. (Matches)
Option 2: 16 + 14 = 30; 16 × 14 = 224. (Incorrect)
Option 3: 15 + 15 = 30; 15 × 15 = 225. (Incorrect)
Therefore The correct answer is 17 years, 13 years.
Alternate Method
Given:
Sum of ages (S) = 30
Product of ages (P) = 221
Calculations:
=> Let the ages be x and y.
=> x + y = 30 and xy = 221
=> Quadratic equation: $t^2 - (Sum)t + (Product) = 0$
=> $t^2 - 30t + 221 = 0$
=> $t^2 - 17t - 13t + 221 = 0$
=> $t(t - 17) - 13(t - 17) = 0$
=> $(t - 17)(t - 13) = 0$
=> t = 17 or t = 13
Therefore The correct answer is 17 years, 13 years.
Additional Information
Quadratic Roots Relation
If sum of roots is S and product is P, the equation is $x^2 - Sx + P = 0$.
Difference of Ages
$(x - y)^2 = (x + y)^2 - 4xy$. Here, $(x - y)^2 = 30^2 - 4(221) = 900 - 884 = 16$ => x − y = 4.

Q58. Answer: (d) D

The mirror image of the figure is given below:-
Hence, "option 4" is the correct answer.

Q59. Answer: (b) 2 : 1

Shortcut Trick
Initial mixture 35 liters has 4 : 1 ratio → Total units = 5.
1 unit = 35 ÷ 5 = 7 liters.
Initial Water is 1 unit (7 liters). Adding 7 liters water makes it 2 units.
New Ratio (Milk : Water) = 4 : 2 = 2 : 1.
Therefore The correct answer is 2 : 1.
Alternate Method
Given: Total volume = 35 liters, Ratio = 4 : 1, Added Water = 7 liters.
=> Quantity of Milk = (4 ÷ 5) × 35 = 28 liters

=> Quantity of Water = (1 ÷ 5) × 35 = 7 liters

=> New Water = 7 + 7 = 14 liters

=> New Ratio (Milk : Water) = 28 : 14

=> New Ratio = 2 : 1

Therefore The correct answer is 2 : 1.

Additional Information

Ratio and Proportion

If a total quantity Q is divided in ratio a : b, then parts are Q × a/(a+b) and Q × b/(a+b).

Mixture Replacement

When a part of mixture is replaced by water, the quantity of the other component (milk) remains same in terms of the initial ratio units.

Q60. Answer: (a) Both A and B are true.

The correct answer is Both A and B are true.

Key Points

• Speed of Sound

• In a medium, the speed of sound depends upon the elasticity and density of the medium.

• When sound enters from one medium to another medium, its speed and wavelength change but frequency remains unchanged.

• In a medium, the speed of sound is independent of frequency.

• Speed of sound is maximum in solids and minimum in gases.

• The speed of sound is more in humid air than in dry air because the density of humid air is less than the density of dry air.

• The unit of loudness is the decibel (dB).

• Effect of pressure on the speed of sound:

• The speed of sound is independent of pressure.

• Effect of temperature on the speed of sound:

• The speed of sound increases with the increase of the temperature of the medium.

• In steel, the speed of sound is 5960 m/s. Hence, option A is correct

• In nickel, the speed of sound is 6040 m/s. Hence, option B is correct.

Important Points

In any medium, if the temperature increases, the speed of sound also increases and vice versa.

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Speed of sound in different medium at 25°C	Speed of sound in different medium at 25°C	State	Medium	Speed of sound (m/s)	Solid	Solids Aluminium	6420	Nickel	6040	Steel	5960	Iron	5950	Brass	4700	Glass (Flint)	3980	liquid	Liquids Water (Sea)	1531	Water (distilled)	1498	Ethanol	1207	Methanol	1103	gas	Gases Hydrogen	1284	Helium	965	Air	346	Oxygen	316	Sulfur dioxide	213
State	Medium	Speed of sound (m/s)																																	

State	Medium	Speed of sound (m/s)
Speed of sound in different medium at 25°C		

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Solid	Solids Aluminium	6420
Nickel		6040
Steel		5960
Iron		5950
Brass		4700
Glass (Flint)		3980

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liquid	Liquids Water (Sea)	1531
Water (distilled)		1498
Ethanol		1207
Methanol		1103

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gas	Gases Hydrogen	1284
Helium		965
Air		346
Oxygen		316
Sulfur dioxide		213

Q61. Answer: (b) Base + Acid → Salt + Water

The correct answer is Base + Acid → Salt + Water.

• In general, a neutralization reaction can be written as Base + Acid → Salt + Water.

Key Points

• Neutralization Reaction:

• It is a chemical reaction in which an acid and base react together to form salt and water as products.

• The formation of Sodium Chloride is an example of the neutralization reaction.

• HCl + NaOH → NaCl + H2O

Additional Information

• Acid:

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• An acid is a substance which:
• Is sour in taste.
• Turns blue litmus paper into red.
• Contains replaceable hydrogen.
• Gives hydrogen ion (H+) in an aqueous solution.
• Can donate a proton.
• Can accept an electron
• Bases:
• A Base is a substance which:
• Is bitter in taste.
• Turns red litmus paper into the blue.
• Gives hydroxyl ions (OH–) in an aqueous solution.
• Can accept a proton.
• Can donate electrons.

Q62. Answer: (b) 32

Shortcut Trick
Total items purchased = 15 (Black) + 15 (Red) + 20 (Blue) = 50
Total items = (Only 1 color) + 2 × (Only 2 colors) + 3 × (All 3 colors)
At least two = (Only 2 colors) + (All 3 colors) => 8 = (Only 2 colors) + 2 => Only 2 colors = 6
50 = (Only 1 color) + 2 × 6 + 3 × 2 => 50 = (Only 1 color) + 12 + 6
Only 1 color = 50 − 18 = 32
Therefore The correct answer is 32 customers.
Alternate Method
Given:
Total Black (B) = 15, Total Red (R) = 15, Total Blue (Bl) = 20
Intersection of all three (B ∩ R ∩ Bl) = 2
At least two = 8
Calculations:
=> Let customers who bought only two colors be x, y, and z.
=> At least two colors = (x + y + z) + (All three) = 8
=> (x + y + z) + 2 = 8 => x + y + z = 6
=> Let customers who bought only one color be N1.
=> Sum of individual sets = N1 + 2 × (Only 2 colors) + 3 × (All 3 colors)
=> 15 + 15 + 20 = N1 + 2 × 6 + 3 × 2
=> 50 = N1 + 12 + 6
=> N1 = 50 − 18 = 32
Therefore The correct answer is 32 customers.
Additional Information
Venn Diagram Formula (3 Sets)
n(A U B U C) = n(A) + n(B) + n(C) − [n(A∩B) + n(B∩C) + n(C∩A)] + n(A∩B∩C).
Exactly vs At least
'At least two' includes those who bought exactly 2 colors and those who bought exactly 3 colors.
Only One Color Calculation
n(Only A) = n(A) − [n(Only A&B) + n(Only A&C) + n(All three)].

Q63. Answer: (a) Madhya Pradesh

The correct answer is Madhya Pradesh.
• Madhya Pradesh has launched the "Anandam" program to help needy people.
Key Points
• Anandam Scheme:
• The scheme was launched by Chief Minister Shivraj Singh Chouhan.

• The programme comes under the newly-formed Aanand Department.
• The programme aims to help needy persons and to increase the happiness per cent of the citizen.
• The scheme has also been launched at the panchayat level.

Q64. Answer: (c) [figure]

The Venn diagram is given below:-

Shirts are made of cloth and Lock is different.

Hence, "option 3" is the correct answer.

Q65. Answer: (d) Dendrite

The correct answer is Dendrite.

• Each neuron is made up of a cyton (cell body), from which many small branches emerge, which are called a dendrite.

Key Points

• Structure of Neuron:
• Dendrites
• Dendrites are branch-like structures that receive signals from other neurons and allow the transmission of signals to the cell body.
• Cell Body:
• The cell body of a neuron consists of a nucleus, Golgi body, endoplasmic reticulum, mitochondria and other components.
• Axon:
• It is a tube-like structure that carries an electrical impulse from the cell body of a neuron to the axon terminals that transmits the impulse to another neuron.
• Synapse:
• It is the junction between the terminal of one neuron and the dendrites of another neuron.
-

Q66. Answer: (d) Neither (1) nor (2) follows.

The Venn diagram is given below:-

Conclusion :

1. Some drops are empty. → False (Empty word is not present in statement. So, some drops are empty is wrong.)

2. Bottles are jams. → False (There is no direction relation given between Jam and Bottle so, bottles are jams it can be possible but not definite, hence, false)

Hence, "option 4" is the correct answer.

Additional Information

Q67. Answer: (c) Sanjeev Gupta

The correct answer is Sanjeev Gupta.

Key Points

• Sanjeev Gupta is a British businessman of Indian origin.
• He is a steel tycoon in Britain.
• He has been appointed by Prince Charles as the official ambassador of the Industrial Cadet Program, which aims to nurture manufacturing skills.
• The aim of the program is to give children and young people the direct structured experience of industry while still at school or college.

Q68. Answer: (b) Rs. 1,81,400

Given:

Total revenue of the company ABC in 2015 = Rs.3628000

Percentage of manufacturing of other leather items = 5%

Calculation:

Revenue generated by manufacturing other leather items:

=> Total Revenue × 5/100

=> 3628000 × 5/100

=> Rs.181400

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Therefore The required result is Rs.181400.

Q69. Answer: (b) Sc, Ga and Ge

The correct answer is Sc, Ga and Ge.

Key Points

• Mendeleev's periodic table is an arrangement of elements in an increasing atomic mass.

• Chlorine, oxygen, and silicon were included in Mendeleev's periodic table.

• In Mendeleev's periodic table, Sc, Ga and Ge found a place in the table later.

• Germanium was discovered, and it filled in the gaps left by Mendeleev while also possessing the desired qualities.

• Unnamed elements were given the names EKA- Boron, EKA- Aluminum, and EKA Silicon by Mendeleev, which were eventually replaced by Scandium, Gallium, and Germanium.

• Elements are, arranged in an increasing order atomic mass, in a horizontal line.

• This horizontal arrangement of elements is a 'period'.

Additional Information

• The metallic property of an element in the modern periodic table decreases from left to right in a period but increases from top to bottom in a group.

• Elements of the same group in the modern periodic table have the same valence electrons.

• The atomic mass of an element is the average mass of the atoms of an element measured in the atomic mass unit (AMU, also known as daltons, D).

Q70. Answer: (b) 840

The logic followed here is:-

Hence, "option 2" is the correct answer.

Q71. Answer: (b) 169/225

Shortcut Trick

Recognize the given expression as a perfect square: $x^2 + 2(x)(1/5) + (1/5)^2 = (x + 1/5)^2 = 0$.

This directly gives the value of $x = -1/5$.

Substitute x in the required expression: $(-1/5 - 2/3)^2 = [(-3 - 10)/15]^2$.

$(-13/15)^2 = 169/225$.

Therefore The correct answer is 169/225.

Alternate Method

Given: $x^2 + 2x/5 + 1/25 = 0$

Formula Used: $(a + b)^2 = a^2 + 2ab + b^2$

$\Rightarrow x^2 + 2 \times x \times (1/5) + (1/5)^2 = 0$

$\Rightarrow (x + 1/5)^2 = 0$

$\Rightarrow x + 1/5 = 0$

$\Rightarrow x = -1/5$

Now, we need to calculate the value of $(x - 2/3)^2$:

$\Rightarrow (-1/5 - 2/3)^2$

Take the Least Common Multiple (LCM) of 5 and 3, which is 15:

$\Rightarrow [(-3 - 10) / 15]^2$

$\Rightarrow (-13 / 15)^2$

$\Rightarrow 169 / 225$

Therefore The correct answer is 169/225.

Additional Information

Perfect Square Trinomial

An expression of the form $a^2 + 2ab + b^2$ can be simplified to $(a + b)^2$, and $a^2 - 2ab + b^2$ simplifies to $(a - b)^2$.

Nature of Roots

In a quadratic equation $ax^2 + bx + c = 0$, if the discriminant $D = b^2 - 4ac$ is equal to zero, the roots are real and equal.

Squaring Fractions

To square a fraction (a/b), square both the numerator and the denominator separately: $(a/b)^2 = a^2 / b^2$.

Q72. Answer: (b) 0.0144

Given:

144/0.144 = 14.4/x

Calculation:

144/0.144 = 14.4/x

=> 144 × x = 14.4 × 0.144

=> x = 144/10 × 144/1000 × 1/144

=> x = 144/10000

=> x = 0.0144

Therefore The value of 144/0.144 = 14.4/x is 0.0144

Q73. Answer: (d) Tamil

The correct answer is Tamil.

• The epics 'Silappadikaram' and 'Manimekalai' of the Sangam period were written in the Tamil language.

Key Points

• The Sangam Age:

• It is a period between the 3rd century B.C. and 3rd century A.D. in South India.

• The period is named after the Sangam academies which were held during that period and flourished under the royal patronage of the Pandya kings of Madurai.

• The Sangam Age was ruled by three dynasties namely the Cheras, Cholas and Pandyas.

• Silappathikaram was written by Elango Adigal.

• Manimekalai was written by Sittalai Sattanar.

Q74. Answer: (c) 3 C

The correct answer is 3 C.

• The work done between two points having the potential of 12 V is 36 J. The electric charge flowing between those points is 3 C.

Key Points

• Work:

• When a body is displaced by applying a force on it, then work is said to be done.

• Work = Force × displacement.

• Its SI unit is joule.

• In electricity,

• Work done=Potential Difference x Charge

• Given,

• Work - 36 J,

• Potential difference - 12 V

• Charge-?

• By Formula,

• Work = potential difference x charge

• Charge= Work/ potential difference

• Charge = 36 J/12 V

• Charge = 3 Coulomb

Q75. Answer: (d) Trains and Airplanes

The correct answer is Trains and Airplanes.

Key Points

• Inertia is the tendency of undisturbed objects to remain at rest or to continue moving at the same speed.

• The quantity of mass in a body determines its inertia.

• A body of larger mass has more inertia; hence Trains and Airplanes has more inertia than the other examples given.

• The first law of motion(Newton's first law) is also known as the law of inertia.

• When a motorcar makes a sharp turn at a high speed, we tend to get thrown to one side due to the effect of inertia.

• The natural tendency of an object to resist a change in its state of motion or rest is known as inertia.

• An object's mass is a measure of its inertia.

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Q76. Answer: (d) Less than bullet

The correct answer is Less than the bullet.

• If a shot is fired from a gun and the gun comes backwards, then the kinetic energy of the gun will be Less than the bullet.

Key Points

• The relation between kinetic energy and momentum is given by

• $K = (P^2)/2m$

• $P=mv$

• As we see the kinetic energy is inversely proportional to the mass keeping momentum constant.

• Hence, the kinetic energy of the gun is lesser than the kinetic energy of the bullet.

Additional Information

• Kinetic Energy

• If a body of mass m is moving with velocity

v, then kinetic energy

• $K = 1/2mv^2$

where p is the linear momentum.

• When momentum is doubled, kinetic energy becomes four times.

• If a body is moving in horizontal circle then its kinetic energy is same at all points, but if it is moving in vertical circle, then the kinetic energy is different at different points.

Q77. Answer: (b) 800

Shortcut Trick

Find the LCM of 15, 16, and 25.

LCM(15, 16, 25) = 1200.

Divide 20000 by 1200 and find the remainder.

20000 ÷ 1200 => Remainder = 800.

Therefore The correct answer is 800.

Alternate Method

Given: Numbers are 15, 16, and 25. Target number is 20000.

Formula Used: Number to be subtracted = Number − (Largest multiple of LCM less than Number)

Step 1: Calculate the Least Common Multiple (LCM) of 15, 16, and 25.

=> 15 = 3 × 5

=> 16 = 2^4

=> 25 = 5^2

=> LCM = $2^4 \times 3 \times 5^2 = 16 \times 3 \times 25 = 1200$.

Step 2: Divide 20000 by the LCM (1200).

=> 20000 = (1200 × 16) + 800

=> Remainder = 800.

Step 3: The remainder is the smallest number to be subtracted to make the result exactly divisible.

Therefore The correct answer is 800.

Additional Information

LCM (Least Common Multiple)

The smallest positive integer that is divisible by each of the given numbers. It is used to find a common dividend.

Subtraction vs Addition for Divisibility

To make a number N divisible by D: subtract the remainder (R) or add (D − R).

Divisibility Rules

A number is divisible by 25 if its last two digits are 00, 25, 50, or 75. A number is divisible by 15 if it is divisible by both 3 and 5.

Q78. Answer: (a) Upthrust/Area

The correct answer is Upthrust/Area.

Key Points

• Pressure:

• Pressure is defined as a force acting normally on the unit area on the surface.

• SI unit of pressure is N/m²
• It is also called Pascal (Pa).
• Pressure is a scalar quantity.
• Atmospheric pressure of 1 atm = 1.01 × 10–5 N/m² = 760 torr.

Q79. Answer: (a) Brother-Sister

Lehar introduces Ayaan as the only son of his father.
The family tree is given below:-
Ayaan and Lehar are Brother-Sister.
Hence, "option 1" is the correct answer.

Q80. Answer: (a) Kangaroo

The logic followed here is:
A Gorilla is an example of a primate.
Similarly,
Kangaroo is an example of a marsupial.
Hence, "option 1" is the correct answer.

Q81. Answer: (a) Aizawl F. C.

The correct answer is Aizawl F. C.
Key Points
• Hero I-League:
• it was founded in the year 1996 as National Football League.
• The league was established in the year 2007 as I-League.
• It is organized by the All India Football Federation (AIFF).
• A total of 13 teams participates in the tournament.
• Aizawl F. C. was the winner of Hero I-League Football in 2017.
• They defeated the Shillong Lajong team in the finals.
Additional Information
• Football:
• The first football club in the world ‘Sheffield Football Club’ was founded in the year 1857 in England.
• The first Football club in India was ‘Dalhousie Club’.
• The apex institution of football is the ‘Federation of International Football Association’ (FIFA) was formed on May 21, 1904.
• The headquarters of FIFA is in Zurich, Switzerland.
• Football was included as a competitive game in Olympic Games officially in 1908.
• India took part in the World Olympic Football Competition in 1948 in London.
• The first World Cup was organized in Uruguay in 1930.
• In India, Indian Football Association (IFA) organizes National Football Championship.
• The trophy awarded in their competition is called Santosh Trophy.

Q82. Answer: (c) Position and condition of the object doing the work

The correct answer is the Position and condition of the object doing the work.
Key Points
• Energy:
• The capacity of doing work by a body is called its energy.
• It is a scalar quantity.
• Its SI unit is joule and CGS unit is erg.
• Energy developed in a body due to work done is called mechanical energy.
• The ability of an object to do work, or the energy contained in an object, depends on the position and condition of the object doing the work.

Q83. Answer: (d) 1/13

Shortcut Trick
Total Aces in a deck = 4

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Total Cards in a deck = 52

Probability = 4 ÷ 52 = 1 ÷ 13

Therefore The correct answer is 1/13.

Alternate Method

Given:

Total number of cards in a standard deck, n(S) = 52

Number of Ace cards, n(E) = 4 (one of each suit: Spades, Hearts, Diamonds, Clubs)

Formula Used:

Probability P(E) = n(E) ÷ n(S)

Calculations:

=> P(drawing an ace) = 4 ÷ 52

=> P(drawing an ace) = (4 × 1) ÷ (4 × 13)

=> P(drawing an ace) = 1/13

Therefore The correct answer is 1/13.

Additional Information

Deck Composition

A standard deck has 52 cards divided into 4 suits (Spades, Hearts, Diamonds, Clubs). Each suit has 13 cards, including one Ace, King, Queen, and Jack.

Face Cards

There are 12 face cards in total (King, Queen, Jack of each suit). The probability of drawing a face card is 12 ÷ 52 = 3/13.

Complementary Events

The probability of not drawing an ace is 1 − P(Ace) = 1 − 1/13 = 12/13.

Q84. Answer: (b) b

The logic followed here is:-

Figure A, C, and D is the water image of the word but figure B is the mirror image of the word.

Figures a, c, and d, which is given below:-

Figure b is given below:-

Hence, "option 2" is the correct answer.

Q85. Answer: (d) 4.46 m

Shortcut Trick

Total length − (Sum of first two parts) = Third part

Sum = 4.58 + 4.96 = 9.54 m

Third part = 14.00 − 9.54 = 4.46 m

Therefore The correct answer is 4.46 m.

Alternate Method

Given:

Total length of rope = 14 m

Length of first part = 4.58 m

Length of second part = 4.96 m

Calculations:

=> Total length = Part 1 + Part 2 + Part 3

=> 14 = 4.58 + 4.96 + Part 3

=> 14 = 9.54 + Part 3

=> Part 3 = 14.00 − 9.54

=> Part 3 = 4.46 m

Therefore The correct answer is 4.46 m.

Additional Information

Decimal Addition

Always align the decimal points vertically before adding or subtracting values.

Linear Partitioning

For any object divided into n parts, the sum of all individual segments must equal the original total length.

Q86. Answer: (a) Narendra Modi

The correct answer is Narendra Modi.

Key Points

• Prime Minister Narendra Modi is the sitting MP representing Varanasi Lok Sabha constituency and is serving for that constituency since 2014.

Additional Information

• Lok Sabha:

• It comes under article 81

• Its maximum strength is 550 + 2 members of its Anglo-Indian Community, which includes 530 members from States and 20 from Union Territories.

• After coming into effect of The Constitution (One Hundred and Fourth Amendment) Act, 2019, the provision of special representation of the Anglo-Indian community in the House of the People by nomination has not been extended further.

• The present strength of Lok Sabha is 545.

• The representatives of the States are directly elected by the people of the States on the basis of adult suffrage.

• Every citizen who is not less than 18 years of age and is not otherwise disqualified is entitled to vote at such an election.

• The normal term of the Lok Sabha is 5 years, but it may be dissolved earlier by the President.

Q87. Answer: (c) Cho Ramaswamy

The correct answer is Cho Ramaswamy.

• Cho Ramaswamy was awarded the 2017 Padma Bhushan Award in the category of Literature and Education-Journalism.

Key Points

• Srinivasa Iyer Ramaswamy is famously known as Cho Ramaswamy.

• He was an actor, comedian, character actor, editor, political satirist, playwright, dialogue writer, film director and lawyer from Tamil Nadu.

• He was given Padma Bhushan award for his contribution towards Literature & Education – Journalism.

• Padma Bhushan:

• The award is given for distinguished service of a high order in any field, including service rendered by government servants.

• It is the third-highest civilian honour in India.

• It was first awarded in 1954.

Additional Information

• Bharat Ratna:

• The highest civilian award is given for exceptional service the advancement of art, literature and science, and in recognition of public service of the highest order.

• Khan Abdul Ghaffar Khan was the first foreigner to be honoured with this award in 1987.

• Padma Vibhushan:

• The award is given for exceptional and distinguished services in any field including service rendered by government servants.

• It is the second-highest civilian honour in India.

• Padma Shri:

• The award is given for distinguished service in any field including service rendered by government servants.

• It is the fourth-highest civilian honour in India.

Q88. Answer: (d) Rear-view mirror

The correct answer is the Rear-view mirror.

• A convex mirror is used in the Rear-view mirror of cars

Key Points

• Convex Mirror:

• Convex Mirror is a part of a spherical mirror where the reflective surface bulges out towards the light source.

• Uses of Convex Mirror

• In the rearview mirror in vehicles because it provides the maximum rear field of view and image formed is always erect.

• In sodium reflector lamp.

Additional Information

• A concave mirror is used in the dentist's mirror and vehicle's headlight.

Q89. Answer: (b) Xylem

The correct answer is Xylem.

• Xylem is an example of permanent tissue.

Key Points

• Permanent tissue:

• Permanent tissues are made of those mature tissues that have lost their capacity of division and attain a definite form of various works.

• These cells can be alive or dead.

• Xylem: This is usually called wood and is a conducting tissue.

• Its two main functions are–

• Conduction of water and minerals.

• To provide mechanical consistency.

• Phloem:

• This is a conducting tissue.

• Its main function is to conduct foods prepared by the leaves to different parts of the plant.

Q90. Answer: (d) 5 5/6 hours

Shortcut Trick

Total Work (Capacity) = LCM of 7, 10, and 14 = 70 units.

Efficiency of A = 70 ÷ 7 = 10; B = 70 ÷ 10 = 7; C = 70 ÷ 14 = −5 (emptying).

Net Efficiency = 10 + 7 − 5 = 12 units/hr.

Time Taken = Total Work ÷ Net Efficiency = 70 ÷ 12 = 35 ÷ 6 = 5 5/6 hours.

Therefore The correct answer is 5 5/6 hr.

Alternate Method

Given: Filling time for Pipe A = 7 hours, Pipe B = 10 hours, and Emptying time for Pipe C = 14 hours.

Formula Used: Total Work = Time × Efficiency; Net Work Done per hour = (1/A + 1/B − 1/C)

Pipe	Time (hr)	Total Work (LCM)	Efficiency
A (Fill)	7	70	10
B (Fill)	10	7	
C (Empty)	14	−5	

=> Net efficiency of all pipes = Efficiency of A + Efficiency of B − Efficiency of C

=> Net efficiency = 10 + 7 − 5 = 12 units/hr

=> Time taken to fill the tank = Total Work ÷ Net Efficiency

=> Time = 70 ÷ 12 = 35/6 hours

=> Time = 5 5/6 hours

Therefore The correct answer is 5 5/6 hr.

Additional Information

Inlet and Outlet Pipes

An inlet pipe fills the tank (positive efficiency), while an outlet pipe or leak empties it (negative efficiency).

Pipes & Cisterns Formula

If two pipes fill a tank in x and y hours, time taken together is (xy)/(x+y). If one empties in z hours, the net rate is (1/x + 1/y − 1/z).

Q91. Answer: (d) Niece

Sagar is the brother of Vanja.

The family tree is given below:-

Vanaja's daughter is the niece of Sagar.

Hence, "option 4" is the correct answer.

Q92. Answer: (c) Force

The correct answer is Force.

Key Points

• An object moves with a constant speed when the value of force is negligible.

• When an object moves with a constant speed there is no change in the value of acceleration hence the force remains constant.

Additional Information

• Force:

• Force is that external cause that when acts on a body, changes or tries to change the initial state of the body.

• Force = mass × acceleration

• Its S.I. unit is Newton (kg. ms^(-2)).

• The pressure is thrust per unit area, hence it is directly proportional to thrust and inversely proportional to area.

• Velocity can be defined as the rate at which an object changes position in a certain direction.

Q93. Answer: (b) Urethra

The correct answer is Urethra.

• The urethra is a 20 cm long tube, which carries urine from the bladder.

Key Points

Ureters: These are two tubes, each approximately 25-30 cm long, that carry urine from the kidneys to the bladder. They are not 20 cm long, and they do not carry urine from the bladder.

Urethra: This is a single tube that carries urine from the bladder to the outside of the body. In males, it is approximately 20 cm long, while in females it is much shorter (about 4 cm).

• In men, it's a long tube that runs through the penis.It also carries semen.

• Additional Information

• Ureters:

• These bring the urine downwards and open into the urinary bladder.

Q94. Answer: (c) 292

Given:

17.3 × 17.3 - 2.7 × 2.7 = ?

Calculation:

17.3 × 17.3 - 2.7 × 2.7 = ?

=> 299.29 - 7.29

=> 292

Therefore The required solution is 292.

Q95. Answer: (c) 7.5

Shortcut Trick

Sides 5, 12, 13 form a Right-Angled Triangle as $5^2 + 12^2 = 13^2$.

Area of original triangle = (1/2) × 5 × 12 = 30 cm^2.

Area of triangle formed by midpoints = (1/4) × Area of original triangle.

Area = 30 ÷ 4 = 7.5 cm^2.

Therefore The correct answer is 7.5 cm^2.

Alternate Method

Given: Sides of triangle a = 5 cm, b = 12 cm, c = 13 cm.

Formula Used: Area of triangle = (1/2) × base × height; Midpoint Theorem area ratio.

=> Area of larger triangle = (1/2) × 5 × 12

=> Area = 30 cm^2

=> A triangle formed by joining midpoints divides the original triangle into 4 congruent triangles of equal area.

=> Area of smaller triangle = 30 ÷ 4

=> Area = 7.5 cm^2

Therefore The correct answer is 7.5 cm^2.

Additional Information

Midpoint Theorem

The segment joining midpoints of two sides is parallel to the third side and half its length. Area ratio = (Side ratio)^2 = (1/2)^2 = 1/4.

Pythagorean Triplets

Sets like (3,4,5), (5,12,13), and (8,15,17) satisfy $a^2 + b^2 = c^2$ and always form right-angled triangles.

Perimeter of Midpoint Triangle

The perimeter of the triangle formed by joining midpoints is exactly half the perimeter of the original triangle.

Q96. Answer: (d) C

The logic followed here is:

Symbols are rotating one place to the Clockwise Direction.

• Rotation of one place in Clockwise Direction in each step.

• Rotation of one place in Clockwise Direction in each step.

• Flip Vertically and Rotate one place in Clockwise Direction in each step.

• Rotation of one place in Clockwise Direction with Addition of + symbol in step I, and Remove the + symbol in step II.

So, the next image of the given series is.

Hence, the correct answer is "Option C".

Q97. Answer: (d) America

The correct answer is America.

• The idea of passing the Fundamental Rights in the Constitution of India was inspired by the Constitution of the United States of America.

Key Points

• Fundamental Rights:

• The Fundamental Rights have been described in Articles 12-35, Part III of the Indian Constitution.

• The Right to Property (Article 31) was deleted from the list of Fundamental Rights by the 44th Amendment Act (1978).

• By the 44th Amendment Act, 1978, it is made a normal constitutional right under Act 300A in Part XII of the Constitution.

• The provision of fundamental rights was borrowed from the Constitution of the USA.

• Fundamental rights are:

• Right to equality (Articles 14–18)

• Right to freedom (Articles 19–22)

• Right against exploitation (Articles 23–24)

• Right to freedom of religion (Article 25–28)

• Cultural and educational rights (Articles 29–30)

• Right to constitutional remedies (Article 32).

Additional Information

• Features borrowed from other countries:

Country	Borrowed feature
Canada	Federation with strong Centre, to provide residuary powers to the Centre, Supreme Court's advisory jurisdiction.
Australia	Concurrent List, Provision Regarding Trade, Commerce and industry, Languages of the Preamble.
England	Law-making procedures, Rule of law, Single citizenship, Bi-cameral Parliamentary system, office of CAG.

Q98. Answer: (d) D

The option figure that bears the closest resemblance to the question figure is shown below:-

Figure D is the water image of the given figure.

Hence, "option 4" is the correct answer.

Q99. Answer: (d) 32

Given:

The number of students studying 3 languages.

Calculation:

Students studying French and Spanish = 20
Students studying Spanish and Japanese = 7
Students studying Japanese and French = 5
Therefore Total number of students studying 2 languages = 20 + 7 + 5
=> 32

Q100. Answer: (a) Tuesday

In an ordinary year, there are 365 days and on dividing 365 by 7,
we get remainder = 1, so this extra one day is taken as an odd day.
Similarly, in a leap year, there are 366 days and on dividing 366 by 7,
we get remainder = 2, so these extra days are taken as the odd days.
Thus, the remainder, which we get after dividing the number of days by 7 is considered as odd days.
1666 = we find out the odd days (the nearest leap year + completing year) = 1600 + 65
In 1600 years the odd days = 0
In 65 years the odd days = 65/4 = 16 leap years and 49 normal years.
In 16 leap years the odd days = 32, and 49 normal years = 49
So total = 32 + 49 = 81 odd days i.e. 81/7 = 4 odd days (remainder)
Odd days in May = 145 days i.e. 5 odd days.
Total = 4 + 5 = 9/7 = 2 odd days.

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

Tuesday of the week was 25 May 1666.
Hence, "option 1" is the correct answer.
Key PointsMay 25, 1666 was the 145th day of the year 1666 in the Gregorian calendar. There were 220 days remaining until the end of the year. The day of the week was Tuesday.

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