RRC Group D Previous Year Paper 68 (Held On: 31 Oct 2018 Shift 1)

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

Take this paper as a timed mock test

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

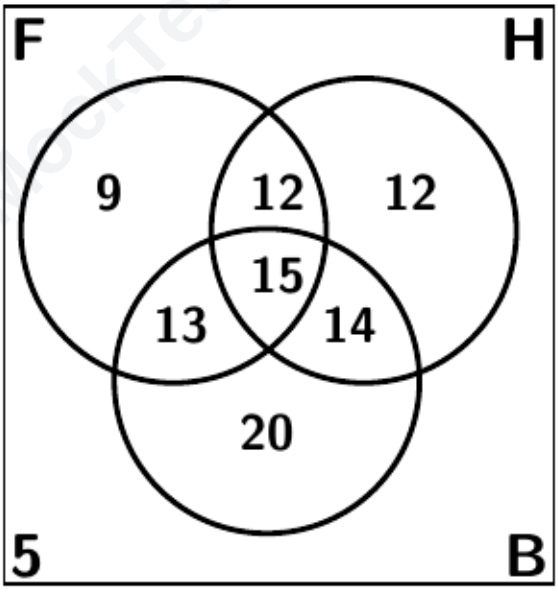
yourmocktest.com/pyq/rrb-group-d/rrc-group-d-previous-year-paper-68-held-on-31-oct-2018-sh…

Scan the QR code or click the link to open it.

1 question is in Hindi and not printed here. Each one links to the online version, where you can read it.

CBT

Q1.



The given diagram shows the number of students playing Football (F), Hockey (H) and Basketball (B) in a class-
The total number of students who like at most two sports is:

(a) 39
(b) 54
(c) 41
(d) 80

Q2. The order of first ionization potential in Na, Mg, Al and Si is-

(a) Na > Mg > Al < Si
(b) Na < Mg > Al < Si
(c) Na > Mg > Al > Si
(d) Na < Mg < Al > Si

Q3. Which Indian film has won the Best Short Film award at the Los Angeles Film Festival, 2018?

(a) Anukool
(b) Taandav
(c) Kriti
(d) Shunyta

Q4. The basic source of biological diversity is _____-

(a) mutation
(b) cosmic evolution
(c) inheritance
(d) fermentative action

Q5. During inhalation, the lungs fill with air due to _____-

(a) lung blockage
(b) narrowing of the lungs
(c) lung inflation
(d) dilation of the lungs

Q6. If (10x + 3y) : (5x + 2y) = 9 : 5, then (2x + y) : (x + 2y) = ?

(a) 12 : 15
(b) 23 : 22
(c) 17 : 11
(d) 11 : 13

Q7. The product of two numbers is 0.432. If one of them is 1.6, what is the other number?

(a) 0.027
(b) 0.27
(c) 2.7
(d) 27

Q8. The following statements are followed by two conclusions. and II are given. You have to take the statements to be true even if they seem to be at variance from commonly known facts. And on the basis of that decide which of the conclusions logically follow from the given statements.

Statement:

(1) No cake is pie.

(2) All cakes are creams.

(3) Some creams are sour.

Conclusion:

I. All cakes are sour.

II. Some cakes are sour.

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

Q9. A and B can do a piece of work in 8 days, B and C together can do it in 12 days. If A, B, and C together can do this work in 6 days, then in how many days will A and C complete twice the work?

(a) 10
(b) 16
(c) 15
(d) 12

Q10. In which city is the Indira Gandhi Indoor Stadium located?

(a) New Delhi
(b) Mumbai
(c) Kolkata
(d) Chennai

YourMockTest.com — Free Study Material

Q11. Three smaller triangles are inscribed from the three vertices of a larger triangle in such a way that each side of each smaller triangle is 2/5 of the side of the adjacent larger triangle. The ratio of the total area of the three smaller triangles to the remaining part of the larger triangle is -

(a) 12 : 13
(b) 1 : 5
(c) 12 : 25
(d) 4 : 25

Q12. Which of the following cricket teams won the Ranji Trophy in 2017?

(a) Madhya Pardesh
(b) Chennai
(c) Vidarbha
(d) Delhi

Q13. An iron ball weighing 8 kg and an aluminum ball of 3 kg is dropped from a height of 20 m. At a height of 10 m above the ground, which of the following will be the same amount?

(a) kinetic energy
(b) acceleration
(c) potential energy
(d) impulse

Q14. Find out the next letter-pair that appears in the following series-

EN, FO, GP, HQ, ?

(a) IV
(b) IR
(c) TC
(d) RZ

Q15. There are four numbers in a set. The mean of the three smallest numbers is 19 and the mean of the three largest numbers is 21. What is the range of the set of data?

(a) 3
(b) 6
(c) 12
(d) 9

Q16. If $x + y = 3$, $xy = 2$ and $x < y$, then find the value of $x^3 - y^3$.

(a) -7
(b) -11
(c) +7
(d) +11

Q17. Riccia comes under which of the following category?

(a) Bryophyta
(b) Thallophyta
(c) Angiosperm
(d) Pteridophyta

Q18. Four bells ring in a temple at intervals of 12, 16, 24 and 36 minutes respectively. If they are started playing at a continuous interval from 6 o'clock, then when will they play together again?

(a) 8 : 24 am
(b) 5 : 24 am
(c) 7 : 24 am
(d) 6 : 24 am

YourMockTest.com — Free Study Material

Q19. Which of the following is true about a cup of hot coffee?

(a) It has a measurable amount of thermal energy gained through the work done by the microwave oven, which in turn takes potential energy from the electrical grid.

(b) It has a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes electrical energy from the electrical grid.

(c) It consists of a measurable amount of kinetic energy acquired through the work done by the microwave oven.

(d) It contains a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes chemical energy from the electrical grid.

Q20. _____ empire was founded by the Sangam princes - Harihara and Bukka.

(a) Malwa

(b) Bahmani

(c) Vijaynagar

(d) Bengal

Q21. Who was selected for the Yash Chopra Memorial National Award, 2017?

(a) Shahrukh Khan

(b) Shahid kapoor

(c) Anupan Kher

(d) Abhishek Bacchan

Q22. Six years ago, the ratio of the ages of Saina and Sagar was 6 : 5. So in the next four years, the ratio of their ages will become 11 : 10 respectively. What is the age of Sagar at present?

(a) 14 years

(b) 16 years

(c) 12 years

(d) 18 years

Q23. In January 2018, who was appointed as the editor of the Economic and Political Weekly?

(a) Gopal Guru

(b) K.V. Anoop

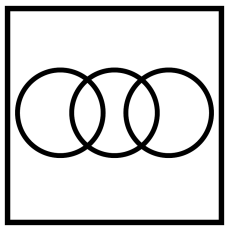
(c) Khalid A.H. Ansari

(d) Arun Shauri

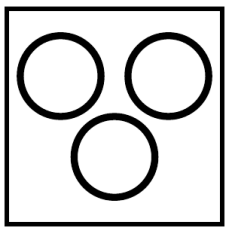
Q24. Select the most appropriate Venn diagram for the following words-

"Shoes, Car, Bicycle"

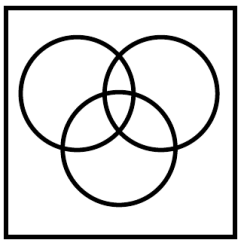
(a)



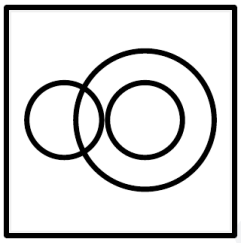
(b)



(c)



(d)



Q25. Which date of November 2000 was Thursday?

(a) 21 November
(b) 2 November
(c) 10 November
(d) 2 and 16 November

Q26. 3 R # 2 A $ K 5 % T 7 & N Y ÷ X B / L Q @ 1

If the second half of the above series is reversed, then using the new series, identify the missing term-

A%T : 52/ :: QY/ : _____

(a) B&L
(b) BL&
(c) XQN
(d) /LN

Q27. The term 'Financial Deficit' is related to which ministry of the Government of India?

(a) Finance
(b) Defence
(c) Home Ministry
(d) Agriculture

Q28. Read the given question and decide which of the following statements are sufficient to answer the question-

Question:

Who is the tallest among M, N, R and S?

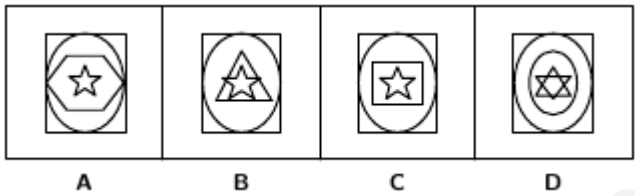
Statement:

1. M is taller than R and S.
2. M is wearing a sky coloured shirt.

(a) Statements 1 and 2 both are sufficient
(b) Statements 1 and 2 both are insufficient
(c) Statement 1 alone is sufficient
(d) Statement 2 alone is sufficient

Q29. Which of the following picture is different from the rest?

YourMockTest.com — Free Study Material



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

Q30. Which award was given to former French President Nicolas Sarkozy in 2004?
(a) Knighthood
(b) Knight of the Legion of Honor
(c) Night of the Dome
(d) French Key Holder

Q31. Solve the following equation-
32 - 2(10 + 16 ÷ 4 × 3 - 5 × 2) + 30 = ?
(a) 28
(b) 38
(c) 30
(d) 35

Q32. Complete the following series by choosing the appropriate option-
ZA, YB, _____, _____, VE.
(a) ZC, VD
(b) CW, DV
(c) CX, DW
(d) XC, WD

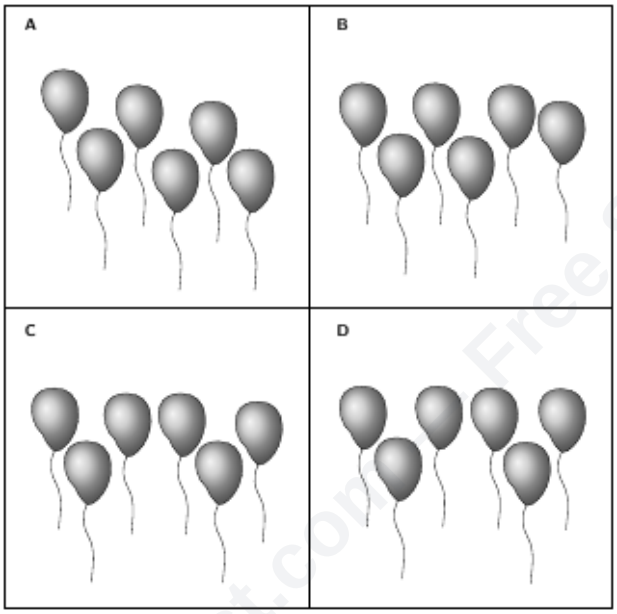
Q33. _____ recommended that the decision-making power should be decentralized and elected local bodies should be set up.
(a) Parikar Committee
(b) Yuva Sena Committee
(c) ABVP Committee
(d) Balwant Rai Mehta Committee

Q34. On adding water to CaO, _____ compound is obtained-
(a) Slaked lime
(b) quick lime
(c) washing soda
(d) bake lime

Q35. When an electric heater receives an electric current of 4A from the source, the potential difference across its ends is 60V. If the potential difference is increased to 127.5 V, then what will be the current received by the heater?
(a) 24 A
(b) 10 A
(c) 8.5 A
(d) 12 A

Q36. Which figure is different (not related) to the given group below?

YourMockTest.com — Free Study Material



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

Q37. Rachna borrowed Rs. 40,000 at 10% simple interest per annum. Exactly one year later she lent this amount to her friend on the same day at the same rate of interest but compounded annually. How much profit or loss will she get at the end of the third year?

(a) Rs. 4,000
(b) Rs. 3,600
(c) Rs. 3,000
(d) Rs. 3,100

Q38. On what amount the interest for 3 years 6 months at 5% simple interest per annum will be Rs. 18,480?

(a) Rs. 112,540
(b) Rs. 123,280
(c) Rs. 98,730
(d) Rs. 105,600

Q39. What is the value of 5.035 + 50.35 + 503.50 - 20.60?

(a) 538.855
(b) 528.285
(c) 538.285
(d) 536.285

Q40. What is the second group of elements called?

(a) Halogen
(b) Alkaline metals
(c) Alkaline earth metals
(d) Inert gas

Q41. Who is the present Governor of Andhra Pradesh and Telangana?

(a) Satya Pal Malik
(b) C. Vidyasagar Rao
(c) ESL Narasimham
(d) K. Rosaiah

YourMockTest.com Free Study Material

Q42. When is World Environment Day celebrated?

(a) 5 June
(b) 5 April
(c) 5 December
(d) 5 October

Q43. Which of the following mixtures can be separated by different funnels?

(a) alcohol and water
(b) salt and water
(c) oil and water
(d) iodine in alcohol

Q44. If the mode of observations of the data is 15 and the mean is 6, then its median will be _____-

(a) 9
(b) 7
(c) 8
(d) 10

Q45. A statement and two actions numbered from I and II are given below. You have to take all the information given in the statement to be true and on the basis of the information given in the statement decide which of the proposed course of action logically follows from the statement.

Statement:

The construction industries in North Karnataka are facing acute water shortage.

Actions:

I. Government should take steps to solve the water crisis.

II. Construction industries should be closed to save water.

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

Q46. In a code language WEAK is written as DVZP. What will be the code for MEAT in the same language?

(a) NVZG
(b) NVZH
(c) MVZH
(d) MVZG

Q47. Who discovered the word 'atom'?

(a) Dalton
(b) Kanaad
(c) Lavoisier
(d) Democritus

Q48. The median of a set of 11 distinct observations is 12.5. If 11 is added to each of the last five observations of the set, then find the median of the new set?

(a) 11
(b) 12
(c) 12.5
(d) 11.5

Q49. Rahil had 155/8 / petrol in the vehicle's tank at the beginning of the journey. At the end of the journey only 31/8 / petrol was left in the fuel tank. What part of the initial quantity of petrol was consumed during the journey?

(a) 3/4
(b) 9/10
(c) 5/6

YourMockTest.com — Free Study Material

(d) 4/5

Q50. What will be the next term of the given series?

9T, 11R, 14P, 18N ?

(a) 15C
(b) 18K
(c) 23L
(d) 20G

Q51. _____ is a religious city located in the Rajasthan state of India.

(a) Rajkot
(b) Puri
(c) Rishikesh
(d) Pushkar

Q52. Spherical mirror whose reflecting surface is bent inward is called-

(a) Concave Mirror
(b) Convex Mirror
(c) Plane Mirror
(d) Both Concave and Convex Mirror

Q53. Which private sector bank was roped in by the Government of India to introduce cashless payments in e-NAM (Electronic National Agriculture Market), in December 2017?

(a) Axis Bank
(b) ICICI Bank
(c) Federal Bank
(d) Karur Vysya Bank

Q54. A and B together can do a piece of work in 35 days. B and C together can complete it in 43.75 days while C and A together can complete the same work in 52.5 days. In how many days can C alone complete the same work?

(a) 162.5
(b) 155
(c) 150
(d) 156.25

Q55. Select the option which is related to the third term in the same way as the second term is related to the first-

Eat : Ate :: Buy : _____

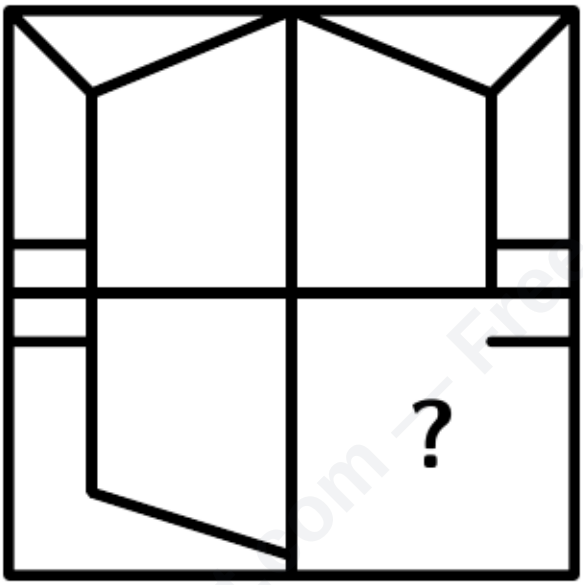
(a) Brings
(b) Buys
(c) Bring
(d) Bought

Q56. The Marathi feature film _____ has won the Best Feature Film award at the 64th National Film Awards-

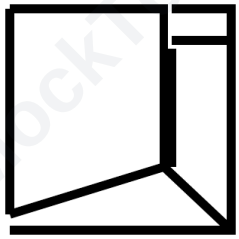
(a) Natrang
(b) Shaala
(c) Kaasav
(d) Valu

Q57. Select the image from the answer images given below so that the given image is complete-

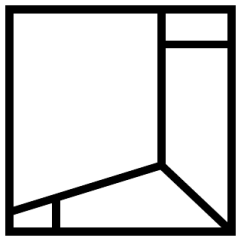
YourMockTest.com — Free Study Material



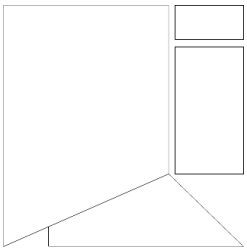
(a)



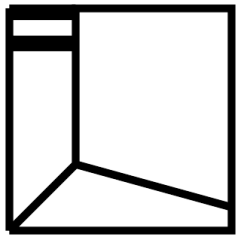
(b)



(c)



(d)



YourMockTest.com – Free Study Material

Q58. Consider the statement and the following statements and decide which of the arguments are strong with respect to the statement.

Statement:

The government should work to popularize the medicines available in alternative medicine for cancer treatment.

Argument:

I. Yes, if medicines are available, people should be aware of it and the government is responsible for creating awareness for this treatment.

II. No, those affected will approach alternative medicine centers if necessary.

(a) Neither I nor II is strong
(b) Only Argument I is Strong
(c) Only Argument II is Strong
(d) Arguments I and II both are strong

Q59. Solve:

$5 + (2 \times (5^2 + 3)) - 84$

(a) -22
(b) -23
(c) -24
(d) -20

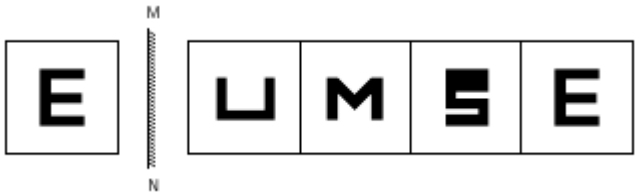
Q60. The audible range of sound for humans is approximately _____-

(a) 20 Hz to 2000 Hz
(b) 20 Hz to 200 Hz
(c) 20 Hz to 20000 Hz
(d) 2 Hz to 2000 Hz

Q61. 6 hours is what percent of a day?

(a) 30%
(b) 40%
(c) 25%
(d) 45%

Q62. Select the mirror image of the figure given below-



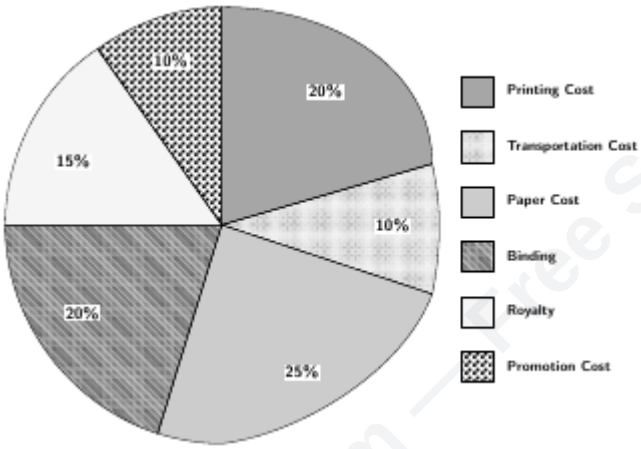
(a) B
(b) A
(c) C
(d) D

Q63. Which of the following does not belong to the given group?

A. soft
B. tender
C. minute
D. hard

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

Q64.



Pie chart shows the expenditure of a publishing house in Karnataka. The angle subtended at the center of the field related to the expenditure of binding is _____ degree-

(a) 54
(b) 72
(c) 36
(d) 90

Q65. Identify which one is different from these-

T	I	V	D
20	9	15	4
A	B	C	D

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

Q66. Select the option which has the same relation with the third word as the second word with the first word.

Work : Effort : : Sleep :

(a) Rise
(b) Freedom
(c) Rest
(d) Near

Q67. Which of the following statements is not true about acids?

(a) It forms H+ in aqueous medium/liquid state.
(b) it is bitter in taste
(c) It converts blue litmus to red
(d) Reacts with metals and bicarbonates to form H2, CO2 and salts.

YourMockTest.com — Free Study Material

Q68. Which of the following statement(s) is/are false?

A. The value of G on the Moon is the same as its value on Earth.

B. The force of gravity between the centres of two masses of 2kg placed at a distance of 1m is 26.68 × 10-11 N.

C. Gravitational Force is inversely proportional to the square of the distance between two objects.

D. The gravitational force between two objects doubles when the distance between them is halved.

(a) Only C and D
(b) Only A
(c) Only D
(d) B, C and D

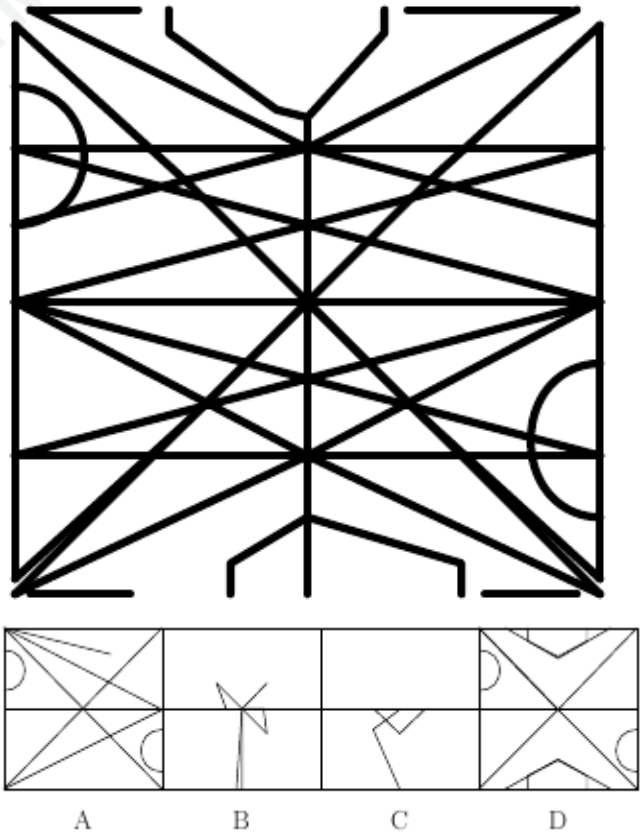
Q69. Which of the following represents the square root of the expression (334 + 335) -

(a) √2 × 3^(17.25)
(b) 6^(34.5)
(c) 2 × 3^(17)
(d) 3^(34.5)

Q70. Where is the headquarter of Small Industries and Development Bank (SIDBI) located?

(a) New Delhi
(b) Mumbai
(c) Hyderabad
(d) Lucknow

Q71. Select the answer figure embedded in the given figure-



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

Q72. This question is in Hindi. Read it online.

Q73. Find the speed of sound in air

(a) 331 ms^(-1)
(b) 331 ms^1
(c) 331 ms^2
(d) 331 ms^(-2)

Q74. When Sulfur Dioxide reacts with zinc, _____ gas is formed-

(a) Oxygen
(b) Hydrogen
(c) Carbon dioxide
(d) Zinc Oxide

Q75. Read the given statement(s) and conclusions carefully and select the conclusion that logically follows from the given statement.

Statement:

1. Some monkeys are not langur.
2. Some langurs are not human.

Conclusion:

1. Some monkeys can be humans.
2. Some Langurs can be Monkeys.

(a) Both conclusions 1 and 2 follow
(b) Only conclusion 1 follows
(c) Only conclusion 2 follows
(d) Either conclusion 1 or 2 follows

Q76. You are given a question and two statements. Decide which of the statement(s) is/are necessary/sufficient to answer the question-

Question:

Latika has 25 boxes of 3 sizes (small, medium, and big). How many big size boxes does he have?

Statement:

1. The number of large boxes is half the number of medium-sized boxes.
2. The number of small boxes is 10.

(a) Statements 1 and 2 both are not sufficient
(b) Only Statement 2 is sufficient
(c) Statements 1 and 2 together are sufficient
(d) Only Statement 1 is sufficient

Q77. Which of the following is true about evaporation?

(a) it is a superficial phenomenon
(b) it only happens in summer
(c) It occurs in solids and liquids
(d) it's an elaborate phenomenon

Q78. in a particular code language if JINX : 5862, ZEBU : 4371, FUZE : 9143. then what will be the code of BINE ?

(a) 7836
(b) 7863
(c) 7869
(d) 4863

YourMockTest.com — Free Study Material

Q79. A ball thrown vertically upwards returns to the ground in 13.5 seconds. With what velocity was it thrown up? (g = 10ms^(-2))

(a) 67.5 m/s
(b) 13.5 m/s
(c) 10 m/s
(d) 135 m/s

Q80. Gene mutation is caused by which of the following?

(a) Reproduction
(b) Change in protein sequence
(c) Change in the sequence of nitrogenous bases
(d) Secretion of enzymes of hormones

Q81. In the question 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 assumption/assumptions is implicit in the statement.

Statement:

Never before has such an informative book on environmental pollution been available.

Assumptions:

I. Other books on environmental pollution are available.

II. Very few books can be written on environmental pollution

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

Q82. When a compressive spring is released it converts its potential energy into _____.

(a) Mechanical energy
(b) Wind energy
(c) Elastic potential energy
(d) Kinetic energy

Q83. Mr. X runs a marathon starting from point A. He runs 5 km in the north direction and reaches point B, then turns right and walks 6 km to reach point C, then turns right and runs 8 km to reach point D, then turns right and runs 10 km and reaches point E, then turns right and runs 6 km and reaches point F, then turns right and runs 1 km and reaches point G, then turns right and runs 3 km and reaches point H.

If Mr. X turns to the right from point E, then in which of the following direction is he facing now?

(a) West
(b) South
(c) East
(d) North

Q84. Train A moving at a speed of 36 km/hr crosses a platform in 80 s. The same train takes 24 s to cross a person moving in the opposite direction with a speed of 18 km/hr. Find the length of the platform-

(a) 120 m
(b) 440 m
(c) 300 m
(d) 240 m

Q85. A total of 210 balls are to be divided between Ranjit and Rohan in such a way that Ranjit gets 56 balls more than Rohan. What will be the ratio of the number of balls Ranjit gets to the number of balls Rohan gets after the division?

(a) 19 : 11
(b) 13 : 8
(c) 5 : 3

YourMockTest.com — Free Study Material

(d) 3 : 2

Q86. Which day was 18th April 2008?

(a) Friday
(b) Monday
(c) Sunday
(d) Saturday

Q87. The correct relation of speed, distance and time is _____.

(a) S = T/D
(b) S = D/T
(c) S = D × T
(d) S = D - T

Q88. The value of G is _____.

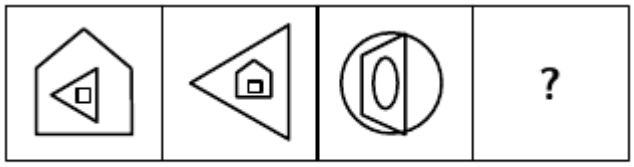
(a) 6.673 × 10^(-11) Nm^(-2)kg²
(b) 6.673 × 10^(-11) Nm²kg²
(c) 6.673 × 10-11 Nm2kg-2
(d) 6.673 × 10^(-11) Nm^(-2)kg^(-2)

Q89. Who was the Foreign Secretary in the Ministry of External Affairs as of February 2018?

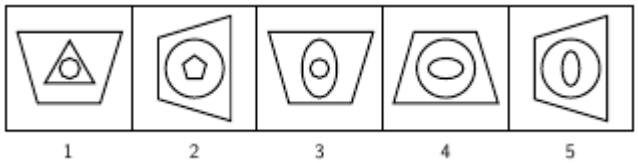
(a) T.S. Tirumurti
(b) Vijay Gokhale
(c) S. Jaishankar
(d) Preeti Saran

Q90. From the given figures, select the figure which is related to the question figure C in the same way as the question figure B is related to question figure A.

Question figures:



Answer figures:



(a) 5
(b) 2
(c) 3
(d) 1

Q91. The price of an article decreases by 25%. By how much will the new price have to be increased to maintain the original price?

(a) 108%
(b) 105/3 %
(c) 50/7 %
(d) 100/3 %

YourMockTest.com — Free Study Material

Q92. _____ gives birth to underdeveloped children.

(a) Echidnas
(b) Kangaroo
(c) Platypus
(d) Rabbit

Q93. _____ is called 'Manchester of India'?

(a) Mumbai
(b) Ahmedabad
(c) Kolkata
(d) Surat

Q94. Political leader Naveen Patnaik belongs to which of the following Indian state?

(a) Uttar Pradesh
(b) Orissa
(c) West Bengal
(d) Assam

Q95. Consider the given statements and decide which of the given assumptions are implicit in the statement.

Statement:

The teacher announced that "from now on, students will clean the class every Friday in groups of five."

Assumption:

I. Teachers want the students to know the importance of cleanliness.

II. Teachers want to clean up the classroom because no one is employed to do this job.

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

Q96. In a group of children 25 play volleyball, 20 badminton and 10 cricket. 5 plays all three games. 6 plays at least two of these games. How many actually play only one game?

(a) 48
(b) 40
(c) 38
(d) 45

Q97. If $a + b + c = 9$ and $a^2 + b^2 + c^2 = 29$, Then find the value of $a^3 + b^3 + c^3 - 3abc$.

(a) 9
(b) 27
(c) 3
(d) 81

Q98. The presence of an element in two or more forms in which physical properties are different but chemical properties are the same is called-

(a) Chain
(b) Alkyne
(c) Allotropy
(d) Alkane

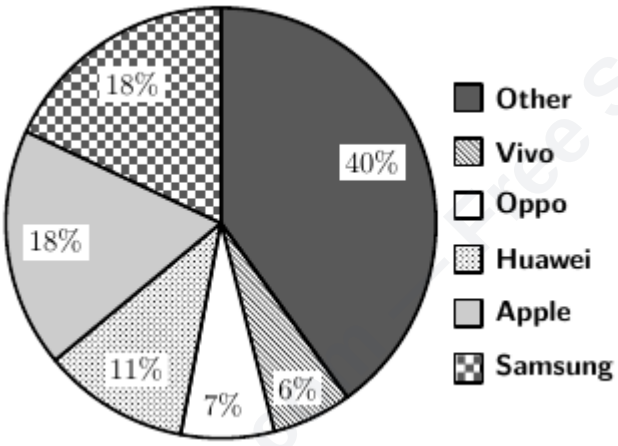
Q99. _____ was initially formed to trade with the East Indies, but eventually became confined mainly to trade with the Indian subcontinent and China.

(a) English India Company
(b) London India Company
(c) East India Company

YourMockTest.com — Free Study Material

(d) British India Company

Q100. The pie graph represents the total sales made by different mobile companies in the year 2017. If the total sales in the year 2017 is Rs. 5000 crores, then the sales made by Apple is Rs. _____ crores.



(a) 350
(b) 550
(c) 900
(d) 2000

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) 80

Mistake Points

Most two points represent the number who has been involved in all the two parts.

The Venn diagram is given below:-

The total number of students who like at most two sports = (9 + 12 + 12 + 14 + 20 + 13) = 80

Hence, "option 4" is the correct answer.

Q2. Answer: (b) Na < Mg > Al < Si

The correct answer is Na < Mg > Al < Si.

• The correct order of first ionization potential in Na < Mg > Al < Si.

Key Points

• The ionisation potential increases as we go along the period from left to right due to a decrease in atomic size.

• The elements Na(11), Mg(12), Al(13), Si(14) all belong to the 3^(rd) period.

• Therefore trend in ionization potential value should be Si>Al>Mg>Na.

• But, the Mg has a higher ionization potential than Al because it has electronic configuration $1s^2 2s^2 3p^6 3s^2$ which has fulfilled 3s orbital and it's difficult to remove an electron from the fulfilled orbital.

• On the other hand, Al has the electronic configuration $1s^2 2s^2 3p^6 3s^2 3p^1$ and it's easier to remove the 3p electron.

• Therefore, Mg has a higher ionisation potential than Al and the correct order of the first ionization potential is Na < Mg > Al < Si.

Q3. Answer: (d) Shunyta

The correct answer is Shoonyta.

• Shunyata has won the Best Short Film award at the Los Angeles Film Festival, 2018.

Key Points

• Shunyata is a 22-minute short fiction film directed by Chintan Sarda.

• Actor Jackie Shroff has performed in the movie.

• It won the best film award at the 2018 Best of India Short Film Festival.

• The festival was held at Mack Sennett Studios in Los Angeles, the United States.

• The prize includes a cash prize of $1,000.

Q4. Answer: (a) mutation

The correct answer is mutation.

• The basic source of biological diversity is mutation.

Key Points

• Mutation:

• It is a change in a DNA sequence.

• It can be a result of DNA copying mistakes made during cell division, exposure to chemicals called mutagens, exposure to ionizing radiation, or infection by viruses.

• It is the basic source of biological diversity.

Additional Information

• Cosmic evolution is the study of change that includes the study of the vast number of developmental and generative changes, accumulated during all time and across all space, from the big bang to humankind.

• Fermentative action is a metabolic process that produces chemical changes in organic substrates through the action of enzymes.

Q5. Answer: (c) lung inflation

The correct answer is lung inflation.

• During inhalation, the lungs fill with air due to lung inflation.

Key Points

• Inhalation:

• It is the process of intake of air.

• During inhalation, muscles of the diaphragm contracts and flattens.

• The lower ribs are raised upward and outwards, the chest cavity enlarges, the air pressure in the lungs is decreased, air rushes into the lungs and the lungs inflate.

Additional Information

• Exhalation

• Expiration is breathing out of air.

• During expiration, relaxation of muscles of the ribs and diaphragm takes place.

• The diaphragm again becomes dome-shaped.

• The Chest cavity is reduced and the air is forced outward through the nose and trachea.

Q6. Answer: (d) 11 : 13

Shortcut Trick

Apply Cross-Multiplication to find the ratio of x : y from the given equation.

$5 \times (10x + 3y) = 9 \times (5x + 2y) \Rightarrow 50x + 15y = 45x + 18y \Rightarrow 5x = 3y \Rightarrow x/y = 3/5$.

Substitute x = 3 and y = 5 into the required ratio (2x + y) : (x + 2y).

$(2 \times 3 + 5) : (3 + 2 \times 5) = (6 + 5) : (3 + 10) = 11 : 13$.

Therefore The correct answer is 11 : 13.

Alternate Method

Given: (10x + 3y) / (5x + 2y) = 9 / 5

Step 1: Solve for x and y

=> 5(10x + 3y) = 9(5x + 2y)

=> 50x + 15y = 45x + 18y

=> 50x − 45x = 18y − 15y

=> 5x = 3y

=> x / y = 3 / 5

Step 2: Calculate the required ratio

=> Required Ratio = (2x + y) / (x + 2y)

=> Divide numerator and denominator by y: [2(x/y) + 1] / [(x/y) + 2]

=> [2(3/5) + 1] / [(3/5) + 2]

=> (6/5 + 1) / (3/5 + 2) = (11/5) / (13/5)

=> 11 / 13

Therefore The correct answer is 11 : 13.

Additional Information

Ratio and Proportion Basics

If a : b = c : d, then ad = bc. This is known as the Product of Extremes = Product of Means.

Componendo and Dividendo

If a/b = c/d, then (a+b)/(a−b) = (c+d)/(c−d). This rule is helpful in simplifying complex linear ratio equations.

Substitution Method

In homogeneous expressions (where the power of variables in each term is the same), we can directly substitute the ratio values into the expression to find the final result.

Q7. Answer: (b) 0.27

Given:

The product of the two numbers is 0.432.

One of them is 1.6

Concept used:

Calculation:

Let the other number be P.

According to the question,

1.6 × P = 0.432

=> P = 0.27

Therefore The other number is 0.27.

Q8. Answer: (b) Neither conclusion I nor II follows

The Venn diagram is given below:-

Conclusion:

I. All cakes are sour. → False (it is possible but not definite)

II. Some cakes are sour. → False (it is possible but not definite.)

• Thus, neither conclusion I nor II follows

Hence, "option 2" is the correct answer.

Additional Information

Q9. Answer: (b) 16

Shortcut Trick

Let Total Work be LCM of (8, 12, 6) = 24 units.

Efficiency: (A+B) = 3, (B+C) = 2, (A+B+C) = 4.

Efficiency of C = (A+B+C) − (A+B) = 4 − 3 = 1 unit/day.

Efficiency of A = (A+B+C) − (B+C) = 4 − 2 = 2 units/day.

Combined efficiency of (A+C) = 2 + 1 = 3 units/day.

Time for twice the work (48 units) = 48 ÷ 3 = 16 days.

Therefore The correct answer is 16 days.

Alternate Method

Given: (A+B) time = 8 days, (B+C) time = 12 days, (A+B+C) time = 6 days.

Formula: Efficiency = Total Work ÷ Time

Person	Days	Total Work	Efficiency
A + B	8	24	3
B + C	12	2	
A + B + C	6	4	

=> Efficiency of A = Efficiency(A+B+C) − Efficiency(B+C) = 4 − 2 = 2

=> Efficiency of C = Efficiency(A+B+C) − Efficiency(A+B) = 4 − 3 = 1

=> Combined Efficiency of (A + C) = 2 + 1 = 3 units/day

=> Twice the work = 2 × 24 = 48 units

=> Time taken by (A + C) = 48 ÷ 3 = 16 days

Therefore The correct answer is 16 days.

Additional Information

Total Work Assumption

Always assume Total Work as the Least Common Multiple (LCM) of the given time periods to avoid calculations in fractions.

Efficiency Relation

Time and Efficiency are inversely proportional. If time taken is doubled for the same work, efficiency is halved.

Combined Work Formula

If A does work in x days and B in y days, together they do it in (x × y) ÷ (x + y) days.

Q10. Answer: (a) New Delhi

The correct answer is New Delhi.

• The Indira Gandhi Indoor Stadium is located in New Delhi.

Key Points

• Indira Gandhi Indoor Stadium:

• The stadium was earlier known as Indraprastha Stadium and Indira Gandhi Arena.

• It is the largest indoor sports arena in India and also among the largest in Asia.

• It was used the host the events of the indoor game in the 1982 Asian Games.

Q11. Answer: (a) 12 : 13

Shortcut Trick

Side ratio of smaller triangle to larger triangle = 2 : 5.

Area ratio = $(2/5)^2 = 4/25$.

Total area of 3 smaller triangles = 3 × 4 = 12 units.

Area of larger triangle = 25 units.

Remaining area = 25 − 12 = 13 units.

Therefore The correct answer is 12 : 13.

Alternate Method

Let the side of the larger triangle be s.

Area of larger triangle (A_L) prop. to s^2.

Side of smaller triangle (s_s) = (2/5)s.

Area of one smaller triangle (A_s) prop. to $((2/5)s)^2 = (4/25)s^2$.

=> $A_s = (4/25) \times A_L$.

=> Total Area of 3 smaller triangles = $3 \times (4/25)A_L = (12/25)A_L$.

=> Remaining area = $A_L - (12/25)A_L = (13/25)A_L$.

=> Required Ratio = $(12/25)A_L : (13/25)A_L = 12 : 13$.

Therefore The correct answer is 12 : 13.

Additional Information

Area of Similar Triangles

If two triangles are similar, the ratio of their areas is equal to the square of the ratio of their corresponding sides: Area1/Area2 =

(side1/side2)².

Equilateral Triangle Area

For an equilateral triangle with side 'a', Area = (√3/4) × a².

Ratio Properties

If the ratio of part to whole is a:b, then the ratio of part to remaining part is a:(b−a).

Q12. Answer: (c) Vidarbha

The correct answer is Vidarbha.

• Vidarbha won the Ranji Trophy in 2017.

Key Points

• Ranji Trophy:

• It is a domestic first-class cricket championship with multiple teams representing regional and state cricket associations.

• It was first held in 1934–35.

• It currently consists of 38 teams, with all 28 states in India and four of the eight union territories having at least one representation.

• It is named after the first Indian cricketer who played international cricket, Ranjitsinhji.

• He was also known as 'Ranji'.

• Bombay is the most successful team in the tournament.

• Vidarbha team won the 2017 tournament by defeating Delhi by 9 wickets.

Q13. Answer: (b) acceleration

The correct answer is acceleration.

Key Points

• When two balls made of iron and aluminium falls then the acceleration due to gravity will be the same for both.

• This is because, in a free fall, the acceleration does not depend on the mass of the object.

Additional Information

• Acceleration:

• Acceleration of an object is defined as the rate of change of velocity of the object.

• It is a vector quantity and its SI unit is metre/second² (m/s²).

• If velocity decreases with time then acceleration is negative and is called retardation.

• Gravity:

• The acceleration due to gravity is the rate of increase of velocity of a body falling freely towards the earth.

• It is represented by g= GM_e/(R_e²)

Q14. Answer: (b) IR

The logic followed here is:-

Hence, "option 2" is the correct answer.

Q15. Answer: (b) 6

Shortcut Trick

For a set of n numbers, if the mean of the first (n−1) numbers is M1 and the mean of the last (n−1) numbers is M2:

Range = (M2 − M1) × (n − 1)

Range = (21 − 19) × 3 = 2 × 3 = 6

Therefore The correct answer is 6.

Alternate Method

Let the four numbers in ascending order be a, b, c, and d.

Given:

=> Mean of the three smallest numbers (a, b, c) = 19

=> Mean of the three largest numbers (b, c, d) = 21

Calculations:

=> Sum of smallest three: a + b + c = 19 × 3 = 57 — (Equation 1)

=> Sum of largest three: b + c + d = 21 × 3 = 63 — (Equation 2)

=> Range = Largest value − Smallest value = d − a

YourMockTest.com — Free Study Material

=> Subtracting Equation 1 from Equation 2:

=> (b + c + d) − (a + b + c) = 63 − 57

=> d − a = 6

Therefore The correct answer is 6.

Additional Information

Range of Data

The Range is the simplest measure of variability, calculated as the difference between the maximum and minimum values in a dataset.

Arithmetic Mean

The Mean is the sum of all values divided by the number of values. Sum = Mean × Count.

Overlap Principle

In a sequence of n numbers, the difference between the sum of the last k numbers and the first k numbers is directly related to the difference between the extreme values when the middle terms cancel out.

Q16. Answer: (a) -7

Shortcut Trick

Identify two numbers whose sum is 3 and product is 2.

The factors of 2 are 1 and 2, and 1 + 2 = 3.

Since the condition x < y is given, we must have x = 1 and y = 2.

Substitute these values into the expression x3 − y3.

13 − 23 = 1 − 8 = −7.

Therefore The correct answer is -7.

Alternate Method

Given: x + y = 3, xy = 2, and x < y.

Formula Used: (x − y)2 = (x + y)2 − 4xy and x3 − y3 = (x − y)(x2 + xy + y2)

=> (x − y)2 = (3)2 − 4(2)

=> (x − y)2 = 9 − 8 = 1

=> x − y = ±1. Since x < y, then x − y = −1.

=> x2 + y2 = (x + y)2 − 2xy = 32 − 2(2) = 5.

=> x3 − y3 = (x − y)(x2 + xy + y2)

=> x3 − y3 = (−1) × (5 + 2) = −7.

Therefore The correct answer is -7.

Additional Information

Algebraic Expansion of x3 − y3

The difference of cubes is given by: x3 − y3 = (x − y)(x2 + xy + y2) or x3 − y3 = (x − y)3 + 3xy(x − y).

Sum of Cubes Identity

The sum of cubes is given by: x3 + y3 = (x + y)(x2 − xy + y2) or x3 + y3 = (x + y)3 − 3xy(x + y).

Relation between (x+y) and (x-y)

The identity connecting sum and difference is (x + y)2 − (x − y)2 = 4xy.

Q17. Answer: (a) Bryophyta

The correct answer is Bryophyta.

• Riccia comes under Bryophyta.

Key Points

• Bryophyta

• In Bryophyta, there is a lack of xylem and phloem tissues.

• They lack true roots, stem and leaves.

• This community is also called the amphibian category of the plant kingdom.

• Examples of Bryophyta are Riccia, liverworts and hornworts.

Additional Information

• Thalophyta

• This is the largest group of the plant kingdom.

• There is no conducting tissue.

YourMockTest.com – Free Study Material

• Pteridophyta

• In Pteridophytes, the body of the plant is differentiated into root, stem and leaf.

Q18. Answer: (a) 8 : 24 am

Shortcut Trick

Find LCM of 12, 16, 24, and 36 minutes.

LCM (12, 16, 24, 36) = 144 minutes.

144 minutes = 2 hours 24 minutes.

Time = 6 : 00 + 2 : 24 = 8 : 24 am.

Therefore The correct answer is 8 : 24 am.

Alternate Method

Given: Intervals are 12, 16, 24 and 36 minutes. Starting time is 6 : 00 am.

Formula Used: Common time for recurring events = LCM of individual intervals.

=> Prime factorization of 12 = $2^2 \times 3$

=> Prime factorization of 16 = 2^4

=> Prime factorization of 24 = $2^3 \times 3$

=> Prime factorization of 36 = $2^2 \times 3^2$

=> LCM = 2^4 × 3^2 = 16 × 9 = 144 minutes.

=> Total time in hours = 144 ÷ 60 = 2 hours 24 minutes.

=> Next ringing time = 6 : 00 am + 2 hours 24 minutes = 8 : 24 am.

Therefore The correct answer is 8 : 24 am.

Additional Information

LCM (Least Common Multiple)

The smallest number that is a multiple of two or more numbers. Used for simultaneous events like traffic lights or bells.

HCF (Highest Common Factor)

The largest number that divides two or more numbers. Used for maximum capacity or length problems.

Time Conversion

Always convert minutes to hours by dividing by 60 to calculate the clock time accurately.

Q19. Answer: (b) It has a measurable amount of thermal energy obtained through the work done by the microwave oven, which in...

The correct answer is It has a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes electrical energy from the electrical grid.

Concept:

Energy

• The capacity of doing work is called energy.

• SI unit of energy is the joule.

• Various forms of energy are heat energy, light energy, nuclear energy, electrical energy, mechanical energy, etc.

• Energy can be converted from one form to another.

• This happens through various processes or using certain appliances.

• For example, when a bulb glows by electricity, electrical energy is converted into light energy.

Explanation:

This question is about the conversion of energy for making a cup of coffee in a microwave oven. The process must follow in a sequence.

• It has a measurable amount of thermal energy gained through the work done by the microwave oven, which in turn takes potential energy from the electrical grid. - Thermal - Work done microwave - Potential energy (false) - Electrical energy.

• It has a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes electrical energy from the electrical grid. Thermal - Work done microwave - Electrical energy - Electrical grid. - Correct Sequence

• It consists of a measurable amount of kinetic energy acquired through the work done by the microwave oven. - False

• It contains a measurable amount of thermal energy obtained through the work done by the microwave oven, which in turn takes chemical energy from the electrical grid. Thermal energy - Work done - Chemical energy (false) - Electric grid

YourMockTest.com — Free Study Material

Q20. Answer: (c) Vijaynagar

The correct answer is Vijaynagar.

• Vijaynagar empire was founded by the Sangam princes - Harihara and Bukka.

Key Points

• Vijayanagar Empire (1336 AD-1580 AD)

• Vijayanagar empire and the city were founded by Harihar and Bukka.

• Muhammad-bin-Tughlaq, converted them to Islam and sent them to the South to control rebellion but motivated by a Bhakti saint Vidyaranya, they established the Vijayanagar kingdom in 1336 AD.

• The period of Vijayanagar can be divided into four distinct dynasties, that are Sangam, Saluva, Tuluva and Aravidu.

Important Points

• The Bahamani kingdom of Deccan was founded by Hasan Gangu.

Q21. Answer: (a) Shahrukh Khan

The correct answer is Shahrukh Khan.

• Shahrukh Khan was selected for the Yash Chopra Memorial National Award, 2017.

Key Points

• Yash Chopra Memorial Award:

• It was instituted in 2013 by the T. Subbarami Reddy from TSR Foundation in memory of the late producer-director Yash Chopra,

• Yash Chopra died in 2012.

• The award was first awarded to melody queen Lata Mangeshkar.

• T. Subbarami Reddy is an industrialist, politician, film producer and philanthropist.

• In the year 2017, the award was given to Shahrukh Khan.

Q22. Answer: (b) 16 years

Shortcut Trick

Ratio 6 years ago = 6 : 5 | Ratio 4 years hence = 11 : 10

Difference in ratio parts = 11 − 6 = 5 units and 10 − 5 = 5 units.

Total time gap = 6 + 4 = 10 years.

5 units = 10 years => 1 unit = 2 years.

Sagar age 6 years ago = 5 units × 2 = 10 years.

Sagar present age = 10 + 6 = 16 years.

Therefore The correct answer is 16 years.

Alternate Method

Given: Ratio of Saina and Sagar 6 years ago = 6 : 5. Ratio 4 years later = 11 : 10.

Let the ages of Saina and Sagar 6 years ago be 6x and 5x.

=> Present age of Sagar = 5x + 6

=> Age of Saina after 4 years = 6x + 6 + 4 = 6x + 10

=> Age of Sagar after 4 years = 5x + 6 + 4 = 5x + 10

=> (6x + 10) / (5x + 10) = 11 / 10

=> 10(6x + 10) = 11(5x + 10)

=> 60x + 100 = 55x + 110

=> 5x = 10 => x = 2

=> Present age of Sagar = 5(2) + 6 = 16 years.

Therefore The correct answer is 16 years.

Additional Information

Concept of Age Ratio

The difference between the ages of two people always remains constant regardless of the time elapsed.

Ratio Balancing

If the difference in ratio parts is not equal, multiply ratios by the difference of the opposite ratio to balance the units.

Time Interval Calculation

The total time gap between 'n' years ago and 'm' years hence is calculated as (n + m) years.

YourMockTest.com — Free Study Material

Q23. Answer: (a) Gopal Guru

The correct answer is Gopal Guru.

• In January 2018, Gopal Guru was appointed as the editor of the Economic and Political Weekly.

Key Points

• Gopal Guru was appointed as the editor of the Economic and Political Weekly.

• Gopal Guru is currently a Professor at the Centre for Political Studies at the Jawaharlal Nehru University in New Delhi.

• He replaced Paranjoy Guha Thakurta.

Additional Information

• Economic and Political Weekly:

• It started in 1949.

• Its Publisher is Sameeksha Trust.

Q24. Answer: (b) [figure]

• Shoes, cars, and bicycles all are different things.

• The most appropriate Venn diagram is as follows:

Hence, "option 2" is the correct answer.

Q25. Answer: (d) 2 and 16 November

Important Points

• 2 November is the earliest date among the given options.

• So, we will calculate the day on 2 November and then use that information to calculate the day on the other dates of November if needed.

Concept:

• 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.

• 1999 = 1600 + 300 + 99 years

• In 1600 years the odd days = 0

• In 300 years the odd days = 1

• In 99 years (from 1901 to 1999), = 99/4 = 24 leap years and 75 normal years.

• In 24 leap years, odd days = 48, and 75 normal years = 75 odd days

• So total = 48 + 75 = 123 odd days i.e. 123/7 = 4 odd days

In 2000, the number of days up to 2 November

= 31 (Jan) + 29 (Feb - leap year) + 31 (Mar) + 30 (Apr) + 31 (May) + 30 (Jun) + 31 (Jul) + 31 (Aug) + 30 (Sep) + 31 (Oct) + 2 (Nov)

= 307 days

= 6 odd days.

Total in 2000 years up to 2 November = 0 + 1 + 4 + 6 = 11/7 = 4 odd days.

The codes for the weekdays are as follows:

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

• Thus, the day of the week on 2 November 2000 was Thursday.

• Now, 2 November + 14 days (0 odd days) = 16 November. So, 16 November is also a Thursday.

Hence, "option 4" is the correct answer.

Q26. Answer: (b) BL&

Given series:-

3 R # 2 A $ K 5 % T 7 & N Y ÷ X B / L Q @ 1

Second half: & N Y ÷ X B / L Q @ 1

The second half of the above series is reversed, then the new series is:-

3 R # 2 A $ K 5 % T 7 1 @ Q L / B X ÷ Y N &

From the above series:-

Similarly,

Hence, "option 2" is the correct answer.

Q27. Answer: (a) Finance

The correct answer is Finance.

• The term 'Financial Deficit' is related to the Finance Ministry of the Government of India.

Key Points

• Fiscal Deficit:

• It is the difference between total expenditure (revenue, capital, and loans net a repayment) and the revenue receipts plus those capital receipts which are not in the form of borrowings but which in the end accrue to the government.

• The term is related to the Finance Ministry of the Government of India.

Q28. Answer: (b) Statements 1 and 2 both are insufficient

1. M is taller than R and S.

M > R and S

• Here, there is no information given about the height of N. Therefore, statement 1 alone is not sufficient.

2. M is wearing a sky coloured shirt.

• No information is given about the height of M, N, R, and S. Therefore, statement 2 alone is not sufficient.

• From statements 1 and 2:-

M > R and S. No definite relationship was established.

• Here, statements 1 and 2 are insufficient.

Hence, "option 2" is the correct answer.

Q29. Answer: (b) D

The logic followed here is:-

• Figures A, B, and C have 5-pointed stars inside them.

•

• Figure D has a 6-pointed star.

•

So, figure D is different from the rest.

Hence, "option 2" is the correct answer.

Q30. Answer: (b) Knight of the Legion of Honor

The correct answer is Knight of the Legion of Honor.

• Knight of the Legion of Honor was given to former French President Nicolas Sarkozy in 2004.

Key Points

• Nicolas Sarkozy:

• He served as the President of France from May 2007 until May 2012.

• The Russo-Georgian War and the Arab Spring took place during his tenure.

• He was awarded the Knight of the Legion of Honour by President Chirac in 2005.

-

Q31. Answer: (b) 38

Given:

32 - 2(10 + 16 ÷ 4 × 3 - 5 × 2) + 30

Concept used:

Calculation:

32 - 2(10 + 16 ÷ 4 × 3 - 5 × 2) + 30

=> 32 - 2(10 + 4 × 3 - 5 × 2) + 30

=> 32 - 2(10 + 12 - 10) + 30

=> 32 - 24 + 30

=> 38

Therefore The required value of 32 - 2(10 + 16 ÷ 4 × 3 - 5 × 2) + 30 is 38.

YourMockTest.com — Free Study Material

Q32. Answer: (d) XC, WD

The logic followed here is:-

Hence, "option 4" is the correct answer.

Q33. Answer: (d) Balwant Rai Mehta Committee

The correct answer is Balwant Rai Mehta Committee.

• Balwant Rai Mehta Committee recommended that the decision-making power should be decentralized and elected local bodies should be set up.

Key Points

• Balwant Rai Mehta Committee

• The Government of India appointed a committee in 1957.

• This committee was set up to examine the work of the Community Development Programme (1952), and the National Extension Service (1953).

• The committee submitted its report in 1958.

• Recommendations

• This committee recommends three levels of governance viz Zila Parishad, Panchayat Samiti (Block) and Gram Panchayat (village).

• The district collector should be a chairperson of Zila Parishad.

• The members of Zila Parishad and Panchayat Samiti should be elected indirectly while the members of Gram Panchayat should be elected directly.

• These recommendations were accepted by National Development Council (NDC) in Jan 1958.

Q34. Answer: (a) Slaked lime

The correct answer is Slaked lime.

• On adding water to CaO, a Slaked lime compound is obtained.

Key Points

• Quick lime is chemically called calcium oxide (CaO), when it is added to water, calcium hydroxide is formed.

• Calcium hydroxide is also called slaked lime.

• This reaction is highly exothermic in which a large amount of heat is released in the process.

• $CaO + H2O \rightarrow Ca(OH)2$

Additional Information

• The chemical formula of washing soda is $Na2CO3$.

Q35. Answer: (c) 8.5 A

The correct answer is

Key Points

• Given,

• Current, I= 4A.

• The potential difference, V= 60 V

• According to Ohm's Law, V= IR

• R = V/I

• R = 60/4

• = 15 Ω

• New current, I= 127.5 V

• I = V/R

• I = 127.5/15

• = 8.5 A

Additional Information

• Ohm’s Law

• The electric current flowing through a conductor is directly proportional to the potential difference across its ends.

• It is given by the formula:

• V=IR

Q36. Answer: (d) C

The logic followed here is:-

• Figures A, B, and D have 3 red balloons and 3 blue balloons.

• Figre C has 2 red balloons and 4 blue balloons.

So, figure C is different from the rest.

Hence, "option 4" is different from others.

Q37. Answer: (b) Rs. 3,600

Shortcut Trick

Total interest to be paid (SI) for 3 years @ 10% = 10% × 3 = 30%

Total interest to be earned (CI) for 2 years (from end of year 1 to 3) @ 10% = 10 + 10 + (10 × 10) ÷ 100 = 21%

Net loss percentage = Interest Paid % − Interest Earned % = 30% − 21% = 9%

Loss amount = 9% of Rs. 40,000 = 40,000 × 0.09 = Rs. 3,600

Therefore The correct answer is Rs. 3,600.

Alternate Method

Given:

Principal amount (P) = Rs. 40,000

Rate of interest (R) = 10% p.a.

Time for borrowing (T1) = 3 years (from Year 0 to Year 3)

Time for lending (T2) = 2 years (from Year 1 to Year 3)

Formula Used:

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

Compound Interest (CI) = P × [(1 + R ÷ 100)^T − 1]

Calculations:

=> Interest to be paid (SI) = (40,000 × 10 × 3) ÷ 100

=> SI = 40,000 × 0.30 = Rs. 12,000

=> Interest to be earned (CI) = 40,000 × [(1 + 10 ÷ 100)² − 1]

=> CI = 40,000 × [(1.1)² − 1] = 40,000 × [1.21 − 1]

=> CI = 40,000 × 0.21 = Rs. 8,400

=> Net Profit/Loss = Interest Earned − Interest Paid

=> Net Result = 8,400 − 12,000 = −Rs. 3,600

=> A negative result indicates a Loss.

Therefore The correct answer is Rs. 3,600.

Additional Information

Effective Interest Rate

For Compound Interest over 2 years, the effective rate is given by R_(eff) = x + y + (x × y) ÷ 100, where x and y are rates for the first and second years.

Difference between SI and CI

For the same principal and rate over 2 years, the difference is CI − SI = P(R ÷ 100)². This rule only applies when the time period and principal are identical for both.

Compound Interest for 'n' years

The amount A in CI is P(1 + r/n)^(nt). When compounded annually, n = 1, so A = P(1 + r)^t.

Q38. Answer: (d) Rs. 105,600

Shortcut Trick

Total interest percentage = Rate × Time

Interest % = 5% × 3.5 years = 17.5%

Given: 17.5% of Principal = Rs. 18,480

100% of Principal = (18,480 ÷ 17.5) × 100 = 1,05,600

Therefore The correct answer is Rs. 1,05,600.

Alternate Method

Given:

Simple Interest (SI) = Rs. 18,480

Rate (R) = 5% per annum
Time (T) = 3 years 6 months = 3.5 years = 7/2 years
Formula Used:
Simple Interest = (Principal × Rate × Time) ÷ 100
=> 18,480 = (P × 5 × 7/2) ÷ 100
=> 18,480 = (P × 35) ÷ 200
=> P = (18,480 × 200) ÷ 35
=> P = (18,480 × 40) ÷ 7
=> P = 2,640 × 40
=> P = 1,05,600
Therefore The correct answer is Rs. 1,05,600.
Additional Information
Total Amount
Amount (A) is the sum of Principal and Simple Interest: A = P + SI = P[1 + (R × T)/100].
Annual vs. Monthly Rate
Always ensure Time and Rate are in the same unit. If time is in months, divide by 12 to convert to years for annual rates.
Compound Interest Comparison
For the first year, SI and CI are equal if interest is compounded annually. CI formula: $A = P(1 + R/100)^n$.

Q39. Answer: (c) 538.285

Given:
5.035 + 50.35 + 503.50 - 20.60
Concept used:
Calculation:
5.035 + 50.35 + 503.50 - 20.60
=> 5035 × (0.001 + 0.01 + 0.1) - 20.60
=> 5035 × 0.111 - 20.60
=> 558.885 - 20.60
=> 538.285
Therefore The value of (5.035 + 50.35 + 503.50 - 20.60) is 538.285.

Q40. Answer: (c) Alkaline earth metals

The correct answer is Alkaline earth metals.
• The second group of elements are called alkaline earth metals.
Key Points
• Alkaline Earth Metals:
• It consists of Group 2 (IIa) elements of the periodic table.
• These are beryllium (Be), magnesium (Mg), calcium (Ca), strontium (Sr), barium (Ba), and radium (Ra).
• Properties of alkaline earth metals:
• they are shiny in appearance.
• They have a silvery-white colour.
• They are reactive metals at standard temperature and pressure.
• They readily lose their two outermost electrons and form cations with a 2^+ charge.
• They have low densities.
• They have low melting points.
• They have low boiling points.
Additional Information
• Halogens are kept in the Group 17 of the periodic table.
• Alkaline metals are kept in Group 1 of the periodic table.
• Inert gases are kept in the Group 18 of the Periodic Table.

YourMockTest.com — Free Study Material

Q41. Answer: (c) ESL Narasimham

The correct answer is ESL Narasimham.

• ESL Narasimham is the present Governor of Andhra Pradesh and Telangana. (in 2018)

Key Points

• ESL Narasimham:

• He is an IPS officer and served as the Director of the Intelligence Bureau.

• He served as the governor of Andhra Pradesh and Telangana.

• He was the first Governor of Telangana.

• He also served as the Governor of Chhattisgarh.

• Additional Information

• Biswabhusan Harichandan is the current governor of Andhra Pradesh. (in Jan 2022)

• Tamilisai Soundararajan is the current governor of Telangana. (in Jan 2022)

Q42. Answer: (a) 5 June

The correct answer is 5 June.

• World Environment Day is celebrated on the 5th of June.

Key Points

• World Environment Day:

• It is celebrated every year on the 5th of June. It was established in 1972 by the United Nations at the Stockholm Conference on the Human Environment

• It was first celebrated in the year 1974.

• The theme of first-World Environment Day was Only One Earth.

• The theme for world environment day 2022 is Only One Earth.

Additional Information

• United Nations:

• The UNO was formed on 24 October 1945.

• At present, 193 countries are members of the UN.

• South Sudan is the latest and the 193rd member to join the UN in 2011

• The UN Charter came into force on October 24, 1945, when the Governments of China, France, the UK, the Soviet Union, the USA and a majority of other counties had ratified it.

• The headquarters of the UN is situated in New York (USA).

Q43. Answer: (c) oil and water

The correct answer is oil and water.

• oil and water can be separated by different funnels.

Key Points

• Separating funnel:

• It is a funnel used to separate immiscible liquids.

• Liquids that do not mix with each other are called immiscible.

• Such two immiscible liquids are oil and water and they can be separated by using a separating funnel.

• The oil and water form two separate layers, with the oil being the less dense liquid being on top.

Additional Information

• The density of oil is 0.930 kg/m^3.

• The density of water is 1.003 kg/m^3.

Q44. Answer: (a) 9

Shortcut Trick

Apply the Empirical Formula: Mode = 3 × Median − 2 × Mean.

Substitute the given values: 15 = 3 × Median − 2 × 6.

15 = 3 × Median − 12 => 3 × Median = 27.

Median = 27 ÷ 3 = 9.

Therefore The correct answer is 9.

Alternate Method

Given:

Mode of the data = 15

Mean of the data = 6

Formula Used:

The relationship between Mean, Median, and Mode is given by the empirical formula: Mode = 3(Median) − 2(Mean)

Calculations:

=> 15 = 3 × Median − 2 × 6

=> 15 = 3 × Median − 12

=> 3 × Median = 15 + 12

=> 3 × Median = 27

=> Median = 27 ÷ 3

=> Median = 9

Therefore The correct answer is 9.

Additional Information

Empirical Relationship

For a moderately skewed distribution, the relationship is Mode = 3 × Median − 2 × Mean. This is also known as Karl Pearson's formula.

Symmetrical Distribution

Q45. Answer: (d) Only 1 follows

The statement highlights the water shortage problem faced by the construction industries in North Karnataka.

• Action I suggests that the government take some steps to address this situation. Since there is a problem, it is reasonable to look for ways to resolve it. Thus, action 1 follows.

• Action II stands illogical with respect to the statement since it says that the construction industries be closed to save water, while the problem of water shortage is faced by those industries themselves. Construction industries are also important for the economy and the citizens. Thus, action II does not follow.

Hence the correct answer is option 4.

Q46. Answer: (a) NVZG

The logic followed here is:-

Similarly,

Hence, "option 1" is the correct answer.

Q47. Answer: (d) Democritus

The correct answer is Democritus.

• The word atom was discovered by Democritus.

Key Points

• Democritus was a Greek philosopher.

• He was the one who first proposed the Greek word atomos.

• Atomos means uncuttable.

• He further explained that all matter was eventually reducible to discrete, small particles or atomos.

Additional Information

• Laws of Multiple Proportion and the Atomic Theory was proposed by John Dalton.

• Antoine Laurent Lavoisier is known as the father of modern chemistry.

Q48. Answer: (c) 12.5

Shortcut Trick

In a set of 11 distinct observations, the median is the 6^(th) term when arranged in ascending order.

The last five observations are the 7^(th), 8^(th), 9^(th), 10^(th), and 11^(th) terms.

Adding 11 to these terms only increases values that are already greater than the median.

Since the 6^(th) term remains unchanged, the median of the new set remains the same.

Therefore The correct answer is 12.5.

Alternate Method

Given:

YourMockTest.com — Free Study Material

Total observations (n) = 11
Median = 12.5
Calculations:
=> For n = 11, Median position = (11 + 1) ÷ 2 = 6^(th) term.
=> Let the observations be x1

Q49. Answer: (d) 4/5

Shortcut Trick
Initial petrol = 125/8 l and Leftover petrol = 25/8 l.
Consumed petrol = 125/8 − 25/8 = 100/8 l.
Required fraction = Consumed ÷ Initial = (100/8) ÷ (125/8) = 100/125 = 4/5.
Therefore The correct answer is 4/5.
Alternate Method
Given:
Initial quantity of petrol = 15(5/8) l = 125/8 l
Final quantity of petrol = 3(1/8) l = 25/8 l
Calculations:
=> Consumed petrol = Initial Quantity − Remaining Quantity
=> Consumed petrol = 125/8 − 25/8 = 100/8 l
=> Part of initial quantity consumed = Consumed quantity ÷ Initial quantity
=> Fraction = (100/8) ÷ (125/8)
=> Fraction = 100/125
=> Fraction = 4/5
Therefore The correct answer is 4/5.
Additional Information
Mixed Fraction Conversion
To convert a mixed fraction a(b/c) to an improper fraction, use (a × c + b) / c.
Fractional Consumption
The part or fraction of a whole consumed is calculated as (Value Consumed) ÷ (Total Initial Value).

Q50. Answer: (c) 23L

The logic followed here is:-
Hence, "option 3" is the correct answer.

Q51. Answer: (d) Pushkar

The correct answer is Pushkar.
• Pushkar is a religious city located in the Rajasthan state of India.
Key Points
• Pushkar:
• Pushkar is a city in the Ajmer district of Rajasthan.
• It is famous for Pushkar Camel Fair.
• It is a trading gathering of cattle, horses and camels.
Additional Information
• Rajkot is a city in Gujarat.
• Puri is a city located in Odisha.
• Rishikesh is a city located in Uttarakhand.

Q52. Answer: (a) Concave Mirror

The correct answer is Concave Mirror.
• A spherical mirror whose reflecting surface is bent inward is called Concave Mirror.
Key Points
• Concave Mirror:
• A concave mirror is a part of a spherical mirror where the inner surface is the reflecting surface.

YourMockTest.com — Free Study Material

• The image formed by a concave mirror is real and virtual.
• Uses of Concave Mirror
• As a shaving glass.
• As a reflector for the headlights of a vehicle, searchlight.
• In ophthalmoscope to examine the eye, ear, nose by doctors.
• In solar cookers.
Additional Information
• Convex Mirror:
• Convex Mirror is a part of a spherical mirror where the reflective surface bulges out towards the light source.
• The images formed by a convex mirror are always virtual and erect.
• 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.

Q53. Answer: (b) ICICI Bank

The correct answer is ICICI Bank.
• ICICI Bank was roped in by the Government of India to introduce cashless payments in e-NAM (Electronic National Agriculture Market), in December 2017.
Key Points
• The government roped in ICICI Bank to enable online payments.
• It will enable online payments at 470 mandis integrated with the national portal of electronic National Agriculture Market (e-NAM).
• The bank will enable BHIM (Bharat Interface for Money) and Unified Payments Interface (UPI) on the e-NAM portal.
• ICICI Bank:
• Its full form is Industrial Credit and Investment Corporation of India (ICICI).
• It was founded in the year 1995.
• Its headquarter is located in Vadodara, Gujarat.
• Sir Arcot Ramasamy Mudaliar was the first Chairman of ICICI bank.
• Girish Chandra Chaturvedi is the current chairperson of ICICI bank.
• Sandeep Bakshi is the current CEO of ICICI bank. (As of Jan 2022).

Q54. Answer: (c) 150

Shortcut Trick
Convert days to fractions: 35, 175/4 (43.75), 105/2 (52.5).
Take LCM of numerators (35, 175, 105) = 525 units as Total Work.
Efficiency of 2(A+B+C) = 15 + 12 + 10 = 37 units → Efficiency of A+B+C = 18.5 units.
Efficiency of C = (A+B+C) − (A+B) = 18.5 − 15 = 3.5 units.
Days for C = 525 ÷ 3.5 = 150 days.
Therefore The correct answer is 150 days.
Alternate Method
Given:
Time taken by (A + B) = 35 days
Time taken by (B + C) = 43.75 days = 175/4 days
Time taken by (C + A) = 52.5 days = 105/2 days
Formula Used:
Total Work = Efficiency × Time

Person	Days	Total Work (LCM)	Efficiency
A + B	35	525	15
B + C	175/4	12	
C + A	105/2	10	

Calculations:
=> Adding efficiencies: 2(A + B + C) = 15 + 12 + 10 = 37

=> Efficiency of (A + B + C) = 37 ÷ 2 = 18.5

=> Efficiency of C = Efficiency of (A + B + C) − Efficiency of (A + B)

=> Efficiency of C = 18.5 − 15 = 3.5

=> Time taken by C alone = Total Work ÷ Efficiency of C

=> Time = 525 ÷ 3.5 = 150 days

Therefore The correct answer is 150 days.

Additional Information

Combined Work Efficiency

When work is done in pairs (A+B, B+C, C+A), the sum of efficiencies equals 2 × (A+B+C).

Time and Work Relation

Efficiency is inversely proportional to time taken. If time increases, efficiency decreases proportionally.

LCM Method for Fractions

LCM of fractions = LCM of Numerators ÷ HCF of Denominators. Useful for finding Total Work.

Q55. Answer: (d) Bought

The logic followed here is:-

• Ate is the past tense of "eat".

Similarly,

• Bought is the past tense of "buy".

Hence, "option 4" is the correct answer.

Q56. Answer: (c) Kaasav

The correct answer is Kaasav.

Key Points

• Kaasav won the "Best Feature Film" award in 64th National Film Awards.

• It was released in the year 2016 in the Marathi language.

• Its directors were Sumitra Bhave and Sunil Suthankar

• It was produced by Mohan Agashe

• 64th National Film Awards:

• Organized by Directorate of Film Festivals to present awards to films of 2016

• Presented by - Pranab Mukherjee

• Jury members - Madhur Bhandakar, Kaushik Ganguly, Radhakrishna Jagalamudi, Mohan Kanda

• Best film-friendly state - Uttar Pradesh

• Best non-feature film - Fireflies in the Abyss

• Best book - Lata: Sur Gatha

• Best film critic - G Dhananjayan

• Dada Saheb Phalke Award - Kasinadhuni Viswanath

Additional Information

• Dada Saheb Phalke Award:

• Dadasaheb Phalke Award is India's highest award in cinema.

• It is presented annually at the National Film Awards ceremony by the Directorate of Film Festivals (an organisation set up by the Ministry of Information and Broadcasting).

• The award prize consists of a golden lotus, a cash prize of Rs. 10 lakh and a shawl.

• The award is given to people for their outstanding contribution to the growth and development of Indian cinema.

• It was first presented in 1969.

• The first recipient of the award was actress Devika Rani, “the first lady of Indian cinema.

Q57. Answer: (a) [figure]

The correct option which will complete the format of the given image is shown below:-

Hence, "option 1" is the correct answer.

YourMockTest.com — Free Study Material

Q58. Answer: (b) Only Argument I is Strong

The statement highlights the need to popularize alternative medicines for cancer treatment.

• It is reasonable to expect that the government should take responsibility to spread awareness about available alternative cancer treatments. Ensuring the outreach of adequate and appropriate healthcare facilities to the citizens is one of the primary responsibilities of a government. Thus, argument I is strong.

• If the affected people aren't aware of the availability of alternative medicines, they won't be able to approach such centers. Thus, argument II does not hold strong.

Hence the correct answer is option 2.

Q59. Answer: (b) -23

Given:

5 + (2 × (52 + 3)) - 84

Concept used:

Calculation:

5 + (2 × (52 + 3)) - 84

=> 5 + (2 × (25 + 3)) - 84

=> 5 + (2 × 28) - 84

=> 5 + 56 - 84

=> (-23)

Therefore The required value of 5 + (2 × (52 + 3)) - 84 is (-23).

Q60. Answer: (c) 20 Hz to 20000 Hz

The correct answer is 20 Hz to 20000 Hz.

• The audible range of sound for humans is approximately 20 Hz to 20000 Hz.

Key Points

• Sound Wave

• It is a longitudinal mechanical wave.

• The longitudinal mechanical waves which lie in the range of 20 Hz to 20,000 Hz are called audible or sound waves.

• It cannot travel in a vacuum.

• The longitudinal mechanical waves having frequencies less than 20 Hz are called infrasonic. These are produced by earthquakes, volcanic, eruptions, Ocean waves, elephants, and whales.

• The longitudinal mechanical waves having frequencies greater than 20000 Hz are called ultrasonic waves.

Q61. Answer: (c) 25%

Given:

6 hours

Concept used:

A day = 24 hours

Calculation:

So, 6 hours = (6/24) × 100% = 25% of a day.

Therefore 6 hours is 25% of a day.

Q62. Answer: (c) C

• The mirror image of the question figure is as follows:

Hence, "option 3" is the correct answer.

Q63. Answer: (a) C

The logic followed here is:-

• Soft, tender and hard are used to describe the state or condition of objects.

• Minute is used to describe the size of objects

So, gentle is different from others.

Hence, "option 3" is the correct answer.

YourMockTest.com — Free Study Material

Q64. Answer: (b) 72

The pie chart shows the expenditure of binding is 20% of total expenditure.

A pie chart defines 360° as 100%.

So, The angle subtended at the center of the field related to the expenditure of binding = 360° ÷ (100/20) = 72°

Therefore The angle subtended at the center of the field related to the expenditure of binding is 72°.

Q65. Answer: (b) C

The logic followed here is:-

• Figure A - T and its positional value 20

• Figure B - I and its positional value 9

• Figure C - V and 15. Positional value of V is 22.

• Figure D - D and its positional value 4

So, figure C is different from others.

Hence, "option 2" is the correct answer.

Q66. Answer: (c) Rest

The logic followed here is:-

• Work requires efforts

Similarly,

• Sleep provides rest.

Hence, "option 3" is the correct answer.

Q67. Answer: (b) it is bitter in taste

The correct answer is it is bitter in taste.

Key Points

• Acid:

• An acid is a substance which

• Is sour to 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

Additional Information

• 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.

Q68. Answer: (c) Only D

The correct answer is Only D.

Key Points

• Gravity:

• The acceleration due to gravity is the rate of increase of velocity of a body falling freely towards the earth.

• It is represented by: g= GM_e/(R_e²)

Additional Information

• Gravitational Force:

• Mathematically, it is represented as:

• F= GMm/(r²)

• Where,

• F is the gravitational force
• G is gravitational constant
• M is the mass of the first particle
• m is the mass of the second particle
• r is the distance between them.
• Substituting G = 6.67 × 10^-11, m1 = 2 kg, m2 = 2 kg, and r = 1 m, the force comes out to 26.68 × 10^-11 N.
• This is called Newton's universal law of gravitation.
• The value of G is 6.67 × 10^(-11) N m²/kg².
• The value of g on the Moon is 1/6th of that on the earth.

Mistake Points

• "g" is the Gravitational acceleration but "G" is the Gravitational constant.
• g can vary from place to place; on Moon, it is 1.62 m/s², but on earth, it is 9.807 m/s²
• But G remains constant.

Q69. Answer: (c) 2 × 3^(17)

2Given:

(334 + 335)

Concept used:

Index

Calculation:

(334 + 335)

=> 3^(34)(1 + 3)

=> 3^(34) × 4

So,

√(334 + 335)

=> √(334 × 4)

=> 3^(17) × 2

Therefore The required value of (334 + 335) is 2 × 317.

Q70. Answer: (d) Lucknow

The correct answer is Lucknow.

• The headquarter of Small Industries and Development Bank (SIDBI) is located in Lucknow.

Key Points

• Small Industries Development Bank of India (SIDBI):
• It was formed in the year 1990.
• It is the apex regulatory body for the licensing and regulation of micro, small and medium enterprise finance companies in India.
• It comes under the jurisdiction of the Ministry of Finance.
• Its headquarters is located at Lucknow, Uttar Pradesh.
• SIDBI is regulated and supervised by the Reserve Bank of India.

Additional Information

• 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

Q71. Answer: (c) B

The embedded answer figure is shown below:-

Hence, the correct answer is "Option 2".

YourMockTest.com – Free Study Material

Q72. Answer: (d)

The correct answer is Rajiv Gandhi Sports Campaign.

Key Points

• Rajiv Gandhi Sports Campaign is a centrally sponsored scheme in place of Panchayat Yuva Krida and Khel Abhiyan (PYKKA).

• It was launched in 2014.

• The scheme was launched to encourage sports players and find out the talent residing in small villages and districts.

• The scheme was merged with Khelo India in the year 2016.

Additional Information

• Khelo India program was launched in 2017-18.

• Major Dhyan Chand Khel Ratna Award (Rajiv Gandhi Khel Ratna):

• The Rajiv Gandhi Khel Ratna Award is India's highest honour given for achievement in sports.

• The award was instituted in the year 1991- 92 and was awarded by the Government of India.

• Vishwanathan Anand was the first person to win the Rajiv Gandhi Khel Ratna award.

• The award was rechristened as Major Dhyan Chand Khel Ratna Award in the year 2021.

Q73. Answer: (a) 331 ms^(-1)

The correct answer is 331 ms^(-1).

Key Points

• Sound Wave

• It is a longitudinal mechanical wave.

• The speed of sound in air is 331 m/s.

• The longitudinal mechanical waves which lie in the range of 20 Hz to 20,000 Hz are called audible or sound waves.

• It cannot travel in a vacuum.

• The longitudinal mechanical waves having frequencies less than 20 Hz are called infrasonic. These are produced by earthquakes, volcanic, eruptions, Ocean waves, elephants, and whales.

• The longitudinal mechanical waves having frequencies greater than 2000 Hz are called ultrasonic waves.

Q74. Answer: (a) Oxygen

The correct answer is Oxygen.

• When sulfuric dioxide reacts with zinc, oxygen gas is formed.

Key Points

• The following reaction can be given by

• $SO2 + Zn \rightarrow ZnS + O2$

• Hence, when sulfuric oxide reacts with zinc, oxygen gas is formed.

Additional Information

• Sulphuric acid is also known as the oil of vitriol.

• It is composed of sulfur, hydrogen, and oxygen element.

• The acid has a very strong acidic nature.

• It has several uses such as fertilizer manufacture, mineral processing, oil refining, and wastewater processing.

• It is also known by the name hydrogen sulfate.

Q75. Answer: (a) Both conclusions 1 and 2 follow

The least possible Venn diagram is as follows:

Conclusions:

1. Some monkeys can be humans. → Follows (The possibility that some monkeys can be humans exists. This is shown in the below possibility diagram.)

The possibility diagram is as follows:

2. Some Langur can be monkeys. → Follows (The possibility that some langur can be monkey exists. This is shown in the below possibility diagram.)

The possibility diagram is as follows:

Hence, "option 1" is the correct answer.

Additional Information

Q76. Answer: (c) Statements 1 and 2 together are sufficient

Shortcut Trick

Total boxes = 25. Small boxes = 10 (from Statement 2).

Remaining (Big + Medium) = 25 − 10 = 15.

Ratio of Big to Medium = 1 : 2 (from Statement 1).

Big boxes = 15 × (1 ÷ 3) = 5. Both statements are required to find the exact count.

Therefore The correct answer is Statements 1 and 2 together are sufficient.

Alternate Method

Given: Total boxes (B + M + S) = 25.

Statement 1: B = M ÷ 2 => M = 2B.

Statement 2: S = 10.

Calculations:

=> Total = Big + Medium + Small

=> 25 = B + M + S

=> Using Statement 2: 25 = B + M + 10 => B + M = 15

=> Using Statement 1: B + 2B = 15

=> 3B = 15

=> B = 5

Both statements are needed to solve for the unique value of B.

Therefore The correct answer is Statements 1 and 2 together are sufficient.

Additional Information

Data Sufficiency

A question is solvable only if the number of independent equations matches the number of unknown variables (here B, M, and S).

Linear Equations in Three Variables

The general form is ax + by + cz = d. To find unique values for x, y, and z, we generally require three distinct statements or constraints.

Ratio and Proportion

If a total T is divided in ratio x : y, the parts are [x / (x+y)] × T and [y / (x+y)] × T.

Q77. Answer: (a) it is a superficial phenomenon

The correct answer is it is a superficial phenomenon.

Key Points

• Evaporation

• The process of vapourisation takes place only from the exposed surface of the liquid and that at all temperatures is called evaporation.

• It is a superficial phenomenon.

• Evaporation causes cooling.

Additional Information

• Vaporisation:

• The process by which a substance is changed from a liquid state to a vapour state is called vaporisation.

Q78. Answer: (b) 7863

The logic followed here is:-

Similarly,

Hence, "option 2" is the correct answer.

Q79. Answer: (a) 67.5 m/s

The correct answer is 67.5 m/s.

Concept:

Kinematic equations of motion:

• These equations define the relationship between initial velocity u, final velocity v, time t, and displacement s of an object with respect to its motion in uniform acceleration a.

• Following are the three kinematic equations for uniformly accelerated motion:

=> v = u + at

=> s = ut + 0.5at2

=> v2 - u2 = 2as

Calculation:

Given

Time t = 13.5 s for going up and coming down

So for going up = t = 13.5/2 = 6.75

For going up initial velocity u = ?

At highest point velocity = v = 0

We know that,

v = u - gt

=> 0 = u - (10 × 6.75)

=> u = 67.5 m/s

Q80. Answer: (c) Change in the sequence of nitrogenous bases

The correct answer is a change in the sequence of nitrogenous bases.

• Gene mutation is caused by the change in the sequence of nitrogenous bases.

Key Points

• Gene Mutation:

• It is a change in one or more genes.

• It is caused by the change in one or more nucleotides of DNA.

• Deoxyribonucleic Acid (DNA):

• It is a long polymer made from repeating units called nucleotides.

• Each nucleotide consists of a nucleoside and a phosphate group, joined together by ester bonds.

• It has four bases, i.e. adenine, guanine, cytosine and thymine.

• DNA double-helix model was discovered by James D Watson and Francis Crick.

• He was awarded the Nobel Prize for this discovery.

Q81. Answer: (c) Only assumption I is implicit

The statement implies that the said book is the most informative book on environmental pollution that has ever been available.

• This means among all the available books on environmental pollution, this is the most informative. Hence, there are other books available on the topic. So, Assumption I is implicit.

• Nothing can be said about the number of books that are available or that can be written on environmental pollution from the given statement. Hence, assumption II is not implicit.

Hence the correct answer is option 3.

Additional Information

• In the case of comparative sentences with the word 'never', try to convert it to an affirmative sentence. It helps in understanding the statement easily and clarifies the logic.

Q82. Answer: (d) Kinetic energy

The correct answer is Kinetic energy.

• When a compressive spring is released it converts its potential energy into Kinetic energy.

Key Points

• Kinetic Energy:

• If a body of mass m is moving with velocity v, then kinetic energy

• KE = $1/2mv^2 = (P^2)/2m$, where p is the linear momentum.

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

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

• Potential Difference:

• Work done in bringing a unit positive charge from one point to another point is the potential difference between the two points.

• Its SI unit is volt.

• It is a scalar quantity.

YourMockTest.com — Free Study Material

Q83. Answer: (d) North

The diagram is given below:-

1) Mr. X runs a marathon starting from point A. He runs 5 km in the north direction.

2) Reaches point B, then turns right and walks 6 km to reach point C.

3) Then turns right and runs 8 km to reach point D.

4) Then turns right and runs 10 km and reaches point E.

5) Then turns right and runs 6 km and reaches point F.

6) Then turns right and runs 1 km and reaches point G.

7) Then turns right and runs 3 km and reaches point H.

Final, Diagram is represent below:

If Mr X turns to the right from point E, then he is facing north direction now.

Hence, "option 4" is the correct answer.

Q84. Answer: (b) 440 m

Shortcut Trick

Relative Speed crossing person = 36 + 18 = 54 km/hr = 15 m/s.

Length of Train = Speed × Time = 15 × 24 = 360 m.

Total distance (Train + Platform) at 36 km/hr (10 m/s) for 80 s = 10 × 80 = 800 m.

Length of Platform = 800 − 360 = 440 m.

Therefore The correct answer is 440 m.

Alternate Method

Given: Speed of Train A (S_A) = 36 km/hr, Speed of Person (S_P) = 18 km/hr, Time to cross person (T1) = 24 s, Time to cross platform (T2) = 80 s.

Formula Used: Distance = Speed × Time; 1 km/hr = 5/18 m/s.

=> Speed of Train A in m/s = 36 × (5/18) = 10 m/s

=> Speed of Person in m/s = 18 × (5/18) = 5 m/s

=> Relative speed (Opposite) = 10 + 5 = 15 m/s

=> Length of Train = Relative Speed × Time = 15 × 24 = 360 m

=> Let Length of Platform be L_P

=> Total Distance = Train Length + Platform Length = 360 + L_P

=> 360 + L_P = Speed of Train × Time to cross platform

=> 360 + L_P = 10 × 80

=> 360 + L_P = 800

=> L_P = 800 − 360 = 440 m

Therefore The correct answer is 440 m.

Additional Information

Relative Speed Concept

When two objects move in the opposite direction, their relative speed is the sum of their individual speeds (S1 + S2). If they move in the same direction, it is the difference (|S1 − S2|).

Crossing Stationary vs Moving Objects

To cross a platform, a train covers distance equal to (Length of Train + Length of Platform). To cross a person/pole, distance covered is just the Length of the Train.

Unit Conversion

Always ensure units are consistent. Multiply km/hr by 5/18 to get m/s, and multiply m/s by 18/5 to get km/hr.

Q85. Answer: (a) 19 : 11

Shortcut Trick

Higher value (Ranjit) = (Sum + Difference) ÷ 2 = (210 + 56) ÷ 2 = 133

Lower value (Rohan) = (Sum − Difference) ÷ 2 = (210 − 56) ÷ 2 = 77

Required Ratio = 133 : 77 = 19 : 11 (Dividing both by 7)

Therefore The correct answer is 19 : 11.

Alternate Method

Given: Total balls = 210, Difference = 56

Formula Used: Ratio = Ranjit's balls : Rohan's balls

=> Let Rohan get x balls, then Ranjit gets (x + 56) balls.

=> x + (x + 56) = 210

=> 2x + 56 = 210

=> 2x = 210 − 56 = 154

=> x = 77 (Rohan's share)

=> Ranjit's share = 77 + 56 = 133

=> Ratio = 133 : 77 = (133 ÷ 7) : (77 ÷ 7) = 19 : 11

Therefore The correct answer is 19 : 11.

Additional Information

Sum and Difference Formula

If sum of two numbers is S and difference is D, then Greater Number = (S+D)/2 and Smaller Number = (S−D)/2.

Ratio Simplification

To simplify a ratio a : b, divide both terms by their Highest Common Factor (HCF).

Q86. Answer: (a) Friday

• 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.

• 2007 = 2000 + 7 years

• In 2000 years the odd days = 0

• In 7 years (from 2001 to 2007), = 7/4 = 1 leap year and 6 normal years.

• In 1 leap year, odd days = 2, and 6 normal years = 6 odd days

• So total = 2 + 6 = 8 odd days i.e. 8/7 = 1 odd day

• In 2008, the number of days up to 18 April = 31 (Jan) + 29 (Feb - leap year) + 31(Mar) + 18(Apr) = 109/7 = 4 odd days.

• Total in 2008 years up to 18 April = 0 + 1 + 4 = 5 odd days.

The codes for the weekdays are as follows:

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

• The day of the week on 18 April 2008 was Friday.

Hence, "option 1" is the correct answer.

Q87. Answer: (b) S = D/T

The correct answer is S = D/T.

• The correct relation of speed, distance and time is S = D/T.

Key Points

• Speed:

• Distance travelled by the moving object in unit time interval is called speed.

• It is a scalar quantity and its SI unit is metre/second (m/s).

• It is given by the formula: Speed = Distance/Time

Q88. Answer: (c) 6.673 × 10-11 Nm2kg-2

The correct answer is 6.673 × 10-11 Nm2kg^(-2).

• The value of G is 6.673 × 10-11 Nm2kg^(-2).

Key Points

• Gravitational Force:

• Mathematically, it is represented as:

• F= GMm/(r²)

• Where,

• F is the gravitational force

• G is gravitational constant
• M is the mass of the first particle
• m is the mass of the second particle
• r is the distance between them.
• This is called Newton's universal law of gravitation.
• The value of G is 6.67 × 10^(-11) N m²kg^(-2).

Additional Information

• Variation in g:
• The value of g decreases with height or depth from the earth's surface.
• g is maximum at poles. Hence, it will be maximum at the Camp in Antarctica
• g is minimum at the equator.
• g decreases due to the rotation of the earth.
• g decreases if the angular speed of earth increases and increases if the angular speed of earth decreases

Q89. Answer: (b) Vijay Gokhale

The correct answer is Vijay Gokhale.

• Vijay Gokhale was the Foreign Secretary in the Ministry of External Affairs as of February 2018.

Key Points

• Vijay Gokhale:
• He is an IFS officer.
• He served as the 32nd Foreign Secretary of India.
• He also served as the Ambassador of India to China.
• He held the office from January 2018 – January 2020.
• Harsh Vardhan Shringla is the current Foreign Secretary of India. (as of Jan 2022)

Additional Information

• T.S. Tirumurti is currently the Permanent Representative of India to the United Nations.
• S. Jaishankar is the current Foreign Minister.
• Preeti Saran was Secretary of the Ministry of External Affairs.

Q90. Answer: (a) 5

The logic followed here is:-

• Innermost shape of A = Innermost shape of B.
• Middle shape of A = Outermost shape of B.
• Outermost shape of A = Middle shape of B.

Similarly,

• Innermost shape of C = Innermost shape of D.
• Middle shape of C = Outermost shape of D.
• Outermost shape of C = Middle shape of D.

The figure is:-

DIAGRAM

Hence, "option 1" is the correct answer.

Note: This question was ignored for students in the official paper due to discrepancy. We have modified the question to make it logically correct.

Q91. Answer: (d) 100/3 %

Shortcut Trick

Required increase % = [Decrease % ÷ (100 − Decrease %)] × 100

Required increase % = [25 ÷ (100 − 25)] × 100

Required increase % = (25 ÷ 75) × 100 = 1/3 × 100

Therefore The correct answer is 100/3 %.

Alternate Method

Given:

Decrease in price = 25%

=> Let the Original Price be 100.

=> New Price = 100 − 25% of 100 = 75.

=> To restore the original price, we must increase 75 back to 100.

=> Required Increase = 100 − 75 = 25.

=> Increase Percentage = (Increase ÷ New Price) × 100

=> Increase % = (25 ÷ 75) × 100

=> Increase % = 1/3 × 100 = 100/3 %

Therefore The correct answer is 100/3 %.

Additional Information

Percentage Change Base

When moving from A to B and back to A, the base changes. If price decreases by r%, the increase required to restore it is [r / (100 − r)] × 100 %.

Price and Consumption

If price increases by r%, consumption must decrease by [r / (100 + r)] × 100 % to keep the expenditure constant.

Fraction Equivalents

Common fractions: 25% = 1/4. If a value drops by 1/4, it becomes 3/4. To restore it, we multiply by 4/3, which is an increase of 1/3 or 33.33%.

Q92. Answer: (b) Kangaroo

The correct answer is Kangaroo.

• Kangaroo gives birth to underdeveloped children.

Key Points

• Kangaroos are known as marsupials.

• Kangaroo gives birth to underdeveloped children.

• The young kangaroo is born at a very immature stage.

• At this stage, it is only about 2 centimetres long and weighs less than a gram.

Additional Information

• Platypus is the mammal that lay eggs.

• It is found only in Australia.

• Rabbits are mammals.

• Echidnas is also a mammal that lay eggs.

Q93. Answer: (b) Ahmedabad

The correct answer is Ahmedabad.

• Ahmedabad is called 'Manchester of India'.

Key Points

• Ahmedabad is known as the Manchester of India.

• The city is known because of the well-known cotton textile centre of Manchester, Great Britain.

• The city is the second-largest producer of cotton in India.

• The city is also known as Boston of East.

• The city was earlier known as Karnavati.

Additional Information

• Mumbai city is also known as 'The City Of Dreams'.

• Kolkata is also known as 'City of joy'.

• Surat is known as the 'Diamond City of India'.

Q94. Answer: (b) Orissa

The correct answer is Orissa.

• Political leader Naveen Patnaik belongs to Orissa.

Key Points

• Navin Patnaik is the Chief Minister of Odisha.

• He is the president of the Biju Janata Dal.

• He is the longest-serving chief minister of Odisha.

Additional Information

• Yogi Adityanath is the Chief Minister of Uttar Pradesh. (as of Jan 2022)

• Mamta Banerjee is the Chief Minister of West Bengal. (as of Jan 2022)

• Himanta Biswa Sarma is the Chief Minister of Assam. (as of Jan 2022)

Q95. Answer: (d) Only I is implicit

The statement implies that the teacher is encouraging the students to clean every week.

• Cleanliness in school is important to provide a healthy and safe environment for students. By enforcing this practice, it can be understood that the teacher wants the students to understand the importance of cleanliness. So, assumption I is implicit.

• The given statement does not imply that the classroom needs to be cleaned by the student because there is no one else to do the job. The availability of cleaners is not discussed in the statement. Assumption II is therefore not implicit.

Hence the correct answer is option 4.

Q96. Answer: (c) 38

• From the statement "6 plays at least two of these games.", we can understand that these two games can be Volleyball and Badminton, or Badminton and Cricket or Volleyball and Cricket.

• Case 1:

• Children who play Volleyball = 25

• Children who play at least Volleyball and Badminton = 6 = 1 + 5 (all three games)

• Children who play only Volleyball = 25 - 6 = 19

• Then children who play only Badminton = 20 - 6 = 14

• Children who play only Cricket = 10 - 5 = 5

• • Therefore, children who play exactly one game = 19 + 14 + 5 = 38.

• Case 2:

• Children who play Badminton = 20

• Children who play at least Badminton and Cricket = 6 = 1 + 5 (all three games)

• Children who play only Badminton = 20 - 6 = 14

• Then children who play only Cricket = 10 - 6 = 4

• Children who play only Volleyball = 25 - 5 = 20

•

• Therefore, children who play exactly one game = 14 + 4 + 20 = 38.

• Case 3:

• Children who play Cricket = 10

• Children who play at least Cricket and Volleyball = 6 = 1 + 5 (all three games)

• Children who play only Cricket = 10 - 6 = 4

• Then children who play only Volleyball = 25 - 6 = 19

• Children who play only Badminton = 20 - 5 = 15

•

• Therefore, children who play exactly one game = 4 + 19 + 15 = 38.

Hence, 38 children play exactly one game.

Q97. Answer: (b) 27

Shortcut Trick

Use the direct expanded identity: $a^3 + b^3 + c^3 - 3abc = (a + b + c) \times [3(a^2 + b^2 + c^2) - (a + b + c)^2] \div 2$

Substitute the given values: $(9) \times [3(29) - (9)^2] \div 2$

=> $9 \times (87 - 81) \div 2$

=> $9 \times 6 \div 2 = 27$

Therefore The correct answer is 27.

Alternate Method

Given: $a + b + c = 9$ and $a^2 + b^2 + c^2 = 29$

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

Calculations:

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

=> $9^2 = 29 + 2(ab + bc + ca)$

=> $81 - 29 = 2(ab + bc + ca)$

=> $52 = 2(ab + bc + ca)$

=> $ab + bc + ca = 26$

=> Now, $a^3 + b^3 + c^3 - 3abc = 9 \times (29 - 26)$

=> $9 \times 3 = 27$

Therefore The correct answer is 27.

Additional Information

Conditional Identity

If $a + b + c = 0$, then $a^3 + b^3 + c^3 = 3abc$. This is a very frequent pattern in competitive exams.

Alternative Expression

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

Sum of Cubes Formula

Another useful variation: $a^3 + b^3 + c^3 - 3abc = (a + b + c) \times [(a + b + c)^2 - 3(ab + bc + ca)\ ]$.

Q98. Answer: (c) Allotropy

The correct answer is Allotropy.

• The presence of an element in two or more forms in which physical properties are different but chemical properties are the same is called Allotropy.

Key Points

• Allotropy

• The substances which have the same chemical properties, but different physical properties are called allotropes and this property is called allotropy.

• Example: Allotropes of Carbon are diamond, graphite and charcoal.

Additional Information

• 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).

• 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).

Q99. Answer: (c) East India Company

The correct answer is East India Company.

• East India Company was initially formed to trade with the East Indies, but eventually became confined mainly to trade with the Indian subcontinent and China.

Key Points

• East India Company:

• It was earlier known as the English East India Company.

• The company was initially formed to trade with the East Indies, but eventually became confined mainly to trade with the Indian subcontinent and China.

• It was formed to share in the East Indian spice trade.

• Various European powers formed their East India companies and came to India.

• | The Advent of Europeans | |

Countries	Year of Arrival
Portuguese	1498
English	1600
Dutch	1602
Danish	1616
French	1664

Q100. Answer: (c) 900

Total sales made by different companies in 2017 = Rs. 5000 crores.

Total sales made by Apple in 2017

=> Rs. (5000 × 18%) crore

=> Rs. 900 crore

Therefore The sales made by Apple is Rs. 900 crore.

More previous year papers and mock tests: **www.yourmocktest.com/pyq**

YourMockTest.com — Free Study Material