RRC Group D Previous Year Paper 59 (Held On: 31 Oct 2018 Shift 2)

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-59-held-on-31-oct-2018-sh…

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

YourMockTest.com — Free Study Material

CBT

Q1. Who is the 35th Governor of Bihar?

(a) D. Y. Patil
(b) Ram Nath Kovind
(c) Devanand Konwar
(d) Satya Pal Malik

Q2. The first Indian state to launch Single Women Pension Scheme is _____.

(a) Maharashtra
(b) Gujrat
(c) Delhi
(d) Telangana

Q3. 'Bandodkar Gold Trophy' is associated with _____ sport.

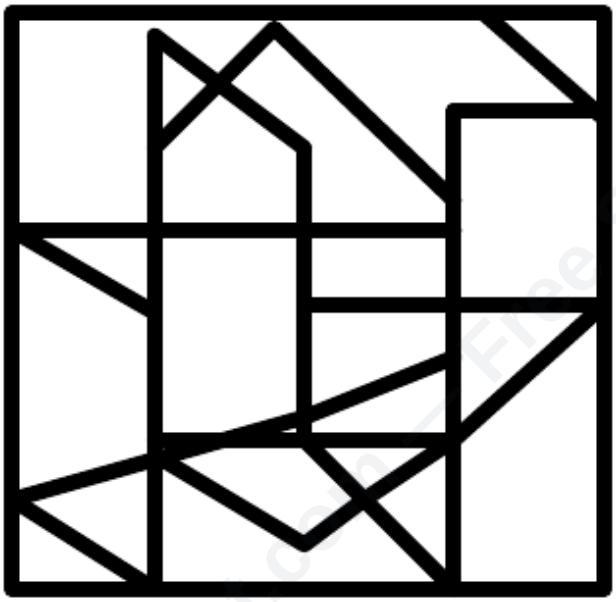
(a) Football
(b) Tennis
(c) Golf
(d) Kho-Kho

Q4. The Minister of Higher and Technical Education for the state of Maharashtra is _____.

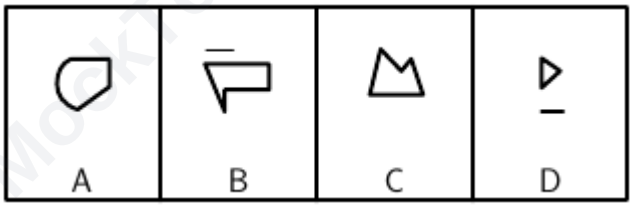
(a) Vinod Tawdean
(b) Chandrakant Patil
(c) Prakash Mehta
(d) Pankaja Munde

Q5. One of the answer figures is embedded in the given question figure. Identify this figure-

Question figure:



Answer figure:



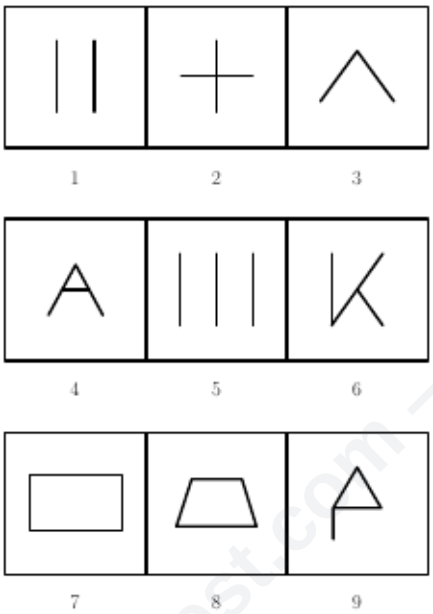
(a) D
(b) C
(c) B
(d) A

Q6. Alkenes, unsaturated hydrocarbons containing a double bond between two carbon atoms, have a general formula, which is:

(a) C_nH_(2n+2)
(b) C_nH_(2n-1)
(c) C_nH_(2n+1)
(d) C_nH_(2n)

YourMockTest.com - Free Study Material

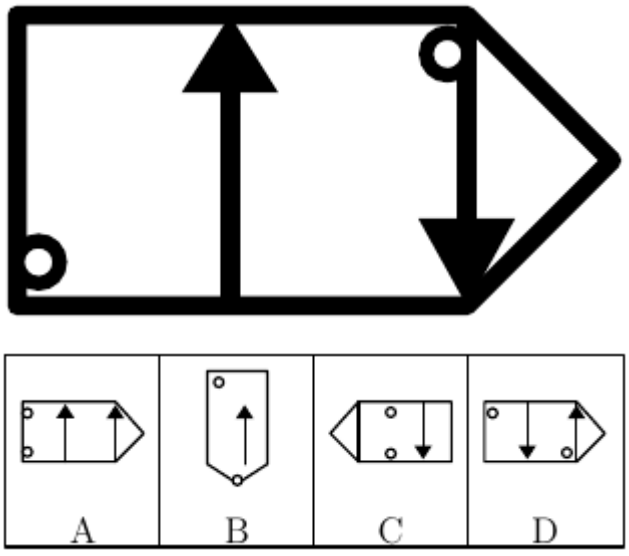
Q7.



The above group has a similar figure:

(a) 1, 2, 5 ; 8, 6, 4 ; 2, 7, 9
(b) 1, 3, 2 ; 5, 6, 4 ; 8, 7, 9
(c) 1, 2, 8 ; 5, 6, 3 ; 4, 7, 9
(d) 1, 2, 3 ; 5, 6, 8 ; 4, 7, 9

Q8. Which option has the closest resemblance to the following figure?



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

Q9. _____ who took over as the Governor-General in 1848 formulated a policy called 'Doctrine of Lapse'.

(a) Lord Wellesley
(b) Lord William
(c) Lord cornwallis
(d) Lord Dalhousie

YourMockTest.com — Free Study Material

Q10. Find the next number in the sequence-

110, 89, 70, 53, 38, ?

(a) 20
(b) 34
(c) 28
(d) 25

Q11. A tank can be filled by two taps A and B in 8 hours and 10 hours respectively. The whole tank can be emptied by the third tap in 12 hours. If all the taps are turned on at the same time, in how much time (in how many hours) will the empty tank be completely filled?

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

Q12. Read the given statement and choose the strong argument-

Question:

Should the government stop allowing new industries to be set up?

Argument:

I. Yes, new industries generate environmental pollution.

II. No, new industries will improve employment and help in the economic development of the country.

(a) Neither argument I nor argument II is strong
(b) Only Argument II is strong
(c) Only argument I is strong
(d) Either Argument I or Argument II is strong

Q13. A vendor sells scented candles in three fragrances. 20 customers bought rose scent, 40 bought cinnamon scent and 30 bought lemongrass scent. 6 bought all three fragrances. 20 bought two of these fragrances. How many bought only one fragrance?

(a) 34
(b) 43
(c) 42
(d) 44

Q14. What is the square root of $(x^2 + 4x + 4)(x^2 + 6x + 9)$?

(a) $(2x + 3)(x + 3)$
(b) $(x + 2)(x + 3)$
(c) $(x + 2)(2x + 3)$
(d) $(x + 2)(x + 4)$

Q15. Which film has won the Global Sustainability Film Award for India in London, 2017?

(a) Lipstick under my burqa
(b) Neerja
(c) Pink
(d) Queen

Q16. In a company, 12 workers can make 111 candles in a given time. How many people will have to be engaged to make 148 candles in the same time?

(a) 18 people
(b) 12 people
(c) 16 people
(d) 10 people

YourMockTest.com — Free Study Material

Q17. Acceleration due to gravity g = _____

(a) GMR^2
(b) MR^2/G
(c) G/MR^2
(d) GM/R^2

Q18. The wall of the ventricle is _____ from the wall of the atrium.

(a) Thick
(b) Small
(c) Thin
(d) Big

Q19. In which of the following will the speed of sound be maximum at 25°C?

(a) Brass
(b) Steel
(c) Aluminum
(d) Iron

Q20. The lengths of the three sides of a triangle are given as 6 cm, 11 cm and 13 cm. The ratio of their respective heights from the opposite vertex will be:

(a) 13 : 11 : 6
(b) 24 : 19 : 17
(c) 143 : 78 : 66
(d) 66 : 143 : 78

Q21. √(?)/3136 = 1/2 Find the value of the question mark-

(a) 56
(b) 784
(c) 1568
(d) 28

Q22. The frequency distribution of diameter (D) of 101 steel balls is given in the following list-

D(mm)	43	44	45	46	47	48
No.	13	15	22	21	16	14

find the mean of the diameter in mm

(a) 45.4
(b) 45.5
(c) 45.7
(d) 45.6

Q23. If the potential difference across the terminals of an electric heater is 60V when it receives a current of 4A from the source. If the potential difference increases to 150V, what will be the current received by the heater?

(a) 24A
(b) 8.5A
(c) 10A
(d) 12A

Q24. Evaluate-

36 ÷ 1/4

(a) Inversely proportional to [9]
(b) 144
(c) Inversely proportional to [144]
(d) 9

YourMockTest.com — Free Study Material

Q25. Calculate the energy of an object of mass 10 kg placed at a height of 6 m above the ground. Given, g = 9.8 ms^(-2)

(a) 578 J
(b) 588 J
(c) 578 W
(d) 588 W

Q26. In a code language, LIVE is written as OREV. What is the code for DEAD?

(a) XVZX
(b) UVZU
(c) GVZG
(d) WVZW

Q27. Who is the Union Minister of Environment and Climate Change (as of July 2018)?

(a) Rajnath Singh
(b) Dr. Harsh Vardhan
(c) Prakash Javadekar
(d) V.K. Singh

Q28. The area of the circumscribed circle of a right-angled triangle with sides 8 cm, 4√5 cm and 12 cm will be _____.

(a) 27 πcm²
(b) 36 πcm²
(c) 18 πcm²
(d) 9 πcm²

Q29. Which of the following are examples of potential energy?

A. A brick placed on the roof of the house
B. The spring of a Watch when round up
C. Compressed Spring
D. water stored in a high reservoir underwater supply system

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

Q30. In each of the questions below is given a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumptions are implicit in the statement.

Statements: Everyone loves Indian clothes.

Assumptions:

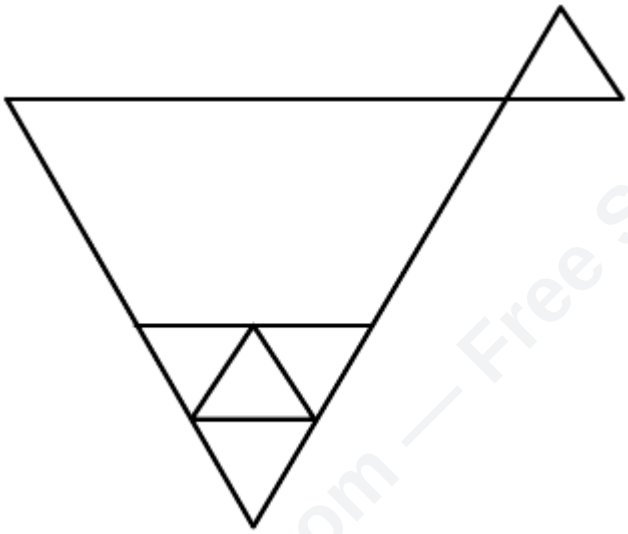
I. Indian clothes are the only clothes available.

II. No one loves any other clothes.

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

Q31. State the number of triangles included in the figure:

YourMockTest.com — Free Study Material



(a) 6
(b) 8
(c) 7
(d) 5

Q32. Which of the following is not true about acids?

(a) Conductors of electricity in aqueous mediuid stateum/liq
(b) Forms H+ in aqueous medium/liquid state
(c) Reacts with metals and bicarbonates to produce H2O, CO2 and salts
×
duplicate options found. English Question 1 options 1,2
(d) Sour in taste

Q33. Sandhya and Ramani were facing east. Sandhya rotates 45° anti-clockwise and then 135° clockwise. How much will Ramani have to rotate to face Sandhya?

(a) 180° anti-clockwise
(b) 180° clockwise
(c) 135° anti-clockwise
(d) 90° anti-clockwise

Q34. In _____ tissue, the cells are living, long and irregularly thickened at the ends.

(a) sclerenchyma
(b) Ironchyma
(c) Collenchyma
(d) Parenchyma

Q35. In a class of students, the ratio of boys and girls is 7 : 3. The average marks of boys is 65 and that of girls is 72. What are the average marks of the whole class?

(a) 67.1
(b) 68.4
(c) 68.3
(d) 68.2

Q36. How many atoms are present in a molecule of Ca(OH)2?

(a) 7
(b) 4
(c) 5
(d) 6

YourMockTest.com — Free Study Material

Q37. In the options given below, three words are similar in some context and one word is different. Choose the word that is different from the rest.

(a) Plastic
(b) Wood
(c) Paper
(d) Wool

Q38. Which political party does Pu Zoramthanga lead?

(a) National People's Party
(b) Naga People's Front
(c) Mizoram People's Conference
(d) Mizo National Front

Q39. Select the option which is related to the third term in the same way as the second term is related to the first term.

Hot : Warm :: Antique : _____,

(a) Old
(b) Oldest
(c) Years
(d) History

Q40. Motion of the boy sitting on the swing is _____.

(a) Uniform
(b) Circular
(c) Unequal
(d) Oscillatory

Q41. Last year Manish, Corner had invested Rs. 1,00,000 on shop 1 and Rs. 1,50,000 on shop 2 for the furniture replacement. They recovered expenses over the next three quarters: Quarter 1 -20%, Quarter 2-55%. What was the amount (in Rs.) received in Quarter 3?

(a) 60,500
(b) 62,500
(c) 62,600
(d) 70,000

Q42. Read the given question and decide which of the following statement(s) is/are sufficient to answer the question.

Question:

Which rod is longest among T1, T2, and T3?

Statement:

1. T2 and T1 are longer than T3.

2. T2 is an iron rod.

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

Q43. A father says to his son, "I was equal to your present age at the time of your birth." If the present age of the father is 40 years, then what was the age of his son 5 years ago?

(a) 15 years
(b) 13 years
(c) 17 years
(d) 23 years

YourMockTest.com — Free Study Material

Q44. As of August 2018, who is the current Chairman and Managing Director of Air India?

(a) Ajay Singh
(b) Pradeep Singh Kharola
(c) Aditya Ghosh
(d) Kalanithi Maran

Q45. 36% of 325 is-

(a) 144
(b) 108
(c) 128
(d) 117

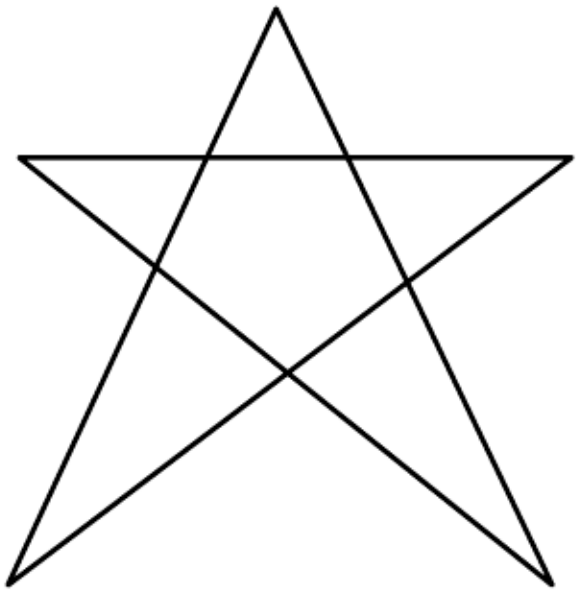
Q46. At an instant, the acceleration of a rocket is proportional to the n^(th) power of the velocity of exhaust gases. What should be the value of n here?

(a) 1
(b) 2
(c) -1
(d) -2

Q47. _____ is a religious city located in the Indian state of Maharashtra.

(a) Shirdi
(b) Rajgir
(c) Somnath
(d) Kushinagar

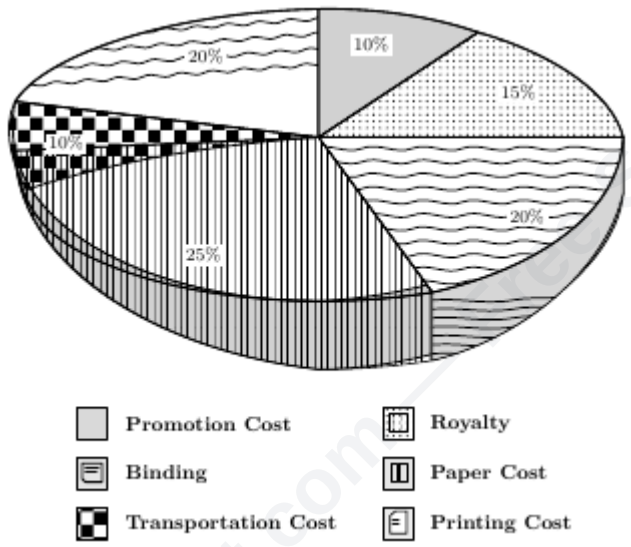
Q48. Count the number of triangles in the given figure-



(a) 9
(b) 11
(c) 10
(d) 6

YourMockTest.com — Free Study Material

Q49.



The given chart shows the expenses of a publishing company in Karnataka. If the total expenditure is Rs. 50,000, what is the binding cost?

(a) 12,500
(b) 10,000
(c) 7,500
(d) 5,000

Q50. If √50 + √128 = √N then find the value of N.

(a) 26
(b) 390
(c) 338
(d) 182

Q51. In which of the following classes, animals lack scales and have mucous glands in the skin?

(a) Reptiles
(b) Fish
(c) Amphibian
(d) Aves

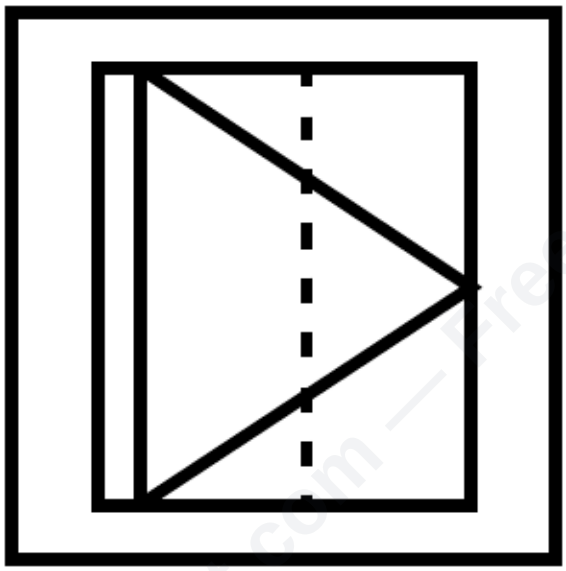
Q52. The cost price of two articles is Rs. 200 and Rs. 600. A shopkeeper makes a profit of Rs.300 by selling both. If the shopkeeper sold the first article at 30% profit, then at what profit does he sell the second article?

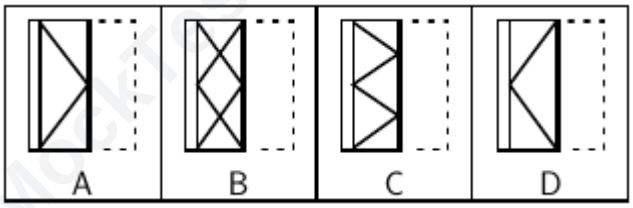
(a) 50%
(b) 30%
(c) 20%
(d) 40%

Q53. Where is Manjira Crocodile Wildlife Sanctuary situated?

(a) Tamil Nadu
(b) Odisha
(c) Telangana
(d) Kerala

Q54. When it is folded on the dotted line, which pattern will be the same as that of the transparent sheet?





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

Q55. Select the alternative which has the same relation with the third word as the second word is with the first word.

Enough : Contentment :: Feel : ?

(a) Sense
(b) React
(c) Act
(d) Leave

Q56. Niccolò Conti visited Vijayanagara in _____ AD during the reign of Devaraya I

(a) 1420
(b) 1424
(c) 1418
(d) 1419

Q57. Which of the following is used as Antacid?

(a) Sodium Hydroxide
(b) Magnesium Hydroxide
(c) Aluminium Hydroxide
(d) Lithium Hydoxide

Q58. _____ causes the changes in the appearance seen in boys at the time of puberty.

(a) Prolactin
(b) Adrenaline
(c) Estrogen
(d) Testosterone

YourMockTest.com — Free Study Material

Q59. The SI unit of resistance is-

(a) Ampere
(b) Coulomb
(c) Volt
(d) Ohm

Q60. How many moles are present in 54g of He?

(a) 13.5 Mole
(b) 10 Mole
(c) 12 Mole
(d) 25 Mole

Q61. What is the amount of work done when an object is moved under a force of 10 N over a distance of 10 m in the direction of the force?

(a) 1 J
(b) 10 J
(c) 100 J
(d) 0.01 J

Q62. What is the share of Government of India in NABARD?

(a) 75%
(b) 50%
(c) 99%
(d) 85%

Q63. A train overtakes two persons, who are traveling in the same direction as the train moving at 2 km/h and 4 km/h and passes them in 9 and 10 seconds respectively. Find the length and speed of the train-

(a) 22 km/h, 50 m
(b) 22 km/h, 80 m
(c) 32 km/h, 50 m
(d) 32 km/h, 80 m

Q64. Read the given statements and conclusions carefully and choose which of the statements logically follows from the conclusions.

Statement:

There is rampant copying in colleges in some states which represents the poor quality of students in higher education.

Conclusion:

1. Malpractices like copying affect the quality of students in higher education.

2. Rampant copying in some colleges necessitates measures to discourage malpractices and improve educational standards for all students.

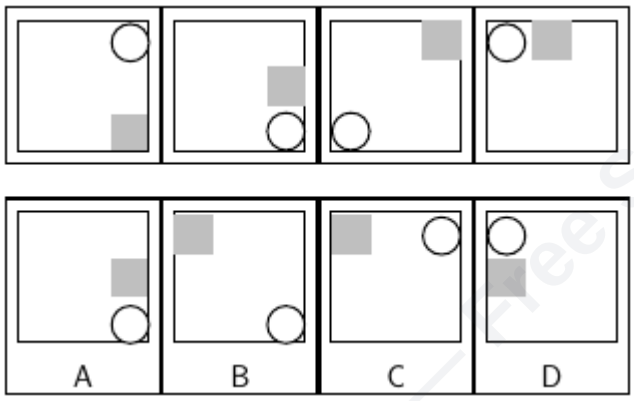
(a) Only conclusion 1 follows
(b) Either 1 or 2 follows
(c) Both 1 and 2 follow
(d) Only conclusion 2 follows

Q65. Divide Rs. 6,600 into two parts such that the simple interest on the first part at 10% per annum for 3 years is equal to the simple interest on the second part at 9% per annum for 4 years.

(a) Rs. 3600, 3000
(b) Rs. 4000, 2600
(c) Rs. 5000, 1600
(d) Rs. 6000, 600

YourMockTest.com — Free Study Material

Q66. Select the correct picture that comes from the given series of 4 pictures-



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

Q67. The first football club in the world, which was established in England in 1857, was-

(a) Huddersfield Football Club
(b) Manchester United Football
(c) Chelsea Football Club
(d) Sheffield Football Club

Q68. The boiling point of ethanol is-

(a) 108°C
(b) 58°C
(c) 98°C
(d) 78°C

Q69. The L.C.M. and H.C.F. of two numbers are 68 and 5 respectively. If one of the numbers is 20, then find the other number?

(a) 15
(b) 19
(c) 14
(d) 17

Q70. When is the National Army Day observed in India?

(a) 12 December
(b) 15 January
(c) 12 November
(d) 15 July

Q71. If 5 : 9 : : x : 27, then x = ?

(a) 6
(b) 3
(c) 18
(d) 15

Q72. Let the volume of a cube be V. What will be the volume if its side is doubled?

(a) 4V
(b) 3V
(c) 8V
(d) 2V

YourMockTest.com — Free Study Material

Q73. Consider the statement and the following arguments and decide which of the arguments is strong with respect to the statement.

Statement:

We should practice walking barefoot on the grass, as it helps to balance the energy of the body.

Argument:

I. Yes, walking on grass gives us energy from the earth, and helps in maintaining better health.

II. No, there are many other ways to create good health.

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

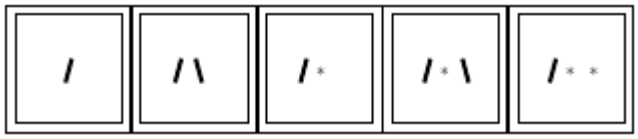
Q74. In a concave mirror, where should the object be placed to obtain a real inverted and smaller image between C and F?

(a) On C
(b) Beyond C
(c) Between F and C
(d) Between F and P

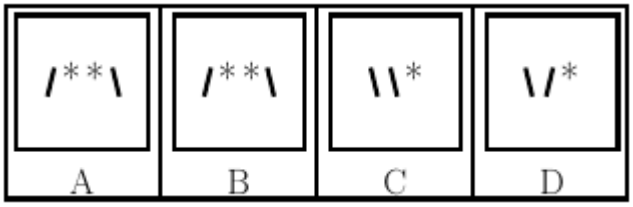
Q75. Find the number which is 30% more than 240.

(a) 312
(b) 340
(c) 331
(d) 320

Q76.



Choose the correct figure from the following alternatives, which is next in the sequence of the above five figures.



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

Q77. _____ is known as Shattantri Veena in Sanskrit text and has 72 strings.

(a) Khanjari
(b) Sarood
(c) Santoor
(d) Sitar

Q78. The electronic configuration of an element is 1s2 2s2 2p6 3s2 3p3. What will be the atomic number of the element just below the said element in the periodic table?

(a) 39
(b) 33
(c) 34

(d) 31

Q79. Who is the author of Pashmina, the compassionate story of an Indian American girl?

(a) Nidhi Chanani
(b) Diksha Basu
(c) Aditi Khurana
(d) Roshani Chokshi

Q80. If √1296 = (?)², then what will be the value of (?)?

(a) 6
(b) 18
(c) 8
(d) 12

Q81. Three statements are followed by two conclusions numbered I and II. You have to take all the statements to be true even if they seem to be at variance from commonly known facts. Decide which of the conclusions follow from the statement.

Statement:

1) All blue is red.

2) No red is green.

3) All green are yellow.

Conclusion:

I. All blue being yellow is a possibility.

II. No blue is yellow.

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

Q82. Which of the following can be generated by regeneration as well as budding?

(a) Amoeba
(b) Yeast
(c) Hydra
(d) Plasmodium

Q83. Which of the following statements is true?

A. The value of 'g' on Mount Everest is >g

B. The value of 'g' on Mount Everest is <g

C. A ball thrown vertically comes back to the ground after 15 seconds. Its velocity is 75 m/s.

D. A ball thrown vertically comes back to the ground after 15 seconds. Its velocity is 150 m/s.

(a) Only statements B and D are true
(b) Only statement D is true
(c) Only statements B and C are true
(d) Only statement B is true

Q84. Shalini, Tanveer and Rashid shared a cake. Shalini had 1/6 th of it, Tanveer had 1/4 th of it and Rashid had the rest. What was Rashid's piece of cake?

(a) 5/6
(b) 3/5
(c) 13/15
(d) 7/12

YourMockTest.com — Free Study Material

Q85. Who among the following is the first woman President of India?

(a) Prerna Patil
(b) Smita Patil
(c) Indira Gandhi
(d) Pratibha Patil

Q86. As of June 2018, which political party is in power in Karnataka?

(a) Only JD (S)
(b) Congress and JD (S) alliance
(c) BJP
(d) CPM

Q87. If a number is divisible by 8, what can be its last digit?

(a) 5
(b) 4
(c) 1
(d) 3

Q88. Complete the following analogy-

Big : Large : : Thin : ?

(a) Slim
(b) Skelton
(c) Weak
(d) Skinny

Q89. What will be the least common factor of 36, 27 and 72?

(a) 108
(b) 432
(c) 324
(d) 216

Q90. Distribute 400 among 6 men, 12 women and 17 boys in such a way that 2 men get an amount equal to 5 boys and 2 women get an amount equal to 3 boys. How much money was given to a man, a woman and a boy?

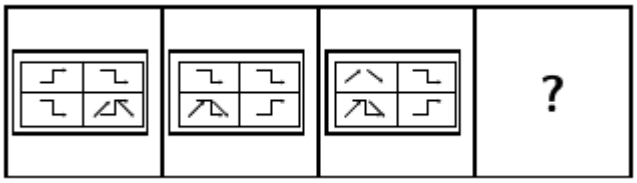
(a) Rs. 40
(b) Rs. 50
(c) Rs. 45
(d) Rs. 38

Q91. Viswanathan Anand was awarded Padma Vibhushan in the year _____-

(a) 2003
(b) 2008
(c) 2005
(d) 2007

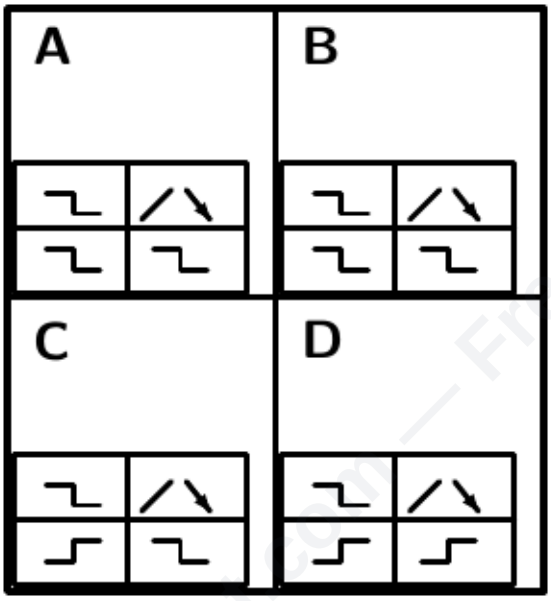
Q92. Select from the option figures to complete the series of question figures.

Question figure:



Option figure :

YourMockTest.com — Free Study Material



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

Q93. A question and two statements are given below. Identify which statement(s) is/are necessary/sufficient to answer the question?

Question:

How many students play cricket in the class?

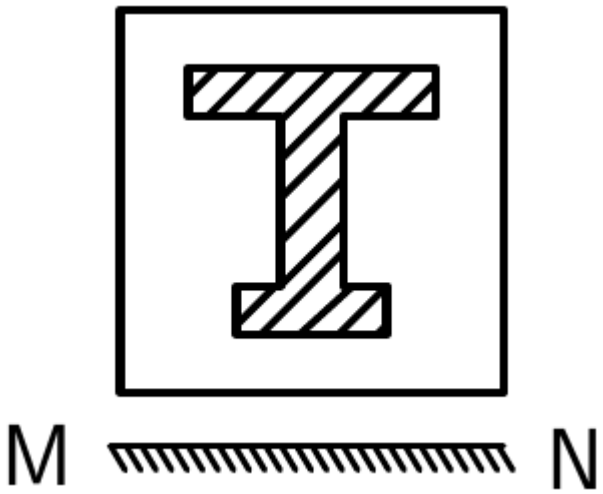
Statement:

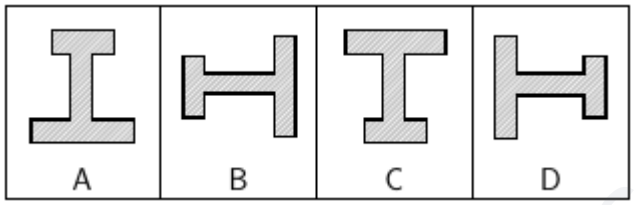
I. There are 32 boys and 28 girls in the class.

II. Only boys play cricket.

(a) Data either in I alone or II alone is sufficient
(b) Data in II alone is sufficient
(c) Data in both I and II together is not sufficient
(d) Data in I alone is sufficient

Q94. Select the mirror image for the figure given below-





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

Q95. Where are the elements of D block found?
(a) Only 18th group
(b) Only elements of group 8
(c) 9th group elements
(d) Between second to 13(3-12)

Q96. ABCDEFGHIJKLMNOPQRSTUVWXYZ
Which letter is 5th to the left of the 9th letter from the right?
(a) N
(b) K
(c) L
(d) M

Q97. If in a certain code, SILK is coded as QGJI, then which word will be coded as VOTE in that code?
(a) MTRC
(b) RTCM
(c) TMRC
(d) TRCM

Q98. Which of the following is NOT a unit of temperature?
(a) Fahrenheit
(b) Pascal
(c) Celsius
(d) Kelvin

Q99. A man sold two cycles at a total profit of 20%. If he had bought them each for 3,500 and the first one sold them at a profit of 5%, then what is the profit (%) he should have from the second?
(a) 20%
(b) 35%
(c) 25%
(d) 30%

Q100. If a steel rod 403/5 long is cut into three equal pieces, then the length of each piece is-
(a) 137/15
(b) 138/15
(c) 1310/15
(d) 139/15

ANSWER KEY

1	d	2	d	3	a	4	a	5	a	6	d	7	b	8	b	9	d	10	d
11	d	12	b	13	d	14	b	15	a	16	c	17	d	18	a	19	c	20	c

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

SOLUTIONS

Q1. Answer: (d) Satya Pal Malik

The correct answer is Satya Pal Malik.

• Satya Pal Malik was the 35th Governor of Bihar.

• Satya Pal Malik was governor of Bihar from 30 September 2017 to 23 August 2018.

• Phagu Chauhan is an Indian politician serving as the 29th and current Governor of Bihar since 2019.

Key Points

• The Governor's appointment, his powers, and everything related to the office of Governor have been discussed under Article 153 to Article 162 of the Indian Constitution.

• The role of the Governor is quite similar to that of the President of India.

• Governor is the constitutional head of the state, bound by the advice of his council of ministers.

• Governor functions as a vital link between the Union Government and the State Government.

Additional Information

Person Name	Details
D. Y. Patil	• Dnyandeo Yashwantrao Patil is an Indian politician who was Governor of Bihar, a state in eastern India from 29 May 2012 to 26 November 2014. - He was appointed as the Governor of West Bengal (additional charge).
Ram Nath Kovind	• Ram Nath Kovind is an Indian politician serving as the 14th president of India from his inauguration in 2017 to 2022. - He served as the 26th governor of Bihar from 2015 to 2017 and as a member of Parliament, Rajya Sabha from 1994 to 2006.
Devanand Konwar	• Devanand Konwar was a senior congressman from Assam who served as the Governor of the Indian states of Tripura, Bihar, and West Bengal. - In 1968-69 he established a Degree College in Guwahati City known as Guwahati College as its founder Principal.
Satya Pal Malik	• Satya Pal Malik was born on 24 July 1946 and is an Indian politician serving as the 21st and current Governor of Meghalaya. - He was the Governor of Jammu and Kashmir from August 2018 to October 2019. - He was the 18th Governor of Goa.

Q2. Answer: (d) Telangana

The correct answer is Telangana.

• The first Indian state to launch Single Women Pension Scheme in Telangana.

Key Points

• Telangana government on 4 June 2017 launched the single-women pension scheme across the state.

• Under the scheme, the state government would be given a pension of about Rs 1000 per month to single women on humanitarian grounds.

• While earlier, the government spent only Rs 800 crores on pensions to 29 lakh beneficiaries, now it would be spending Rs 5,600 Cr per annum and benefiting around 38 lakh people.

Additional Information

YourMockTest.com — Free Study Material

State	Schemes for Women's
Maharashtra	• Manodhairya Scheme. - ASMITA Yojana. - Rajmata Jijau Mother-Child Health & Nutrition Mission.
Gujrat	• Beti Bachao (Save Girl Child). - Gaurav Nari Niti Women's Pride, Gender Equality. - Balika Samruddhi Yojna Girl Child Development. - Kishori Shakti Yojna Adolescents, Strenth and Awareness. - Swayamsidh Yojna Self Reliance and Empowerment.
Delhi	• Beti Bachao Beti Padhao Scheme. - One-Stop Centre Scheme. - Women Helpline Scheme. - Working Women Hostel. - UJJAWALA.

Q3. Answer: (a) Football

The correct answer is Football.

Key Points

• 'Bandodkar Gold Trophy' is associated with the sports of Football.

• The Bandodkar Gold Cup was made of pure gold weighing several kilos.

• The trophy was instituted in 1970, by then Chief Minister, the late Dayanand Bandodkar.

• The Bandodkar Gold Cup was one of the top football tournaments in business in that era.

• The tournament was disbanded in 1994, only to be revived some years back by the Association.

Additional Information

Sports	Trophies Associated
Tennis & Table Tennis	Rajendra Prasad Cup, Corbillion Cup Corbitton Cup (Women) Jaylaxmi Cup (Women's) Rajkumar Cup (Junior boys) Rajkumari Challenge Cup, etc.
Golf	Amateur Championship of India, IGU Handicap Stableford, A.D.Vickers Trophy, Mid Amateur Trophy, etc.
Kho-Kho	Junior National Kho Kho C'ship, National-kho-kho-championship, etc.

Q4. Answer: (a) Vinod Tawdean

The correct answer is Vinod Tawde.

• The Minister of Higher and Technical Education for the state of Maharashtra is Vinod Tawde.

Key Points

• Vinod Tawade is an Indian politician from Maharashtra and a senior leader of the Bharatiya Janata Party (BJP).

• In 1995, Vinod Tawde was first named as the Maharashtra General Secretary of the BJP and he served up to 1999.

• In 1999, Vinod Tawde was elected as the President of the Mumbai Metropolitan Unit of the BJP.

Person Name	Constituency	Department	Party
Vinod Tawde	Borivali	• Higher and Technical Education. - Marathi Bhasha. - Cultural Affairs. - Minorities Development, and Wakf.	• BJP

Additional Information

Person Name	Details
Chandrakant Patil	• Chandrakant Patil is an Indian politician who is the Maharashtra state President of Bharatiya Janata Party since 2019. - In June 2014, he was appointed as a member of the Maharashtra Legislative Council. - In October 2014, he was elected as Cabinet Minister of Maharashtra.

YourMockTest.com — Free Study Material

Prakash Mehta	• Prakash Mehta is an Indian politician from Maharashtra and a senior leader of the Bharatiya Janata Party. - He was the President of the Mumbai BJP Unit. Prakash Mehta was the State Cabinet Minister for Housing Department.
Pankaja Munde	• Pankaja Munde Indian politician from the state of Maharashtra and National Secretary of Bharatiya Janata Party (BJP). - Pankaja Munde was the Minister of Rural and Women, Child Development in the Devendra Fadnavis cabinet. - Pankaja Munde served as the State President of BJP's youth wing, the Bharatiya Janata Yuva Morcha (BJYM), in 2012.

Q5. Answer: (a) D

Figure D is embedded in the question figure as follows:

Hence, "option 1" is the correct answer.

Q6. Answer: (d) C_nH_(2n)

The correct answer is CnH2n.

• Alkenes, unsaturated hydrocarbons containing a double bond between two carbon atoms, have a general formula, is CnH2n.

Key Points

• Alkenes contain carbon-carbon double bonds and are unsaturated hydrocarbons with the molecular formula is CnH2n.

• This is also the same molecular formula as cycloalkanes.

Additional Information

• General Properties of Alkenes:

• Physical state: The members containing two or four carbon atoms are gases, five to seventeen, liquids, eighteen onwards, solids at room temperature and they burn in air with a luminous smoky flame.

• Density: Alkenes are lighter than water.

• Solubility: Alkenes are insoluble in water and soluble in organic solvents such as benzene etc.

• Boiling point: The boiling points of alkenes show a gradual increase with an increase in the molecular mass or chain length.

Important Points

Formula	Details
CnH2n+2	• Hydrocarbons having a single bond between two carbon atoms are known as alkane.
CnH2n-2	• Alkenyl (CnH_(2n-2)) is the hydrocarbon group that derived an alkene by removal of one hydrogen atom.

Q7. Answer: (b) 1, 3, 2 ; 5, 6, 4 ; 8, 7, 9

The pattern followed here is:

• Figure 1 = Figure 3 = Figure 2 = minimum 2 lines

• => (1, 3, 2)

• Figure 5 = Figure 6 = Figure 4 = minimum 3 lines

• => (5, 6, 4)

• Figure 8 = Figure 7 = Figure 9 = minimum 4 lines

• => (8, 7, 9)

Hence, "option 2" is the correct answer.

Q8. Answer: (b) D

The closest resemblance to the question figure is given below:-

• Water image of the given figure.

Hence, "option 2" is the correct answer.

Q9. Answer: (d) Lord Dalhousie

The correct answer is Lord Dalhousie.

• Lord Dalhousie who took over as the Governor-General in 1848 formulated a policy called Doctrine of Lapse.

Key Points

YourMockTest.com — Free Study Material

• The doctrine of Lapse was the policy devised by the Governor-General of the East India Company in India.

• This doctrine was based on the idea that in case a ruler of a dependent state died childless, the right of ruling over the state reverted or lapsed to the sovereign.

• According to this doctrine, if any Indian ruler dies without leaving a male heir, his kingdom would automatically pass over to the British.

• The Doctrine of Lapse was withdrawn by Lord Canning (1857-1861).

Additional Information

Person Name	Details
Lord Wellesley	• Major-General Lord Charles Wellesley was a British politician, soldier and courtier. - Wellesley represented the Conservative Party as the Member of Parliament (MP) for South Hampshire from 1842 to 1852. - He was also a Chief Equerry and Clerk Marshal to Queen Victoria.
Lord William	• He was born on 14 September 1774, Buckinghamshire, United Kingdom. - Lieutenant General Lord William Henry Cavendish-Bentinck, known as Lord William Bentinck, was a British soldier and statesman. - He served as Governor-General of India from 1828 to 1835. - He reformed the court system in India during his period.
Lord Cornwallis	• Charles Cornwallis was appointed in February 1786 to serve as both Commander-in-Chief of British India and Governor of the Presidency of Fort William, also known as the Bengal Presidency. - Cornwallis was charged by the directors of the British East India Company to overhaul and reform its administration in India. - He was raised to the title of Marquess Cornwallis in 1792 as recognition for his performance in the Third Anglo-Mysore War.
Lord Dalhousie	• Lord Dalhousie, was a Scottish statesman and colonial administrator in British India. - He served as Governor-General of India from 1848 to 1856. - In 1849, under Dalhousie's command, the British captured the princely state of Punjab.

Q10. Answer: (d) 25

The logic followed here is:-

Hence, "option 4" is the correct answer.

Q11. Answer: (d) 7

Shortcut Trick

Net efficiency = (1/8 + 1/10 − 1/12) of the tank per hour.

LCM of 8, 10, and 12 is 120.

Net efficiency = (15 + 12 − 10)/120 = 17/120.

Time taken = 120/17 ≈ 7.05 hours.

Rounding to the nearest whole number as per options.

Therefore The correct answer is 7 hours.

Alternate Method

Given: Filling time Tap A = 8 hours, Tap B = 10 hours, Emptying time Tap C = 12 hours.

Formula Used: Total Work = LCM of time; Efficiency = Work ÷ Time.

Tap	Hours	Total Capacity (LCM)	Efficiency
A (Fill)	8	120	+15
B (Fill)	10	+12	
C (Empty)	12	−10	

=> Combined Efficiency = 15 + 12 − 10 = 17 units/hour

=> Time required = Total Capacity ÷ Combined Efficiency

=> Time = 120 ÷ 17

=> Time ≈ 7.058 hours

=> Rounding to the nearest option, Time = 7 hours

Therefore The correct answer is 7 hours.

Additional Information

Pipes and Cisterns Convention

Inlet pipes which fill the tank are taken as positive efficiency, while outlet/leakage pipes are taken as negative efficiency.

Net Rate Formula

If two pipes fill in x and y hours and one empties in z hours, the net part filled in 1 hour is (1/x + 1/y − 1/z).

Q12. Answer: (b) Only Argument II is strong

The question is implicitly asking whether the government should allow new industries or not.

• Argument I suggests that the government should stop allowing new industries because they cause environmental pollution, however, it is not true. It cannot be claimed that all new industries will cause pollution. Thus, argument I is not strong.

• Argument II talks against stopping new industries, meaning that new industries should be allowed because they help in economic development. This is a valid and strong point. Thus, argument II is strong.

Hence the correct answer is option 2.

Q13. Answer: (d) 44

Calculation:

Only Rose = 20 - 6 = 14

Only Cinnamon = 40 - 14 - 6 = 20

Only Lemongrass = 30 - 14 - 6 = 10

According to the question,

Total = 14 + 20 + 10 = 44

Therefore 44 bought only one fragrance

Q14. Answer: (b) (x + 2) (x + 3)

Shortcut Trick

Identify the perfect square trinomials within the expression.

$x^2 + 4x + 4$ is the square of (x + 2).

$x^2 + 6x + 9$ is the square of (x + 3).

Square root of $[(x + 2)^2 \times (x + 3)^2] = (x + 2)(x + 3)$.

Therefore The correct answer is (x + 2)(x + 3).

Alternate Method

Given: $(x^2 + 4x + 4)(x^2 + 6x + 9)$

Formula Used: $(a + b)^2 = a^2 + 2ab + b^2$ and $\sqrt{(A^2 \times B^2)} = A \times B$

=> First term: $x^2 + 4x + 4 = x^2 + 2(2)(x) + 2^2 = (x + 2)^2$

=> Second term: $x^2 + 6x + 9 = x^2 + 2(3)(x) + 3^2 = (x + 3)^2$

=> Required Square Root = $\sqrt{[(x + 2)^2 \times (x + 3)^2]}$

=> Required Square Root = (x + 2)(x + 3)

Therefore The correct answer is (x + 2)(x + 3).

Additional Information

Perfect Square Identity

An expression in the form $a^2 + 2ab + b^2$ can always be written as $(a + b)^2$, which simplifies finding square roots.

Factorization of Quadratics

For $ax^2 + bx + c$, if it is a perfect square, the discriminant $D = b^2 − 4ac$ will always be zero.

Square Root of Products

The rule $\sqrt{(m \times n)} = \sqrt{m} \times \sqrt{n}$ allows us to find the square root of each polynomial factor independently.

Q15. Answer: (a) Lipstick under my burqa

The correct answer is Lipstick under my burqa.

• Lipstick under my burqa won the Global Sustainability Film Award for India in London, 2017.

Key Points

• In London Lipstick Under My Burkha, which explores women's sexuality, has bagged a top prize at the time Global Sustainability Film Awards 2017.

• Lipstick Under My Burkha is produced by Prakash Jha and directed by Alankrita Shrivastava and stars Konkona SenSharma and Ratna Pathak Shah.

• The Founders Award for Sustainability on the Big Screen was introduced this year and sponsored by philanthropist Surina Narula.

Additional Information

Movie Name	Director
Neerja	Ram Madhavan
Pink	Aniruddha Roy Chowdhury
Queen	Vikas Bahl

Q16. Answer: (c) 16 people

Shortcut Trick

Work is directly proportional to the number of workers when time is constant.

Ratio of candles = 111 : 148 = 3 : 4

Since 3 units = 12 workers, then 1 unit = 4 workers.

For 4 units of work = 4 × 4 = 16 workers.

Therefore The correct answer is 16 people.

Alternate Method

Given:

Initial workers (M1) = 12

Initial candles (W1) = 111

Final candles (W2) = 148

Formula Used:

M1D1H1 / W1 = M2D2H2 / W2

Since time is the same, the formula reduces to: M1 / W1 = M2 / W2

Calculations:

=> 12 / 111 = M2 / 148

=> M2 = (12 × 148) / 111

=> M2 = (12 × 4) / 3 (Dividing 148 and 111 by 37)

=> M2 = 4 × 4

=> M2 = 16

Therefore The correct answer is 16 people.

Additional Information

Chain Rule in Time and Work

The general formula is (M × D × H × E) / W = Constant, where M is manpower, D is days, H is hours, E is efficiency, and W is work.

Direct Proportion

When the amount of work increases, the required number of workers also increases proportionally, provided time remains constant.

Q17. Answer: (d) GM/R^2

The correct answer is GM/R2

• Gravity is the force with which the earth attracts a body towards its centre.

• Acceleration is defined as the rate of change of velocity with respect to time.

• Acceleration is a vector quantity that is described as the frequency at which a body’s velocity changes.

Key Points

• SI unit and Formula:

• The S.I unit for acceleration is meter per second square or m/s2.

• Mathematically acceleration is denoted as a= Change in velocity / Time taken.

YourMockTest.com — Free Study Material

Additional Information

• The types of acceleration are:

• Uniform acceleration: When an object is travelling in a straight line with an increase in velocity at equal intervals of time, then the object is said to be in uniform acceleration. The free-falling of an object is an example of uniform acceleration.

• Non-uniform acceleration: When an object is travelling with an increase in velocity but not at equal intervals of time is known as non-uniform acceleration. Bus moving or leaving from the bus stop is an example of non-uniform acceleration.

• Instantaneous acceleration: The acceleration of an object at any instant of time is known as instantaneous acceleration.

Q18. Answer: (a) Thick

The correct answer is Thick.

• The wall of the ventricle is Thick from the wall of the atrium.

Key Points

• Atrial walls are thinner compared to the thickness of ventricular walls. Moreover, embedded in the atrial wall is pacemaker of the heart.

• Atria of the heart are receiving chambers while ventricles pump the blood forcefully to all organs of the body. Hence muscle mass around ventricles is thickened compared to that around atria.

• The stimulus for rhythmic contraction of the heart originates inside the auricular wall due to the presence of the sinoatrial node.

• Moreover, the myocardium of both atria together form a functional syncytium and it remains completely separated from the ventricular myocardial syncytium.

Q19. Answer: (c) Aluminum

The correct answer is Aluminium.

• In aluminium, the speed of sound is maximum at 25°C.

Key Points

• Out of the following, the speed of sound is maximum in Aluminium.

• The speed of sound in Aluminium at 25 deg Celsius is around 6420 m/s.

• The matter or substance through which sound is transmitted is called a medium. It can be solid, liquid, or gas.

• Sound is a mechanical wave and needs a material medium for its propagation. It cannot travel through a vacuum.

Sound travels at different speeds depending on what it is travelling through.

• Of the three mediums (gas, liquid, and solid) sound waves travel the slowest through gases, faster through liquids, and fastest through solids.

• Temperature also affects the speed of sound.

• For Example, at 0° Celcius, sound travels through air at 331 meters per second, but, at 20°C, room temperature, sound travels at 343 meters per second.

Q20. Answer: (c) 143 : 78 : 66

Shortcut Trick

For any triangle, the Area (A) = (1/2) × base × height.

Since the Area is constant for all sides: side1 × h1 = side2 × h2 = side3 × h3.

Ratio of heights (h1 : h2 : h3) is the inverse ratio of the sides (1/s1 : 1/s2 : 1/s3).

h1 : h2 : h3 = 1/6 : 1/11 : 1/13 = (11 × 13) : (6 × 13) : (6 × 11) = 143 : 78 : 66.

Therefore The correct answer is 143 : 78 : 66.

Alternate Method

Given: Sides of the triangle (a, b, c) are 6 cm, 11 cm, and 13 cm.

Formula Used: Area of Triangle = (1/2) × base × height => h = 2 × Area ÷ base

=> Let the area of the triangle be K.

=> h1 = 2K/6, h2 = 2K/11, h3 = 2K/13

=> Ratio = h1 : h2 : h3 = (2K/6) : (2K/11) : (2K/13)

=> Ratio = 1/6 : 1/11 : 1/13

=> To clear fractions, multiply by LCM(6, 11, 13) = 858.

=> h1 = 858 ÷ 6 = 143

=> h2 = 858 ÷ 11 = 78

=> h3 = 858 ÷ 13 = 66

Therefore The correct answer is 143 : 78 : 66.

Additional Information

Inverse Proportion in Triangles

In any triangle, the altitude (height) is inversely proportional to its corresponding base. If sides are a:b:c, heights are (1/a):(1/b):(1/c).

Heron's Formula

To find the actual area when three sides are given: Area = √[s(s−a)(s−b)(s−c)], where s is the semi-perimeter (a+b+c)/2.

Triangle Inequality

For a triangle to exist, the sum of any two sides must be greater than the third side (6+11 > 13).

Q21. Answer: (b) 784

Given:

√(?)/3136 = 1/2

Calculation:

Let the missing number be x

Squaring both sides we get,

=> (√x/3136)² = (1/2)²

=> x/3136 = 1/4

=> x = (3136/4)

=> x = 784

Therefore The required value is 784

Q22. Answer: (b) 45.5

Shortcut Trick

Assume the Mean (A) is 45 mm.

Calculate the net deviation: (13 × −2) + (15 × −1) + (22 × 0) + (21 × 1) + (16 × 2) + (14 × 3) = −26 − 15 + 0 + 21 + 32 + 42 = 54.

Mean = A + (Net Deviation ÷ Total Frequency) = 45 + (54 ÷ 101) ≈ 45.5 mm.

Therefore The correct answer is 45.5 mm.

Alternate Method

Given: The diameter (D) of 101 steel balls and their respective frequencies (f).

Formula: Arithmetic Mean (x) = Σ(f_i × D_i) ÷ Σf_i

=> Total Frequency (Σf_i) = 13 + 15 + 22 + 21 + 16 + 14 = 101

=> Sum of products (Σf_iD_i) = (43 × 13) + (44 × 15) + (45 × 22) + (46 × 21) + (47 × 16) + (48 × 14)

=> Σf_iD_i = 559 + 660 + 990 + 966 + 752 + 672 = 4599

=> Mean = 4599 ÷ 101 = 45.5346...

Therefore The correct answer is 45.5 mm.

Additional Information

Arithmetic Mean

The average of a set of numerical values, calculated by dividing the sum of all values by the total number of observations. Formula: x = Σx_i ÷ n.

Assumed Mean Method

A shortcut method to find the mean of a large dataset by assuming a central value (A) and calculating the mean of deviations (d). Formula: Mean = A + (Σfd ÷ Σf).

Weighted Average

An average where each observation is multiplied by a weight (or frequency) reflecting its importance. Formula: Σ(w_i × x_i) ÷ Σw_i.

Q23. Answer: (c) 10A

The correct answer is 10A.

• Solution:

• Potential difference, V = 60.

• Current, I = 4A.

• By Ohms law.

• Resistance, R = V/I

• 60 V/4A = 15 Ohms.
• When the potential difference is increased to 150V, the current drawn by the heater will be
• I = V/R
• I = 150 V/ 15 Ohms
• 10 A.

Q24. Answer: (b) 144

Concept Used:
Follow the BODMAS rule according to the table given below:
Calculation:
36 ÷ 1/4
=> 36 × 4/1
=> 144
Therefore The required value is 144

Q25. Answer: (b) 588 J

The correct answer is 588 J.
Key Points
• Given,
• Mass, m = 10 kg.
• height, h = 6 m
• g = 9.8 ms^(-2)
• Potential energy = mgh
• = 10 x 6 x 9.8
• = 588 J.
Additional Information
• Potential Energy:
• It is the energy possessed by a body by virtue of its position.
• PE of a body in the gravitational field of the earth is mgh.
• where m = mass, g = acceleration due to gravity, h = height of the body from the surface of the earth.
• When a body is falling downwards, then its potential energy goes on changing to kinetic energy.

Q26. Answer: (d) WVZW

The logic followed here is:-
Similarly,
Hence, "option 4" is the correct answer.

Q27. Answer: (b) Dr. Harsh Vardhan

The correct answer is Dr Harsh Vardhan.
• Harsh Vardhan is the Union Minister of Environment and Climate Change (as of July 2018).
Key Points
• The Union Minister of Environment and Climate change was formed in 1947 and its headquarters is located in New Delhi.
• As of now the Union Minister of Environment and Climate Change is held by Bhupendra Yadav.
• The ministry is responsible for planning, promoting, coordinating, and overseeing the implementation of environmental and forestry programs in the country.
Additional Information

Person Name	Details
Rajnath Singh	• Rajnath Singh is an Indian politician serving as the Defence Minister of India. - He is currently the Deputy Leader of the House Lok Sabha. - He is the former President of the Bharatiya Janata Party. - He has previously served as the Chief Minister of Uttar Pradesh and as a Cabinet Minister in the Vajpayee Government.

YourMockTest.com — Free Study Material

Dr. Harsh Vardhan	• Harsh Vardhan is an Indian otorhinolaryngologist. - He had served as the Minister of Health and Family Welfare, Minister of Science and Technology and Minister of Earth Sciences in the BJP-led NDA government of Prime Minister Narendra Modi from 30 May 2019 to 7 July 2021.
Prakash Javadekar	• Javadekar is now the Human Resource and Development Minister of India and also a veteran spokesperson of the Bharatiya Janata Party. - Before becoming a National Spokesperson, he was also a Spokesperson for the Maharashtra BJP. - Javadekar previously served as the Minister of Environment, Forest and Climate Change, Minister of Information and Broadcasting, and Minister of Heavy Industries and Public Enterprises between 2014 to 2021.
V.K. Singh	• General Singh has been the Member of Parliament (Lok Sabha) representing the Ghaziabad constituency (Uttar Pradesh) since 2014. - General Singh served as the 24th chief of staff in the Indian Army (2010-12). - In 2015, he spearheaded 'Operation Raahat' for the evacuation of Indian citizens and other foreign nationals from war-torn Yemen.

Q28. Answer: (b) 36 πcm²

Shortcut Trick

For any right-angled triangle, the circumradius (R) is always half of the hypotenuse.

In the given triangle, the longest side is 12 cm, which is the hypotenuse.

Circumradius (R) = 12 ÷ 2 = 6 cm.

Area of circumscribed circle = π × R² = π × 6² = 36π cm².

Therefore The correct answer is 36π cm².

Alternate Method

Given: Sides of the right-angled triangle are 8 cm, 4√5 cm, and 12 cm.

Formula Used: Area of circle = πr²; Circumradius of right triangle = Hypotenuse ÷ 2.

=> First, verify the hypotenuse: 8² + (4√5)² = 64 + 80 = 144.

=> Since 12² = 144, the hypotenuse is 12 cm.

=> Circumradius (R) = Hypotenuse / 2 = 12 / 2 = 6 cm.

=> Area = π × (6)²

=> Area = 36π cm².

Therefore The correct answer is 36π cm².

Additional Information

Inradius of Right Triangle

The radius (r) of the inscribed circle is calculated as r = (Perpendicular + Base − Hypotenuse) ÷ 2.

Circumcenter Location

In a right-angled triangle, the circumcenter always lies exactly at the midpoint of the hypotenuse.

Pythagorean Triplet

A set of three positive integers a, b, and c, such that a² + b² = c², forming the sides of a right triangle.

Q29. Answer: (d) A, B, C, D

The correct answer is A, B, C, D.

• Potential energy, stored energy that depends upon the relative position of various parts of a system.

• Spring has more potential energy when it is compressed or stretched.

• A steel ball has more potential energy raised above the ground than it has after falling to Earth.

Key Points

• The term potential energy was introduced by the 19th-century Scottish engineer and physicist William Rankine, although it has links to Greek philosopher Aristotle's concept of potentiality.

Additional Information

Q30. Answer: (b) Neither I nor II is implicit

The statement simply talks about all people loving Indian clothes.

• It does not talk about which types of clothes are available in the market, or Indian clothes being the only choice available. So, assumption I is not implicit.

• From the statement, nothing can be determined about people's opinion on any other type of clothes. Thus, assumption II is also not implicit.

Hence the correct answer is option 2.

Q31. Answer: (c) 7

The triangles are as follows:

The number of triangles is 7.

Hence, "option 3" is the correct answer.

Q32. Answer: (c) Reacts with metals and bicarbonates to produce H2O, CO2 and salts × duplicate options found. English Questi...

An acid is any hydrogen-containing substance that is capable of donating a proton (hydrogen ion) to another substance.

• In 1884, Svante Arrhenius attributed the properties of acidity to hydrogen ions (H+), later described as protons or hydrons.

Key Points

• Acids react with Bicarbonates to form Salt, Water and release Carbon Dioxide.

• Acid react with metal form salt with evolve of Hydrogen gas

Thus reacts with metals and bicarbonates to produce H2O, CO2and salts is not true about acids.

Additional Information

• The properties of acids are:

• Acids are corrosive in nature.

• They are good conductors of electricity.

• Their pH values are always less than 7.

• When reacted with metals, these substances produce hydrogen gas.

• Acids are sour-tasting substances.

Important Points

Q33. Answer: (d) 90° anti-clockwise

The diagram is given below:-

• Ramani and Sandhya should be facing the opposite direction. Only then will they be facing each other.

• Therefore, Ramani has to rotate 90^o anticlockwise to face Sandhya.

Hence, "option 4" is the correct answer.

Q34. Answer: (c) Collenchyma

The correct answer is Collenchyma.

Key Points

• In Collenchyma tissue, the cells are living, long and irregularly thickened at the ends.

• Collenchyma tissue is composed of elongated living cells of uneven primary thick walls, which possess hemicellulose, cellulose, and pectic materials.

• It provides support, structure, mechanical strength, and flexibility to the petiole, leaf veins, and stem of young plants, allowing for easy bending without breakage.

• Collenchyma tissue is found immediately under the epidermis, young stems, petioles, and leaf veins.

Additional Information

Tissue	Description
Sclerenchyma	• Sclerenchyma is a type of permanent tissue found in plants. - Cells are usually dead without protoplasts.
Aerenchyma	• Aerenchyma is a spongy tissue that forms spaces/air channels in the leaves, stems, and roots of halophytic plants. - The presence of aerenchyma tissues helps in the exchange of gases between the shoot and the root systems.

YourMockTest.com — Free Study Material

Parenchyma	• Parenchyma is a type of simple permanent tissue that makes a major part of ground tissues in plants, where other tissues like vascular tissues are embedded.

Q35. Answer: (a) 67.1

Shortcut Trick

Using the Deviation Method: Assume the class average is 65.

Deviation for Boys (7 parts) = 65 − 65 = 0

Deviation for Girls (3 parts) = 72 − 65 = +7

Total deviation = 3 × 7 = +21

Average marks = Assumed Average + (Total deviation ÷ Total parts) = 65 + (21 ÷ 10) = 67.1

Therefore The correct answer is 67.1.

Alternate Method

Given:

Ratio of Boys : Girls = 7 : 3

Average marks of Boys = 65

Average marks of Girls = 72

Formula Used:

Combined Average = (n1 × A1 + n2 × A2) ÷ (n1 + n2)

Calculations:

=> Total marks of Boys = 7 × 65 = 455

=> Total marks of Girls = 3 × 72 = 216

=> Total marks of Class = 455 + 216 = 671

=> Total parts (students) = 7 + 3 = 10

=> Average marks of Whole Class = 671 ÷ 10 = 67.1

Therefore The correct answer is 67.1.

Additional Information

Weighted Average

It is used when groups have different sizes. The formula is $A_w = \Sigma(w_i \times x_i) \div \Sigma w_i$, where w is the weight/ratio and x is the value.

Alligation Rule

The ratio of the quantities is the inverse ratio of the differences between the average values: (n1 ÷ n2) = (A2 − A_(avg)) ÷ (A_(avg) − A1).

Deviation Method Shortcut

Pick a base number (usually the smaller average), calculate the extra values from others, and divide that extra by the total count.

Q36. Answer: (c) 5

The correct answer is 5.

• 5 atoms are present in a molecule of Ca(OH)2.

Key Points

• Ca is 1 since there is no subscript and O and H each have 2 because the subscript 2 is outside the parenthesis.

• i.e. 1Ca+2O+2H = 5atoms

Q37. Answer: (a) Plastic

The logic followed here is as follows:

Plastic	**It is not biodegradable material.**
Wood	It is a biodegradable material.
Paper	It is a biodegradable material.
Wool	It is a biodegradable material.

Hence, "option 1" is the correct answer.

YourMockTest.com — Free Study Material

Q38. Answer: (d) Mizo National Front

The correct answer is Mizo National Front.

Key Points

• Zoramthanga is led by Mizo National Front.

• Zoramthanga was born on 13 July 1944 is an Indian politician who is the Chief Minister of Mizoram.

• He is the president of the Mizo National Front (MNF) party. He had served as the Chief Minister of Mizoram from December 1998 to December 2008, for two consecutive terms.

• He joined the Mizoram Legislative Assembly as Minister of Finance and Education in 1987.

• In 1990, when Laldenga died, he became the President of the Mizo National Front.

Additional Information

• The Mizo National Front is a regional political party in Mizoram, India.

• The Mizo National Front was founded in 1961 by Laldenga.

• MNF emerged from the Mizo National Famine Front, which was formed by Pu Laldenga to protest against the inaction of the Indian central government towards the famine situation in the Mizo areas of the Assam state in 1959.

Important Points

Party Name	Details
Mizoram People's Conference	• The Mizoram People's Conference was a regional political party in Mizoram, India. - It was formed by Brig Thenphunga Sailo on 17 April 1975. - Thenphunga was the party chairman and Chief Minister of Mizoram from 1979 to 1984
Naga People's Front	• The Naga People's Front is a regional political party in Nagaland and Manipur, India. - It headed the Nagaland government with the Bharatiya Janata Party, as part of the Democratic Alliance of Nagaland from 2003 to 2018. - Dr. Shürhozelie Liezietsu is the president of the party.
National People's Party	• The National People's Party is a national-level political party in India, though its influence is mostly concentrated in the state of Meghalaya. - The party was founded by P A Sangma after his expulsion from the NCP in July 2012. - It was accorded national party status on 7 June 2019.

Q39. Answer: (a) Old

The logic followed here is:-

Hot is the synonym of warm.

Similarly,

Antique is the synonym of Old.

Hence, "option 1" is the correct answer.

Q40. Answer: (d) Oscillatory

The correct answer is Oscillatory.

• The speed of the boy sitting on the swing is Oscillatory.

Key Points

• A motion repeating itself is referred to as periodic or oscillatory motion. An object in such motion oscillates about an equilibrium position due to a restoring force or torque.

Additional Information

• Following are the examples of oscillatory motion:

• Series of oscillations are seen in the cosmological model.

• Alternating current is an electrical example of oscillatory motion.

• Movement of spring.

• Vibrating strings of musical instruments is a mechanical example of oscillatory motion.

Q41. Answer: (b) 62,500

Shortcut Trick

Total Investment = Rs. 1,00,000 + Rs. 1,50,000 = Rs. 2,50,000.

Total recovery percentage in Q1 and Q2 = 20% + 55% = 75%.

Remaining recovery percentage for Quarter 3 = 100% − 75% = 25%.

Amount in Quarter 3 = 25% of Rs. 2,50,000 = 2,50,000 ÷ 4 = Rs. 62,500.

Therefore The correct answer is Rs. 62,500.

Alternate Method

Given:

Investment on Shop 1 = Rs. 1,00,000

Investment on Shop 2 = Rs. 1,50,000

Calculations:

=> Total Investment = 1,00,000 + 1,50,000 = Rs. 2,50,000

=> Recovery in Quarter 1 = 20% of 2,50,000 = 0.20 × 2,50,000 = Rs. 50,000

=> Recovery in Quarter 2 = 55% of 2,50,000 = 0.55 × 2,50,000 = Rs. 1,37,500

=> Total recovered in Q1 and Q2 = 50,000 + 1,37,500 = Rs. 1,87,500

=> Recovery in Quarter 3 = Total Investment − Total recovered

=> Recovery in Quarter 3 = 2,50,000 − 1,87,500 = Rs. 62,500

Therefore The correct answer is Rs. 62,500.

Additional Information

Percentage Change

To find the percentage of a total value, use the formula: (Percentage / 100) × Total Value.

Successive Percentages

When multiple percentages are applied to the same base, they can be added directly if they represent parts of the same whole: Total % = P1 + P2 + ... + P_n.

Complementary Percentage

If certain parts are given, the remaining part is calculated as: Remaining % = 100% − (Sum of given percentages).

Q42. Answer: (b) Statements 1 and 2 both are not sufficient

1. T2, T1 is longer than T3

• T2, T1 > T3

• Here, we can say that the longest rod is either T1 or T2 but it is no definite information. Therefore, statement 1 alone is not sufficient.

2. T2 is an iron rod.

• No information is given about the size of rods T1, T2, and T3. Therefore, statement 2 alone is not sufficient.

Here, statements 1 and 2 are not sufficient to answer.

Hence, "option 2" is the correct answer.

Q43. Answer: (a) 15 years

Shortcut Trick

When a father says he was as old as the son is now at the time of the son's birth, the father is exactly twice as old as the son.

Son's present age = Father's present age ÷ 2

=> 40 ÷ 2 = 20 years.

Son's age 5 years ago = 20 − 5 = 15 years.

Therefore The correct answer is 15 years.

Alternate Method

Given:

Present age of Father = 40 years.

Let the Son's present age be x years.

Calculations:

=> Age of father at son's birth = Father's present age − Son's present age

=> Age of father at son's birth = 40 − x

=> According to the question: 40 − x = x

=> 2x = 40

=> x = 20 years (Present age of son)

=> Son's age 5 years ago = 20 − 5

=> Son's age 5 years ago = 15 years

Therefore The correct answer is 15 years.

Additional Information

Age Difference Constant

The difference between the ages of two people remains constant throughout their lives, regardless of how many years pass.

Ratio of Ages

If the ratio of ages of A and B is a:b, then after 'n' years, the ratio becomes (a×k + n) : (b×k + n).

Double Age Logic

If a person is twice as old as another, the age difference between them is equal to the younger person's age.

Q44. Answer: (b) Pradeep Singh Kharola

The correct answer is

• August 2018, Pradeep Singh Kharola is the current Chairman and Managing Director of Air India.

• As of now the current Chairman and Managing Director of Air India is Rajiv Bansal.

Key Points

• Air India was founded on 15 October 1932 and its headquarter is located in Delhi.

• Air India had its origin as Tata Air Services later renamed to Tata Airlines founded by J. R. D. Tata of Tata Sons, an Indian aviator, and business tycoon.

• On 15 October 1932, Tata flew a Puss Moth carrying air mail from Karachi to Bombay.

• After World War II, regular commercial service was restored in India and Tata Airlines became a public limited company on 29 July 1946 under the name Air India.

• After Indian independence in 1947, 49% of the airline was acquired by the Government of India in 1948.

Q45. Answer: (d) 117

Calculation:

36% of 325

=> 36/100 × 325

=> (9 × 13)

=> 117

Therefore The required value is 117

Q46. Answer: (a) 1

The correct answer is 1.

Key Points

• At an instant, the acceleration of a rocket is proportional to the nth power of the velocity of exhaust gases. The value of n here is 1.

• If the gases are expelled at velocity v, then the rate of change in linear momentum is equal to mv where m is the mass of the gases.

• Now the equal and opposite force is experienced on the rocket. If the force experienced by a rocket of mass M is F then the acceleration is M x a.

• Now the forces are equal and opposite hence by using the two-equation, F = mv or M x a = M x v.

• Hence from this equation the acceleration is directly proportional to the first power of velocity.

Q47. Answer: (a) Shirdi

The correct answer is Shirdi.

• Shirdi is a religious city located in the Indian state of Maharashtra.

Key Points

• Shirdi is famously known as the home of the late 19th-century saint Shri Sai Baba.

• Sai Baba visited Shirdi when he was 16 years old and stayed there until he died in 1918.

• The Shri Saibaba Sansthan Trust located in Shirdi is one of the richest temple organizations.

• Shirdi has an average literacy rate of 70%, higher than the national average of 59.5%.

• Male literacy is 76%, and female literacy is 62%. In Shirdi, 15% of the population is under six years of age.

Additional Information

Place Name	Details

Rajgir	• Rajgir is an ancient city in the northeast Indian state of Bihar. - Rajgir history is linked with both Jainism and Buddism. - The 2,500-year-old Cyclopean Wall is located in Rajgir city.
Somnath	• Somnath temple on the western edge of the state is believed to be the place where the first of the twelve holy jyotirlingas emerged in India. - The temples lie at the meeting of Kapila, Hiran and Sarasvati rivers and the waves of the Arabian Sea. - The ancient temple's timeline can be traced from 649 BC but is believed to be older than that. The present form was reconstructed in 1951.
Kushinagar	• Kushinagar is a town in the Kushinagar district of the Indian state of Uttar Pradesh. - It is an important Buddhist pilgrimage site, where Buddhists believe Gautam Buddha attained Mahaparinirvana after his death. - It is an international Buddhist pilgrimage centre.

Q48. Answer: (c) 10

The triangles are as follows:

• The number of triangles is 10.

Hence, "option 3" is the correct answer.

Q49. Answer: (b) 10,000

According to the given pie chart,

20% of the total expenses is in Binding

50000 × 20/100

=> Rs. 10000

Therefore The binding cost is Rs. 10000

Q50. Answer: (c) 338

Shortcut Trick

Simplify both terms by extracting the largest perfect square factors: 50 = 25 × 2 and 128 = 64 × 2.

√50 + √128 → 5√2 + 8√2 = 13√2.

To find N, move the coefficient back inside the square root: √N = √(13² × 2).

N = 169 × 2 = 338.

Therefore The correct answer is 338.

Alternate Method

Given: √50 + √128 = √N

Formula Used: √(a² × b) = a√b

=> √(25 × 2) + √(64 × 2) = √N

=> (5 × √2) + (8 × √2) = √N

=> (5 + 8)√2 = √N

=> 13√2 = √N

Squaring both sides to find N:

=> (13√2)² = (√N)²

=> 13² × (√2)² = N

=> 169 × 2 = N

=> N = 338

Therefore The correct answer is 338.

Additional Information

Simplifying Surds

A surd is simplified by identifying the largest perfect square factor of the radicand and applying √(x × y) = √x × √y.

Like Surds

Surds that have the same irrational factor are called like surds. Only like surds can be combined through addition or subtraction.

Squaring Rule

When squaring an expression of the form a√b, the result is always a² × b.

YourMockTest.com — Free Study Material

Q51. Answer: (c) Amphibian

The correct answer is Amphibian.

• Amphibian classes, animals lack scales and have mucous glands in the skin.

Key Points

• Amphibians are cold-blooded vertebrates (vertebrates have backbones) that don't have scales. They live part of their lives in water and part on land.

• These animals are born with gills, and while some outgrow them as they transform into adults, others retain them for their entire lives.

• Amphibians are the most threatened class of animals in nature. They are extremely susceptible to environmental threats because of their porous eggs and semipermeable skin.

Additional Information

Important Points

Name	Details
Reptiles	• Reptiles, as most commonly defined, are the animals in the class Reptilia, a paraphyletic grouping comprising all amniotes except synapsids and Aves. - Reptiles are air-breathing, cold-blooded vertebrates that have scaly bodies rather than hair or feathers.
Fish	• Fishes are a group of animals that are completely aquatic vertebrates that have gills, scales, swim bladders to float, most produce eggs, and are ectothermic. - Sharks, stingrays, skates, eels, puffers, seahorses, clownfish are all examples of fishes.
Aves	• Birds are a group of warm-blooded vertebrates constituting the class Aves. - Birds are vertebrates with feathers, modified for flight and for active metabolism. - Birds are a monophyletic lineage, evolved once from a common ancestor, and all birds are related through that common origin.

Q52. Answer: (d) 40%

Shortcut Trick

Total Cost Price (CP) = 200 + 600 = 800.

Profit on 1^(st) article = 30% of 200 = 60.

Remaining profit needed for 2^(nd) article = Total Profit − Profit1 = 300 − 60 = 240.

Profit % on 2^(nd) article = (Profit2 ÷ CP2) × 100 = (240 ÷ 600) × 100 = 40%.

Therefore The correct answer is 40%.

Alternate Method

Given → CP1 = 200, CP2 = 600, Total Profit = 300, P1% = 30%.

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

=> Profit from first article = 30% of 200 = (30 ÷ 100) × 200 = 60.

=> Total Profit = Profit1 + Profit2.

=> 300 = 60 + Profit2.

=> Profit2 = 300 − 60 = 240.

=> Profit% for second article = (240 ÷ 600) × 100.

=> Profit% = 40%.

Therefore The correct answer is 40%.

Additional Information

Profit Calculation

Profit is always calculated on the Cost Price unless stated otherwise. Profit = Selling Price − Cost Price.

Total Profit Percentage

Overall Profit% = (Total Profit ÷ Total CP) × 100. In this case, (300 ÷ 800) × 100 = 37.5%.

YourMockTest.com — Free Study Material

Q53. Answer: (c) Telangana

The correct answer is Telangana.

Key Points

• The Manjira Crocodile Wildlife Sanctuary is situated in Medak district Telangana state.

• The Manjira sanctuary is situated along the mighty river Manjeera.

• The Manjira sanctuary was established in June 1978.

• In 1974, the mugger crocodile had reached the threshold of extinction in Telangana, with only four pairs of mugger crocodiles remaining in the Manjira wildlife sanctuary.

• Today there are approximately 400 to 600 crocodiles in the sanctuary helped by a crocodile breeding program that is carried out here.

Additional Information

State Name	Details
Tamil Nadu	• Tamil Nadu, a South Indian state, is famed for its Dravidian-style Hindu temples. - The Tamil Nadu state capital is Chennai. - During the 4th to 8th centuries, Tamil Nadu saw the rise of the Pallava dynasty under Mahendravarman I and his son Mamalla Narasimhavarman I. - As of now, Tamil Nadu Chief Minister is M K Stalin.
Odisha	• Odisha, an eastern Indian state on the Bay of Bengal, is known for its tribal cultures and its many ancient Hindu temples. - The capital of Odisha is Bhubaneshwar. - As of now, Odisha's chief minister is Naveen Patnaik.
Telangana	• Telangana is a state in southern India. - The capital of Telangana is Hyderabad. - Telangana, as a geographical and political entity, was born on June 2, 2014, as the 29th and the youngest state in the Union of India. - As of now, The Telangana chief minister is K. Chandrashekar Rao.
Kerala	• Kerala, a state on India's tropical Malabar Coast. - The capital of Kerala is Thiruvananthapuram. - As of now, the chief minister of Kerala is Pinarayi Vijayan. - The island of Dharmadom near Kannur, along with Thalassery, was ceded to the East India Company in 1734.

Q54. Answer: (b) C

When it is folded on the dotted line, pattern will be the same as that of the transparent sheet given below:-

Hence, "option 2" is the correct answer.

Q55. Answer: (a) Sense

The logic followed here is:-

Enough is the synonym of contentment.

Similarly,

Feel is the synonym of sense.

Hence, "option 1" is the correct answer.

Q56. Answer: (a) 1420

The correct answer is 1420.

Key Points

• Niccolo Conti visited Vijayanagara in 1420 AD during the reign of Devaraya I.

• Niccolo Conti was an Italian merchant, explorer, and writer. Born in Chioggia, he traveled to India and Southeast Asia, and possibly to Southern China, during the early 15th century.

• The first printed edition of de' Conti's account was made in 1492 in the original Latin by Cristoforo da Bollate and dedicated to Pietro Cara, who was going on a journey to India.

Additional Information

• Vijayanagara Empire:

• The Vijayanagara Empire was founded by Harihara and Bukka and the reign was from 1336 A.D to 1646 A.D.

YourMockTest.com — Free Study Material

• The Vijayanagar empire's capital city was Hampi.
• Vijayanagar Empire was ruled by four important dynasties and they are:
• Sangama.
• Saluva.
• Tuluva.
• Aravidu.

Important Points

• Temples Built during Vijaynagara Empire are:

Temple Name	Location	Details
Ganagitti (Jain)	Hampi	• Built-in 1385 AD - An inscription on the site states that the temple was built by Iruga, in the reign of King Harihara II, a UNESCO World Heritage site.
Chandranath (Jain)	Mudabidri	• Built-in 1429–1430 AD. - Known locally as the 1000-pillared temple.
Temple tank (Pushkarni)	Hampi	• Built-in 16th century AD. - Stepped temple tank in Hoysala style, UNESCO World Heritage site.
Bahubali monolith (Jain)	Karkala	• Built in 1581 AD. - The Basadi is also called Ratnatraya Badasi and was built by Rangapparajodeya. It has shrines for Neminatha, Parsvanatha, and Vardhamana.
Kollur Mookambika	Kollur	• Built-in 1484 AD. - The temples were built by Hadavalli prince Salvendra

Q57. Answer: (b) Magnesium Hydroxide

The correct answer is Magnesium Hydroxide.

• Magnesium Hydroxide is used as an Antacid.

Key Points

• An antacid is a substance which neutralizes stomach acidity and is used to relieve heartburn, indigestion, or an upset stomach.
• Some antacids have been used in the treatment of constipation and diarrhea.
• Antacids are over-the-counter (OTC) medications that help neutralize stomach acid.
• They work differently from other acid reducers such as H2 receptor blockers and proton pump inhibitors (PPIs). Those drugs work by reducing or preventing the secretion of stomach acid.

Additional Information

• Antacids can be used to treat symptoms of excess stomach acid, such as:
• Acid reflux: which can include regurgitation, bitter taste, persistent dry cough, pain when lying down, and trouble swallowing.
• Heartburn: which is a burning sensation in your chest or throat caused by acid reflux.
• Indigestion: which is a pain in your upper gut that can feel like gas or bloating.

Important Points

• Antacids usually come in the following drug forms:
• Liquid.
• Chewable gummy or tablet.
• A tablet that you dissolve in water to drink.

NOTE:-

Al(OH)3 isnn also used for the same purpose but answer is according to official Answer key.

Q58. Answer: (d) Testosterone

The correct answer is Testosterone.

• Testosterone causes changes in the appearance seen in boys at the time of puberty.
• Puberty is the process of physical changes through which a child's body matures into an adult body capable of sexual reproduction.

Key Points

• For guys, these hormones travel through the blood and give the testes the signal to begin the production of testosterone and sperm.

• Testosterone is the hormone that causes most of the changes in a guy's body during puberty.

• Sex hormones are chemical substances produced by sex organs.

• For example, Testosterone is the male sex hormone produced by the testis, and estrogen is the female sex hormone produced by the ovary. These hormones affect the sexual features of an organism.

Additional Information

• Functions of sex hormones:

• Testosterone: This hormone brings about secondary sex characters in boys such as the growth of a beard, the voice becoming hoarse, development of reproductive organs, etc.

• Oestrogen: This hormone is responsible for the development of secondary sexual characters in females such as the enlargement of breasts, development of female reproductive organs, etc.

Important Points

Name	Details
Prolactin	• Prolactin, also known as lactotroph, is a protein best known for its role in enabling mammals, usually females, to produce milk. - It is influential in over 300 separate processes in various vertebrates, including humans.
Adrenaline	• Adrenaline, also known as epinephrine, is a hormone and medication which is involved in regulating visceral functions. - Adrenaline is normally produced both by the adrenal glands and by a small number of neurons in the medulla oblongata.
Estrogen	• Estrogen is a kind of hormone that has an important role in the health of women. - There are 3 types of estrogen: estrone, estradiol, and estriol. - They affect the sexual and reproductive development in girls and women. The ovaries make most of the estrogen in your body.

Q59. Answer: (d) Ohm

The correct answer is Ohm.

• The SI unit of resistance is Ohm.

Key Points

• Resistance is a measure of the opposition to current flow in an electrical circuit.

• Resistance is measured in ohm, symbolized by the Greek letter omega (Ω).

• Ohms are named after Georg Simon Ohm (1784-1854), a German physicist who studied the relationship between voltage, current, and resistance.

• The resistance formula is as follows:

• Resistance = voltage drop across a resistor/ current flowing through a resistor. R = V/I R = resistance (Ohms, Ω).

Additional Information

Unit	Details
Ampere	• The ampere, often shortened to amp, is the base unit of electric current in the International System of Units. - It is named after Andre-Marie Ampere, French mathematician and physicist, considered the father of electromagnetism along with the Danish physicist Hans Christian Qrsted.
Coulomb	• coulomb, unit of electric charge in the meter-kilogram-second-ampere system, the basis of the SI system of physical units. - It is abbreviated as C. - The coulomb is defined as the quantity of electricity transported in one second by a current of one ampere.

Volt	• The volt (symbolized V) is the Standard International (SI) unit of electric potential or electromotive force. - Voltages are sometimes expressed in units representing power-of-10 multiples or fractions of one volt. - A kilovolt (symbolized kV) is equal to one thousand volts (1 kV = 103 V).

Q60. Answer: (a) 13.5 Mole

The correct answer is 13.5 Mole.

• 13.50 Moles are present in 54g of He.

Key Points

• A number of grams of Helium (He) = 54 gm.

• Molecular mass is the sum of total protons and neutrons.

• The molecular mass of Helium = 2 x 2 = 4.

• Now multiply the mass with a number of elements we get = 4 x 1 = 4.

• One mole is equal to the total mass of the molecule.

• We know one mole is equal to 4 gm of Glucose molecule.

• Now a number of moles in 54 gm of Helium is (n) = 54/4 n = 13.5 moles.

• The number of moles in 54 gm is 13.5 moles.

Additional Information

• Helium is a chemical element with the symbol He and atomic number 2.

• It is a colorless, odorless, tasteless, non-toxic, inert, monatomic gas, the first in the noble gas group in the periodic table.

• Its boiling and melting point are the lowest among all the elements.

Q61. Answer: (c) 100 J

The correct answer is 100 J.

Key Points

If

• Force = 10 N and

• distance = 10 m

• then the work done by the force will be 100 J.

• Here the unit of work is Newton- metre (Nm) or joule (J).

• 100 Joule is the amount of work done on an object when a force of 10 N replaces it by 10 metre with the line of action of the force.

• The work done by a force can be either zero or negative or positive.

• Hence, 100 Joule is the amount of work done when a body moves under a force of in a distance of 10 metre in the direction of the force.

Q62. Answer: (c) 99%

The correct answer is 99%.

• 99% of the share of Government of India in NABARD.

Key Points

• The Committee was formed on 30 March 1979, under the Chairmanship of Shri B. Sivaraman, a former member of the Planning Commission, Government of India.

• National Bank For Agriculture & Rural Development (NABARD) is set up as an apex Development Bank by the Government of India with a mandate for facilitating credit flow for promotion and development of agriculture, cottage, and village industries.

• The NABARD its headquarters is located in Mumbai. And its agency executive (Chairperson) is Harsh Kumar Bhanwala.

Additional Information

• Key Achievements of NABARD are:

• Provision of refinances support.

• Improving rural infrastructure.

• Preparation of credit plans at a district level and encouraging banks to achieve these targets.

• Supervision of Regional Rural Banks (RRBs) and Cooperative Banks.

• Development of sound banking practices within the economically backward sections of India.

• NABARD has designed the Kisan Credit Card that has benefitted crores of farmers in the country.

YourMockTest.com - Free Study Material

Q63. Answer: (a) 22 km/h, 50 m

Shortcut Trick

Let the speed of the train be S km/h.

Since the train and persons move in the same direction, relative speeds are (S − 2) and (S − 4).

Distance (Length) is constant: (S − 2) × 9 = (S − 4) × 10 => 9S − 18 = 10S − 40 => S = 22 km/h.

Length = (22 − 2) × (5/18) × 9 = 20 × (5/18) × 9 = 50 m.

Therefore The correct answer is 22 km/h, 50 m.

Alternate Method

Given: Speed of Person 1 = 2 km/h, Time 1 = 9 s; Speed of Person 2 = 4 km/h, Time 2 = 10 s.

Formula Used: Distance = Relative Speed × Time

=> Let Train Speed = S km/h and Length = L m.

=> L = (S − 2) × (5/18) × 9 --- (i)

=> L = (S − 4) × (5/18) × 10 --- (ii)

=> (S − 2) × 9 = (S − 4) × 10

=> 9S − 18 = 10S − 40

=> S = 22 km/h

=> L = (22 − 2) × (5/18) × 9 = 20 × 5/2 = 50 m

Therefore The correct answer is 22 km/h, 50 m.

Additional Information

Relative Speed

When two objects move in the same direction, relative speed = S1 − S2. When they move in opposite directions, relative speed = S1 + S2.

Unit Conversion

To convert km/h to m/s, multiply by 5/18. To convert m/s to km/h, multiply by 18/5.

Train Crossing Objects

When a train crosses a pole or person, distance = length of train. When it crosses a platform or bridge, distance = length of train + length of platform.

Q64. Answer: (c) Both 1 and 2 follow

The statement highlights the problem of wide-ranged cheating in colleges and its effect.

• The statement suggests that copying in colleges has resulted in poor quality of students at the higher education level. This implies that such malpractices have an effect on the quality of students opting for higher education. Thus, conclusion I follows.

• The statement implies the effect of copying on the quality of higher education. Therefore, it also means that there is a necessity to take some measures to tackle the situation. Thus, Conclusion II also follows.

Hence the correct answer is option 3.

Q65. Answer: (a) Rs. 3600, 3000

Shortcut Trick

Ratio of principal parts P1 : P2 = 1 / (R1 × T1) : 1 / (R2 × T2)

P1 : P2 = 1 / (10 × 3) : 1 / (9 × 4) = 1/30 : 1/36

Multiplying by 180 (LCM of 30 and 36), the ratio becomes 6 : 5.

Total units = 6 + 5 = 11 units → Rs. 6,600, so 1 unit = Rs. 600.

P1 = 6 × 600 = Rs. 3,600 and P2 = 5 × 600 = Rs. 3,000.

Therefore The correct answer is Rs. 3600, Rs. 3000.

Alternate Method

Given:

Total Sum = Rs. 6,600

Part 1: Rate (R1) = 10%, Time (T1) = 3 years

Part 2: Rate (R2) = 9%, Time (T2) = 4 years

Formula Used:

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

Let the first part be P1 and the second part be P2.

=> (P1 × 10 × 3) / 100 = (P2 × 9 × 4) / 100

=> 30 × P1 = 36 × P2

=> P1 / P2 = 36 / 30 = 6 / 5

=> Let P1 = 6x and P2 = 5x

=> 6x + 5x = 6,600

=> 11x = 6,600 => x = 600

=> P1 = 6 × 600 = Rs. 3,600

=> P2 = 5 × 600 = Rs. 3,000

Therefore The correct answer is Rs. 3600, Rs. 3000.

Additional Information

Simple Interest Concept

Simple Interest is calculated only on the Principal amount for the entire duration. Formula: SI = (P × R × T) / 100.

Inverse Ratio Rule

When interests are equal for different parts, the Principal amounts are in the inverse ratio of the product of Rate and Time: P1 : P2 : P3 = (1/R1T1) : (1/R2T2) : (1/R3T3).

Amount Calculation

Total Amount (A) is the sum of Principal and Simple Interest: A = P + SI.

Q66. Answer: (a) C

The logic followed here is:-

• The circle moves in the clockwise direction

• top right to bottom right,

• then bottom right to bottom left,

• then bottom left to top left and

• then top left to top right.

• The square moves in the anticlockwise direction

• bottom right to middle right,

• then middle right to top right,

• then top right to top middle and

• top middle to top left.

Hence, "option 1" is the correct answer.

Q67. Answer: (d) Sheffield Football Club

The correct answer is Sheffield Football Club

• The first football club in the world, which was established in England in 1857, was Sheffield Football Club.

Key Points

• Two members, Nathaniel Creswick and William Prest formed the Sheffield Football Club.

• The inaugural meeting of the club took place on 24 October 1857 at Parkfield House in the suburb of Highfield in Sheffield.

• Creswick and Prest were responsible for drawing up the club's rules of play, which were decided upon at the club's AGM on 21 October 1858, and published the following year.

• On 2 January 1865, the club played its first fixture outside Sheffield against Nottingham playing eighteen-a-side under Nottingham Rules.

Additional Information

Club Name	Details
Huddersfield Football Club	• Huddersfield Town Association Football Club is an English professional football club based in Huddersfield, West Yorkshire. - It was founded on 15 August 1908, it entered the Football League in 1910.
Manchester United Football	• Manchester United Football Club is a professional football club based in Old Trafford, Greater Manchester, England. - The club was founded in 1878, Newton Heath, Manchester, United Kingdom. - The club founders are Lancashire and Yorkshire Railway.

Chelsea Football Club	• Chelsea Football Club is an English professional football club based in Fulham, West London. - It was founded in 1905, the club competes in the Premier League, the top division of English football. - Club founders are Gus Mears, Joseph Mears.

Q68. Answer: (d) 78°C

The correct answer is 78°C.

• The boiling point of ethanol is 78°C.

Key Points

• Ethanol is a renewable fuel made from corn and other plant materials.

• The most common blend of ethanol is E10 (10% ethanol, 90% gasoline).

• Ethanol is also available as E85 (or flex fuel) a high-level ethanol blend containing 51% to 83% ethanol, depending on geography and season for use in flexible fuel vehicles.

• It is simple alcohol with the chemical formula C2H6O. Its formula can be also written as CH 3−CH 2−OH or C 2H 5OH and is often abbreviated as EtOH.

Additional Information

Q69. Answer: (d) 17

Shortcut Trick

Using the product formula of numbers:

Other number = (L.C.M. × H.C.F.) ÷ Given number

Other number = (68 × 5) ÷ 20 = 340 ÷ 20 = 17

Therefore The correct answer is 17.

Alternate Method

Given:

=> L.C.M. = 68

=> H.C.F. = 5

=> First number (A) = 20

Formula used:

=> Product of two numbers = L.C.M. × H.C.F.

=> A × B = L.C.M. × H.C.F.

Calculations:

Let the second number be B.

=> 20 × B = 68 × 5

=> 20 × B = 340

=> B = 340 ÷ 20

=> B = 17

Therefore The correct answer is 17.

Additional Information

Product of Numbers Property

For any two positive integers a and b, H.C.F.(a, b) × L.C.M.(a, b) = a × b.

Co-prime Numbers Relationship

If two numbers are co-prime, their H.C.F. is always 1, and their L.C.M. is equal to their product.

Q70. Answer: (b) 15 January

The correct answer is 15 January.

• On 15th January the National Army Day was observed in India.

Key Points

• Army Day is celebrated on 15 January every year in India, in recognition of Field Marshal Kodandera M.

• On 15 January 2021, India celebrated its 73rd Indian Army Day in New Delhi.

• Gallantry awards and Sena medals are also awarded on this day.

Additional Information

• The Indian Army was founded almost 126 years ago by the British on April 1, 1895.

YourMockTest.com — Free Study Material

• The Indian army was established on 1st April, but Army Day in India is celebrated on 15th January.
• Field Marshal K. M. Cariappa became the first Indian Army Chief of Independent India on 15 January 1949.
• The transfer of power of the army in the hands of an Indian citizen on 15 January is marked as Army day in the country.
• Cariappa led the Indian Army on the western border in the Indo-Pak war in 1947.

Q71. Answer: (d) 15

Shortcut Trick
In a proportion, the product of the means equals the product of the extremes.
Logic: $5 \times 27 = 9 \times x$
=> $x = (5 \times 27) \div 9 = 5 \times 3 = 15$
Therefore The correct answer is 15.
Alternate Method
Given: 5 : 9 : : x : 27
Formula Used: Product of Extremes = Product of Means ($a \times d = b \times c$)
=> 5 / 9 = x / 27
=> $x = (5 \times 27) / 9$
=> $x = 5 \times 3$
=> x = 15
Therefore The correct answer is 15.
Additional Information
Fourth Proportional
If four quantities a, b, c, and d are in proportion (a:b :: c:d), then d is called the fourth proportional to a, b, and c.
Mean Proportional
The mean proportional between two numbers a and b is given by $\sqrt{(a \times b)}$.
Third Proportional
If a, b, and c are in continued proportion (a:b :: b:c), then c is the third proportional where $c = b^2 / a$.

Q72. Answer: (c) 8V

Shortcut Trick
Volume of a cube is proportional to the cube of its side (s^3).
If the side is doubled (2 times), the volume increases by $(2)^3$ times.
New Volume = 8 × Original Volume = 8V.
Therefore The correct answer is 8V.
Alternate Method
Given: Original side = s, Original volume = V.
Formula Used: Volume of a cube = $(side)^3$
=> $V = s^3$
=> New side (s') = 2s
=> New Volume (V') = $(s')^3 = (2s)^3$
=> $V' = 8 \times s^3$
=> V' = 8V
Therefore The correct answer is 8V.
Additional Information
Total Surface Area of a Cube
The total surface area (TSA) is given by $6 \times s^2$. If the side is doubled, the area becomes 4 times.
Diagonal of a Cube
The length of the longest diagonal of a cube is $\sqrt{3} \times s$.
Lateral Surface Area
The area of the four vertical faces is given by $4 \times s^2$.

Q73. Answer: (b) Only argument I is strong

The statement makes a suggestion to walk barefoot on grass, highlighting that it is good for health.
• Argument I agrees to this point and further adds that walking on grass is good because it gives energy from the earth. It points

out the benefits. Thus, Argument I is strong.

• Argument II disagrees with the given statement, but it does not make a valid point to justify the disagreement. Having other ways to create good health need not imply that we need to reject this way. Thus, argument II is not strong.

Hence the correct answer is option 2.

Q74. Answer: (b) Beyond C

The correct answer is Beyond C.

Key Points

• A concave mirror is a type of spherical mirror in which, the reflecting surface is the inner curved surface of the sphere.

• The incident light is reflected inwards because of its shape. Thus, such mirrors are also called converging mirrors.

• A concave mirror forms different images which depend on the distance between the object and the mirror.

• In a concave mirror, the object should be placed beyond C to obtain a real inverted and smaller image between C and F.

Additional Information

• Ray diagram:

Q75. Answer: (a) 312

Given:

30% number is more than 240

Calculation:

According to the question

=>240 + (240 × 30/100)

=> 240 + 72

=> 312

Therefore The required number is 312

Q76. Answer: (a) B

The logic followed here is:-

One line became two line which is given below:-

Two lines became one line and one star which is given below:-

one line and one star became two lines and one star which is given below:-

Two lines and one star became one line and two stars which is given below:-

One line and two stars became two lines and two stars which is given below:-

Hence, "option 1" is the correct answer.

Q77. Answer: (c) Santoor

The correct answer is Santoor.

• Santoor is known as Shattantri Veena in Sanskrit text and has 72 strings.

Key Points

• The santoor is a trapezoid-shaped hammered dulcimer or string musical instrument made of walnut, with seventy-two strings.

• It is the national musical instrument of Iran and is also native to Jammu and Kashmir.

• It dates back to ancient times and was called Shatha Tantri Veena in ancient Sanskrit texts.

• A primitive ancestor of this type of instrument was used in Mesopotamia (1600-911 BC) and Babylonia.

Additional Information

Important Points

Instrument Name	Details
Khanjari	• The khanjari is a small frame drum of southern India that has a single set of jingles. - A circular frame over one edge of which a circular piece of skin is stretched and glued. - It is a drum-like instrument, usually made of neem or jackfruit wood, one side of which is covered with animal membrane, while the other side is left uncovered.

YourMockTest.com — Free Study Material

Sarood	• The sarod is a stringed instrument, used mainly in Hindustani music on the Indian subcontinent. - The design of the Sarood instrument depends on the school (Gharana) of playing. - The design of this early model is generally credited to Niyamatullah Khan of the Lucknow Gharana as well as Ghulam Ali Khan of the Gwalior-Bangash Gharana.
Sitar	• The sitar is a plucked stringed instrument, originating from the Indian subcontinent, used in Hindustani classical music. - The instrument was invented in medieval India and flourished in the 16th and 17th centuries and arrived at its present form in 18th-century India.

Q78. Answer: (b) 33

The correct answer is 33.

• The electronic configuration of an element is 1s2 2s2 2p6 3s2 3p3. 33 will be the atomic number of the element just below the said element in the periodic table.

Key Points

• The electron configuration is the distribution of electrons of an atom or molecule in atomic or molecular orbitals.

• The atomic number of the above element is 2+2+6+2+3=15.

• The atomic number of the element below the given element is 15+18=33.

Q79. Answer: (a) Nidhi Chanani

The correct answer is Nidhi Chanani.

• The author of Pashmina, the compassionate story of an Indian American girl was Nidhi Chanani.

Key Points

• Nidhi Chanani was born in 1980 in Kolkata.

• Her debut graphic novel Pashmina was released by First Second Books in October 2017.

• Awards of Nidhi Chanani are:

• In 2012 White House Champion of Change.

• In 2017 Virginia Library Association Graphic novel Diversity Award in the youth category.

• In 2018 South Asia Book Award Honor (Grade 3-6).

Additional Information

Person Name	Details	Famous Book
Diksha Basu	• Diksha Basu is an Indian American writer and actor. - Her debut novel Opening Night was published by HarperCollins and launched in 2012 by Chetan Bhagat.	• Opening Night (2012). - The Windfall (2017). - Destination Wedding (2020).
Roshani Chokshi	• Roshani Chokshi is an American children's book author and a New York Times bestselling author. - She was born on 14 February 1991, St. Louis, Missouri, United States.	• The Gilded Wolves. - Aru Shah and the Song of Death. - A Crown of Wishes.

Q80. Answer: (a) 6

Calculation:

=> $\sqrt{1296} = (?)^2$

=> $36 = (?)^2$

=> $6 = ?$

Therefore The value of ? is 6

Q81. Answer: (a) Only I follows.

The least possible Venn diagram is as follows:

Conclusion:

I. All blue being yellow is a possibility. → True (All blue is red, no red is green, all green are yellow then we can say that all blue being yellow is a possibility is true.)

The possibility diagram is as follows:

• here we can see that all blue can be yellow

II. No blue is yellow. → False (it is possible but not definite.)

Hence, "option 1" is the correct answer.

Q82. Answer: (c) Hydra

The correct answer is Hydra.

Key Points

• Hydra can reproduce by the process of regeneration and budding.

• Hydra is a small freshwater organism. They are native to temperate and tropical regions.

• When the food is plentiful the asexual reproduction occurs in hydra.

• The process is done by producing buds in the body wall. It grows as a mini form of adult and breaks apart when gets mature.

• Hydra goes through tissue regeneration when injured. If the hydra is cut in half, each part will regenerate as a whole new hydra. This regeneration occurs without the cell division process.

Additional Information

• Yeast:

• While most yeasts reproduce by budding, some also reproduce by fission.

• Plasmodium:

• Plasmodium reproduces both by sexual and asexual methods.

• Planaria:

• Planaria reproduces by methods like fragmentation and spontaneous dropping tails.

• Amoeba:

• An amoeba often called an amoeboid, is a type of cell or unicellular organism which has the ability to alter its shape, primarily by extending and retracting pseudopods.

Important Points

Structure of Hydra:

Q83. Answer: (c) Only statements B and C are true

The correct answer is Only statements B and C are true.

Key Points

• The value of 'g' on Mount Everest is <g:

• value of acceleration due to gravity on Mount Everest is <g.

• Explanation: As we move above and below the surface of the earth, acceleration due to gravity decreases.

• Hence, statement B is correct.

• A ball thrown vertically comes back to the ground after 15 seconds. Its velocity is 150 m/s.

• Time to reach Maximum height:

• t = 15/2 = 7.5 s.

• v = 0 (at the maximum height)

• a = – 10 m s^{-2}

• Since the ball is thrown upwards, the acceleration is negative.

• Velocity:

• Using, v = u + at, we get

• 0 = u – 10 × 7.5

• or, u = 75 ms^{-1}

• Thus, the velocity with which it was thrown up = 75ms^{-1}

• Hence, statement C is correct.

• Maximum height it reaches:

• Using, 2aS = $v^2 – u^2$, we get

• S = v^2- u^2/2a

• S = 0 – 75 × 75/(- 2× 9.8)

• S = 276 m

• Thus, Maximum height it reaches = 287 m.

Q84. Answer: (d) 7/12

Given:

Shalini had a piece of cake = 1/6^(th)

Tanveer had a piece of cake = 1/4^(th)

Calculation:

According to the question

=> (1 – (1/6 + 1/4))

=> (12 – (2 + 3))/12

=> 7/12

Therefore Rashid's piece of cake is 7/12

Q85. Answer: (d) Pratibha Patil

The correct answer is Pratibha Patil.

Key Points

• Pratibha Patil is the first woman President of India.

• She was born on 19 December 1934.

• She is an Indian politician who served as the 12th President of India from 2007 to 2012.

• She is the only woman to hold the office of the president of India.

• She previously governed as the Governor of Rajasthan from 2004 to 2007

• She was born in the village Nadgaon of Muktainagar taluka in the Jalgaon district of Maharashtra in India.

Additional Information

Person Name	Details
Smita Patil	• Smita Patil was born on 17 October 1955 in Pune, Bombay State, India. - Smita Patil was an actress. - In 2012, the Smita Patil International Film Festival Documentaries and Shorts were initiated in her honor. - On the occasion of 100 years of the Indian cinema, a postage stamp bearing her face was released by India Post to honor her on 3 May 2013.
Indira Gandhi	• Indira Gandhi was an Indian politician and a central figure of the Indian National Congress. - She was the 3rd prime minister of India and was also the first and, to date, only female prime minister of India. - Indira Gandhi was born on 19 November 1917, Prayagraj.

Q86. Answer: (b) Congress and JD (S) alliance

The correct answer is Congress and JD (S) alliance.

• As of June 2018 Congress and JD (S) alliance political party is in power in Karnataka.

• In June 2018 the chief Minister of Karnataka is H.D. Kumaraswamy.

Key Points

• The BJP has won 104 seats. Congress has won 78 seats. The JD(S) has won 37 seats and the others 3 seats.

• In assembly, Congress has got 22 berths while the JDS has12 seats.

• As of now the chief minister of Karnataka is Basavaraj Bommai from 28 July 2021.

Additional Information

• The 1st chief minister of Karnataka in K. Chengalaraya Reddy served as a chief minister from 25 October 1947 to 30 March 1952.

Q87. Answer: (b) 4

Shortcut Trick

Any number divisible by 8 must be an even number.

Even numbers can only end in 0, 2, 4, 6, or 8.

Among the given options, only 4 is an even number.

Therefore The correct answer is 4.

Alternate Method

Given: A number is divisible by 8.

Property: The multiples of 8 are 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, ...

=> The unit digit of a number divisible by 8 must be 0, 2, 4, 6, or 8.

=> Looking at the options: 5, 4, 1, 3.

=> 4 is the only even digit present in the options.

Therefore The correct answer is 4.

Additional Information

Divisibility Rule of 8

A number is divisible by 8 if the number formed by its last three digits is divisible by 8.

Divisibility Rule of 4

A number is divisible by 4 if the number formed by its last two digits is divisible by 4.

Even Number Rule

All multiples of an even number are always even, meaning they must end in 0, 2, 4, 6, or 8.

Q88. Answer: (a) Slim

The logic followed here is:-

Big is the synonym of large.

Similarly,

Thin is the synonym of slim.

Hence, "option 1" is the correct answer.

Q89. Answer: (d) 216

Shortcut Trick

To find the Least Common Multiple (LCM), pick the largest number 72 and check its multiples.

72 × 1 = 72 (Not divisible by 27)

72 × 2 = 144 (Not divisible by 27)

72 × 3 = 216 (Divisible by 36 and 27)

Therefore The correct answer is 216.

Alternate Method

Given: Numbers are 36, 27, and 72.

Formula Used: Prime Factorization Method for LCM.

Step-by-step factorization:

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

=> Prime factors of 27 = $3 \times 3 \times 3 = 3^3$

=> Prime factors of 72 = $2 \times 2 \times 2 \times 3 \times 3 = 2^3 \times 3^2$

=> LCM = $2^3 \times 3^3$ (Highest power of each prime factor)

=> LCM = $8 \times 27 = 216$

Therefore The correct answer is 216.

Additional Information

LCM and HCF Relationship

For any two numbers 'a' and 'b', the product of the numbers is equal to the product of their HCF and LCM: a × b = HCF(a,b) × LCM(a,b).

HCF (Highest Common Factor)

The HCF is the greatest number that divides each of the given numbers. For 36, 27, and 72, the HCF is 9.

Co-prime Numbers

If the HCF of two numbers is 1, they are called co-prime numbers, and their LCM is simply their product.

Q90. Answer: (a) Rs. 40

Shortcut Trick

Ratio of shares: 2 Men = 5 Boys → 1 Man = 2.5 Boys

2 Women = 3 Boys → 1 Woman = 1.5 Boys

Total amount in terms of boys: (6 × 2.5) + (12 × 1.5) + 17 = 15 + 18 + 17 = 50 boys

1 Boy's share = 400 ÷ 50 = Rs. 8

Sum of 1 Man + 1 Woman + 1 Boy = (2.5 + 1.5 + 1) × 8 = 5 × 8 = Rs. 40

Therefore The correct answer is Rs. 40.

Alternate Method

Given: Total amount = Rs. 400. 2 Men = 5 Boys, 2 Women = 3 Boys.

Formula: Total Amount = (No. of Men × Man's share) + (No. of Women × Woman's share) + (No. of Boys × Boy's share)

=> Let share of 1 Boy be b.

=> Share of 1 Man (m) = 5b/2 = 2.5b

=> Share of 1 Woman (w) = 3b/2 = 1.5b

=> Total = (6 × 2.5b) + (12 × 1.5b) + (17 × b) = 400

=> 15b + 18b + 17b = 400 => 50b = 400 => b = Rs. 8

=> m = 2.5 × 8 = Rs. 20, w = 1.5 × 8 = Rs. 12, b = Rs. 8

=> Sum = 20 + 12 + 8 = Rs. 40

Therefore The correct answer is Rs. 40.

Additional Information

Ratio and Proportion

When multiple entities are compared, express all variables in terms of a single common variable to simplify equations.

Unitary Method

Find the value of one unit first by dividing the total value by the total number of ratio parts.

Work and Wages Concept

Wages are usually distributed in the ratio of the work done or efficiency if the time period is constant.

Q91. Answer: (d) 2007

The correct answer is 2007.

• Viswanathan Anand was awarded Padma Vibhushan in the year 2007.

Key Points

• Viswanathan Anand was the undisputed World Champion from 2007-2013 and is one of the greatest talents the game has ever known.

• Viswanathan Anand was born on 11 December 1969 in Chennai, Tamil Nadu, India.

• In April 2006, Anand became the fourth player in history to pass the 2800 Elo mark on the FIDE rating list, after Kramnik, Topalov, and Garry Kasparov.

• He won the FIDE World Rapid Chess Championship in 2003 and 2017, the World Blitz Cup in 2000.

Additional Information

• Chess is a board game played between two players.

• The current form of the game emerged in Southern Europe during the second half of the 15th century after evolving from a similar, much older game of Indian origin.

• When a king is under immediate attack, it is said to be in check. A move in response to a check is legal only if it results in a position where the king is no longer in check.

Important Points

Viswanathan Anand Awards	
Award Name	Year
Chess Oscar	2004, 2007 and 2008
Padma Bhushan	2001
Padma Shri	1988
Arjuna Award for Chess	1985
CNN-IBN Indian of the Year in Sports	2007 and 2012

Q92. Answer: (d) C

The logic followed here is:-

• The elements are moving in the clockwise direction.

Hence, "option 4" is the correct answer.

Q93. Answer: (c) Data in both I and II together is not sufficient

Given:-

Question:- How many students play cricket in the class?

Statement I:- There are 32 boys and 28 girls in the school:- This statement tells us the number of boys and girls in the class, but it does not provide any information about how many boys play cricket. Therefore, by itself, Statement I is not sufficient to answer the question.

Statement II:- Only boys play cricket:- This statement tells us that only boys play cricket, but it does not tell us how many boys are there or how many of those boys play cricket. Therefore, by itself, Statement II is also not sufficient to answer the question.

Both Statements I and II together:- However, even with both statements together, we still do not know how many of the 32 boys actually play cricket. There could be fewer than 32 boys playing cricket, or all 32 boys could play cricket. We need additional information specifying how many of the boys actually play cricket to provide a precise answer.

Hence, Data in both I and II together is not sufficient to answer the question.

Q94. Answer: (d) A

The mirror image for the given figure is below:-

Hence, "option 4" is the correct answer.

Q95. Answer: (d) Between second to 13(3-12)

The correct answer is Between second to 13(3-12).

• Between second to 13(3-12) are the elements of the D block found in the Periodic Table.

Key Points

• The d-block elements are found in groups 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 of the periodic table, d-block elements are also known as the transition metals.

• The d orbital is filled with the electronic shell n-1.

• D block elements are the elements that can be found from the third group to the twelfth group of the modern periodic table.

Additional Information

• There are four series in the d block corresponding to the filling up of 3d, 4d, 5d, or 6d orbitals.

• 3d- Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn.

• 4d- Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd.

• 5d- La, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg.

• 6d- incomplete.

Important Points

Q96. Answer: (d) M

Given letter series:-

• ABCDEFGHIJKLMNOPQRSTUVWXYZ

• 9th letter from the right end = R

• ABCDEFGHIJKLMNOPQRSTUVWXYZ

• 5th letter from the left of R = M

• ABCDEFGHIJKLMNOPQRSTUVWXYZ

Hence, "option 4" is the correct answer.

Q97. Answer: (c) TMRC

The logic followed here is:-

Similarly,

Hence, "option 3" is the correct answer.

Q98. Answer: (b) Pascal

The correct answer is Pascal.

• Pascal is not a unit of temperature.

• A pascal is a pressure of one newton per square meter, or, in SI base units, one kilogram per meter per second squared.

Key Points

• Temperature refers to the hotness or coldness of a body. In specific terms, it is the way of determining the kinetic energy of particles within an object. Faster the movement of particles; more the temperature and vice versa.

• The three most common temperature scales are the Fahrenheit, Celsius, and Kelvin scales.

• The following are a few temperature sensors besides the thermometer.
• Thermocouples.
• Resistor temperature detectors.
• Thermistors.
• Infrared sensors.
• Semiconductors.

Additional Information

Unit	Details
Fahrenheit	• On the Fahrenheit scale, the freezing point of water is at 32ºF and the boiling point is at 212ºF. - The temperature difference of one degree Celsius is greater than a temperature difference of one degree Fahrenheit. - One degree on the Celsius scale is 1.8 times larger than one degree on the Fahrenheit scale 180/100=9/5.
Celsius	• The Celsius scale has a freezing point of water as 0ºC and the boiling point of water as 100ºC. - The temperature difference of one degree Celsius is greater than a temperature difference of one degree Fahrenheit. - One degree on the Celsius scale is 1.8 times larger than one degree on the Fahrenheit scale 180/100=9/5.
Kelvin	• Kelvin scale is the most commonly used temperature scale in science. - The freezing and boiling points of water on this scale are 273.15 K and 373.15 K, respectively.

Important Points

Q99. Answer: (b) 35%

Shortcut Trick

Since the Cost Price (CP) of both cycles is the same (3,500 each), we can use the Average Profit method.

Let the profit percentage of the second cycle be x%.

Average Profit % = (Profit1 + Profit2) ÷ 2

20% = (5% + x%) ÷ 2

40% = 5% + x% => x = 35%.

Therefore The correct answer is 35%.

Alternate Method

Given: CP of each cycle = 3,500 | Total Profit % = 20% | Profit % on 1st cycle = 5%.

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

=> Total Cost Price = 3,500 + 3,500 = 7,000.

=> Total Profit earned = 20% of 7,000 = (20 ÷ 100) × 7,000 = 1,400.

=> Profit from 1st cycle = 5% of 3,500 = (5 ÷ 100) × 3,500 = 175.

=> Required Profit from 2nd cycle = Total Profit − Profit1 = 1,400 − 175 = 1,225.

=> Profit % on 2nd cycle = (1,225 ÷ 3,500) × 100 = 35%.

Therefore The correct answer is 35%.

Additional Information

Equal Cost Price Concept

When the Cost Price of two or more items is the same, the overall profit or loss percentage is simply the arithmetic mean of the individual profit/loss percentages.

Profit and Loss Calculation

Always remember that Profit % and Loss % are calculated on the Cost Price (CP) unless stated otherwise in the question.

Q100. Answer: (b) 138/15

Shortcut Trick

Total length of steel rod = 40(3/5) units

Convert to improper fraction: (40 × 5 + 3) / 5 = 203/5

Divide by 3 for equal pieces: (203/5) ÷ 3 = 203/15

Convert to mixed fraction: 203 ÷ 15 = 13 with remainder 8 → 13(8/15)

YourMockTest.com — Free Study Material

Therefore The correct answer is 13(8/15).

Alternate Method

Given:

Total length of steel rod = 40(3/5)

Number of equal pieces = 3

Formula Used:

Length of each piece = Total Length ÷ Number of pieces

Calculations:

=> Total length = 40 + 3/5 = (40 × 5 + 3) / 5 = 203/5

=> Length of each piece = (203/5) ÷ 3

=> Length of each piece = 203 / (5 × 3)

=> Length of each piece = 203 / 15

=> 203 = 15 × 13 + 8

=> Length = 13(8/15)

Therefore The correct answer is 13(8/15).

Additional Information

Mixed Fraction to Improper Fraction

To convert a(b/c), multiply the whole number 'a' by denominator 'c' and add numerator 'b': (a × c + b) / c.

Division of Fractions

To divide a fraction by a whole number n, multiply the denominator of the fraction by n: (a/b) ÷ n = a / (b × n).

Improper Fraction to Mixed Fraction

Divide the numerator by the denominator. The quotient is the whole number, and the remainder becomes the new numerator.

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

YourMockTest.com — Free Study Material