PRELIMINARY INTERVIEW BOARD

TERRITORIAL ARMY COMMISSION : PRACTICE TEST PAPER - 3

PAPER–1: REASONING & ELEMENTARY MATHEMATICS

A1

Max Time : 2 Hours **(Please Read The Instructions Carefully)** **Max Marks : 100**

Roll No……..

INSTRUCTIONS

1. Paper 1 has two parts: Part I & Part II
   (a) Part I : Reasoning (50 marks)
   (b) Part II: Elementary Mathematics (50 marks)
2. Each section carries 50 objectives type of questions.
3. There will be four possible answers to every question. Candidates are required to fill correct answer in the OMR sheet with Black ball pen.
4. For each correct answer, 1 mark will be granted and 0.33 mark will be deducted for every wrong answer.
5. If a candidate gives more than one answer, it will be treated as a wrong answer and 0.33 mark will be deducted. There will be no penalty for questions left unanswered.
6. Candidates should not mark in the question paper. They can use blank pages provided in the question paper for rough work.
7. To be eligible to qualify, a candidate must obtain minimum 40% marks each in Part I & II separately and a minimum of 50% aggregate in total.

PART–1 : REASONING

Direction In each of the following question a number of series is given with one term missing. Choose the correct alternative that will continue the same pattern.

Q1. 4, 7, 12, 19, 28, ?
(a) 30 (b) 36 (c) 39 (d) 49

Q2. $\frac{4}{9}, \frac{9}{20}, ?, \frac{39}{86}$
(a) $\frac{17}{40}$ (b) $\frac{19}{42}$ (c) $\frac{20}{45}$ (d) $\frac{29}{53}$

Direction In each of the following questions, various terms of an alphabet series are given with one missing term as shown by (?) choose the missing term out of the given alternatives.

Q3. B, D, F, I, L, P, ?
(a) R (b) S (c) T (d) U

Q4. BZA, DYC, FXE, ?, JVI ?
(a) HUG (b) HWG (c) UHG (d) WHG

Q5. m _ nm _ n _ an _ a _ ma _
(a) aamnan (b) ammanm (c) aammnn (d) amammn

Q6. Q1F, S2E, U6D, W21C, ?
(a) Y44B (b) Y66B (c) Y88B (d) Z88B

Direction Choose the correct alternative which shows the same relationship.

Q7. Mountain Valley :: Genius : ?
(a) Brain (b) Idiot (c) Think (d) Intelligence

Q8. House : Garbage :: Ore : ?
(a) Rubbish (b) Gangue (c) Sand (d) Dregs

Q9. Ottawa: Canada :: Canberra : ?
(a) Argentina (b) Switzerland (c) Sri Lanka (d) Australia

Direction Choose the correct alternative which shows the same group relationship.

Q10. Rice: Wheat: Maize : ?
(a) Jowar–Bajra (b) Tobacco (c) Jute (d) Cotton

Q11. Necklace : Ring : Bangle : ?
(a) Belt (b) Ornaments (c) Bracelet (d) Jewellery

Direction Choose the odd one out.

Q12. Find the odd one out.
(a) Eye (b) Ear (c) Nose (d) Brain

Q13. Find the odd one out.
(a) Almirah (b) Rack (c) Safe (d) Cupboard

Directions: In each of the following questions, certain pairs of words are given, out of which the words in all pairs except one, bear a certain common relationship. Choose the pair in which the words are differently related

Q14. (a) Tree : Stem (b)Face : Eye (c) Chair: Sofa (d) Plant : Flower

Q15. (a) Class: Students (b) Sentence : Words (c) Tree: Forest (d) Hour : Minutes

Q16. If in a certain language, MIRACLE is coded as NKUEHRL, then how is GAMBLE coded in that language?
(a) JDOCMF (b) CLEMNK (c) HCPFQK (d) AELGMN

Q17. If BE QUICK is coded as ZC OSGAI, then the code of the last letter of the third word in the sentence I LOVE MY COUNTRY is
(a) A (b) T (c) U (d) W

Q18. If wall' is called window', 'window' is called 'door', 'door' is called 'floor', 'floor' is called 'roof and roof is called ventilator', what will a person stand on?
(a) Window (b) Wall (c) Floor (d) Roof

Q19. If air is called 'green', 'green' is called 'blue', 'blue' s called 'sky', 'sky' is called yellow', yellow' is called is water and water' is called 'pink', then what is the colour of clear sky?
(a) Blue (b) Sky (c) Yellow (d) Water

Q20. Introducing a man, a woman said, "He is the only son of my mother's mother." How is the woman related to the man?
(a) Mother (b) Aunt (c) Sister (d) Niece

Q21. Pointing to a lady on the platform, Manju said, "She is the sister of the father of my mother's son." Who is the lady to Manju?
(a) Mother (b) Sister (c) Aunt (d) Niece

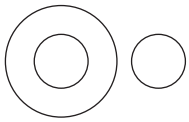
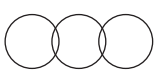
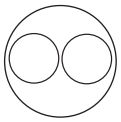
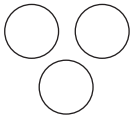
Q22. A, P, R, X, S and Z are sitting in a row. S and Z are in the centre, and A and P are at the ends. R is sitting on the left of A. Then who is sitting on the right of P?
(a) A (b) S (c) X (d) Z

Q23. Daksh is taller than Manick but not as tall as Rohan. Somesh is shorter than Daksh but taller than Farhan. Who among them is the shortest?
(a) Daksh (b) Manick (c) Farhan (d) Cannot be determined

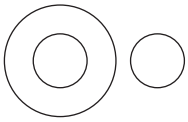
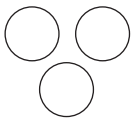
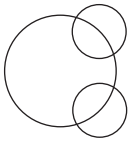
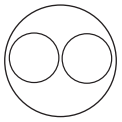
Q24. A villager went to meet his uncle in another village situated 5 km away in the North–east direction of his own village. From there he came to meet his father–in–law living in a village situated 4 km in the south of his uncle's village. How far away and in which direction is he now?
(a) 3 km in the North (b) 3 km in the East (c) 4 km in the East (d) 4 km in the West

Q25. Pinky walks a distance of 600 m towards East, turns left and moves 500 m, then turns left and walks 600 m and then turns left again and moves 500 m and halts. At what distance (in m) is she from the starting point?
(a) 0 (b) 600 (c) 500 (d) 2200

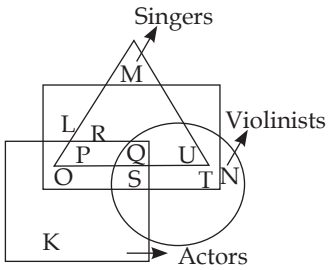
Q26. Which of the following diagrams indicates the best relation between Thief, Criminal and Police?

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

Q27. Which of the following diagrams indicates best relation between Pigeon, Bird and Dog?

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

Q28. In the given figure, which letter represents those Actors who are also Dancers, Singers as well as Violinists?



(a) S (b) Q (c) P (d) U

Q29. In a row of boys, A is fifteenth from the left and B is fourth from the right. There are three boys between A and B. C is just left of A. What is C's position from the right?
(a) 9th (b) 10th (c) 12th (d) 13th

Q30. Forty boys are standing in a row facing the North. Amit is eleventh from the left and Deepak is thirty first from the right end of the row. How far will Shreya, who is third to the right of Amit in the row, be from Deepak?
(a) 2nd (b) 3rd (c) 4th (d) 5th

Q31. Standing on a platform, Amit told Sunits that Aligarh was more than ten kilometres but less than fifteen kilometres from there. Sunita knew that it was more than twelve but less than fourteen kilometres from there. If both of them were correct, which of the following could be the distance of Aligarh from the platform?
(a) 11 km (b) 12 km (c) 13 km (d) 14 km

Q32. An application was received by inward clerk in the afternoon of a week day. Next day he forwarded it to the table of the senior clerk, who was on leave that day. The senior clerk next day evening put up the application to the desk officer. Desk officer studied the application and disposed of the matter on the same day, i.e., Friday. Which day was the application received by the inward clerk?
(a) Monday (b) Tuesday (c) Wednesday (d) Earlier week's Saturday

Q33. If ÷ means ×, × means +, + means – and – means ÷, find the value of 16 × 3 + 5 – 2 ÷ 4.
(a) 9 (b) 10 (c) 19 (d) None of these

Q34. If × means –,+ means ÷, – means × and ÷ means +, then 15 – 2 + 900 + 90 × 100 =?
(a) 190 (b) 180 (c) 90 (d) None of these

Q35. If P denotes 'multiplied by', T denotes 'subtracted from', M denotes 'added to' and B denotes 'divided by', then 28 B 7 P 8 T 6 M 4 = ?
(a) $-\frac{3}{2}$ (b) 30 (c) 32 (d) 34

Q36. Find the missing term.

6	11	25
8	6	16
12	5	?

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

Q37. Find the missing term.

1	3	7
5	12	14
25	?	28
125	192	56

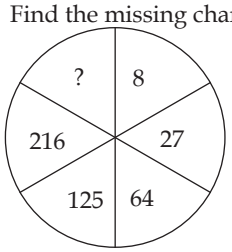
(a) 64 (b) 56 (c) 48 (d) 40

Q38. Find the missing term.

4C	2B	3A
28A	?	45B
7C	5A	15B

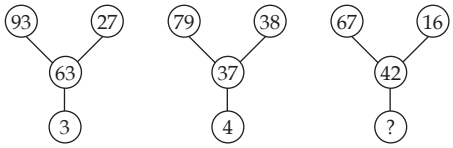
(a) 10C (b) 12C (c) 13C (d) 7C

Q39. Find the missing character in the following figure.



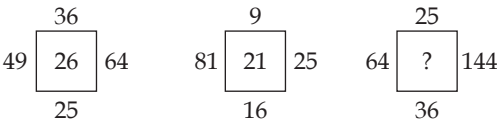
(a) 4 (b) 305 (c) 343 (d) 729

Q40. Find the missing character in the following figure.



(a) 5 (b) 6 (c) 8 (d) 9

Q41. Find the missing character in the following figure.



(a) 19 (b) 23 (c) 25 (d) 31

Direction Consider the given statements to be true and decide which of the given conclusion/assumptions can definitely be drawn from the given statement

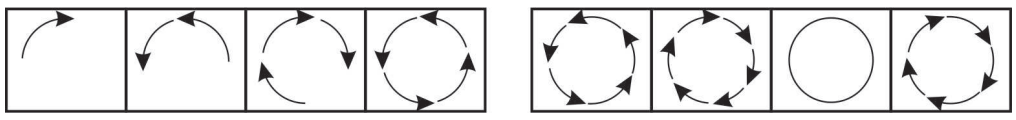
Q42. Statements All pens are roads. All roads are houses.
Conclusions: I All houses are pens.
II. Some houses are pens.
(a) if only conclusion I follows; (b) if only conclusion II follows;
(c) if neither conclusion I nor II follows; (d) if both conclusions I and II follow.

Q43. Statements All good athletes win. All good athletes eat well.
Conclusions : I. All those who eat well are good athletes.
II. All those who win eat well.
(a) if only conclusion I follows; (b) if only conclusion II follows;
(c) if neither conclusion I nor II follows; (d) if both conclusions I and II follow.

Q44. Statements: All birds are tall. Some tall are hens.
Conclusion : I. Some birds are hens.
II. Some hens are tall.
(a) if only conclusion I follows; (b) if only conclusion II follows;
(c) if neither conclusion I nor II follows; (d) if both conclusions I and II follow.

Direction Each of the problems, contains four figures marked as (A), (B), (C), (D) and answer figures marked as (a), (b), (c) and (d). Select a figure from amongst the answer figures which will continue in the same series as given in the problem figure.

Q45. Find out the next figure

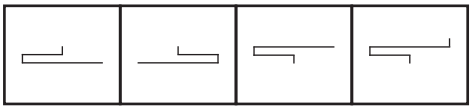


(A) (B) (C) (D) (a) (b) (c) (d)

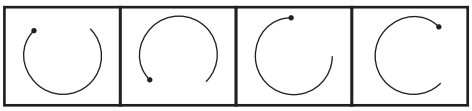
Q46. Find out the next figure

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

Direction Each of the following problems, contains 4 figures marked (a), (b), (c), (d). Find the odd figure.

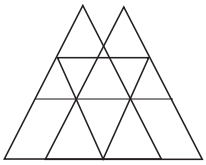
Q47. 

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

Q48. 

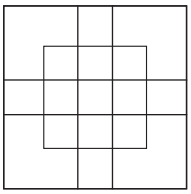
(a) (b) (c) (d)

Q49. How many triangles are there puzzles .



(a) 16 (b) 18 (c) 14 (d) 15

Q50. How many maximum squares are in the following figure?



(a) 18 (b) 19 (c) 25 (d) 27

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PART–II : ELEMENTARY MATHEMATICS

Q51. Find the value of x if $140\sqrt{x} + 315 = 1015$
(a) 25 (b) 30 (c) 35 (d) 40

Q52. The value of $\left(\frac{1}{\sqrt{2}-2} + \frac{1}{\sqrt{2}+2} + \sqrt{2} + 2\right)$ is ;
(a) 2 (b) 4 (c) $\sqrt{2}$ (d) None of these

Q53. The sum of factors of 1520 except the unity is
(a) 3720 (b) 3721 (c) 3190 (d) 3719

Q54. If a* b* c $= \sqrt{\frac{(a+2)(b+3)}{c+1}}$ = then the value of (6* 15* 3) is
(a) 6 (b) 3 (c) 4 (d) can't the overhead

Q55. Lieutenant Kalia when arranged all his 1500 soldiers in such a way that the number of soldiers in a line were the same as there were the number of lines. So he was left with 56 soldiers, who were not a part of this arrangement . The number of lines in this arrangement is:
(a) 44 (b) 36 (c) 38 (d) None of these

Q56. $\sqrt{289} \div \sqrt{x} = \frac{1}{5}$ then the value of x is
(a) $\frac{17}{25}$ (b) $\frac{34}{35}$ **(c)** 235 (d) 7225

Q57. $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$
(a) 1 (b) –1 (c) 0 (d) 2

Q58. If $x^{\frac{1}{3}} + y^{\frac{1}{3}} + z^{\frac{1}{3}} = 0$ then the value of $(x + y + z)^3$ is
(a) 27 (b) $27xyz$ (c) 81 (d) $(xyz)^3$

Q59. If $x = 2^{\frac{1}{3}} + 2^{\frac{-1}{3}}$ then the value of $2x^3$ is:
(a) 6x + 5 (b) $5x + 6$ (c) $6x - 5$ (d) $5x - 6$

Q60. log cot 1° + log cot 2° + ---- log cot 89°
(a) 0 (b) –1 (c) 1 (d) 2

Q61. If $3^n = 27$ then 3^{n-2}.
(a) 3 (b) $\frac{1}{2}$ (c) $\frac{1}{9}$ (d) 9

Q62. If $\sin\theta - \cos\theta = \frac{1}{2}$ then the value of $\sin\theta + \cos\theta$.
(a) $\frac{\sqrt{7}}{2}$ (b) 4 (c) 3 (d) –1

Q63. $\tan(x + y)\ \tan(x - y) = 1$ then the value of $\tan x$.
(a) 1 (b) $\frac{1}{2}$ (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

Q64. The perimeters of two similar triangles ΔABC and ΔPQR are 36 cm. and 24cm. respectively. If PQ = 10 cm. then AB is:
(a) 10cm. (b) 15cm. (c) 20cm. (d) 25cm.

Q65. By selling 9 articles for a rupee, a man incurred a loss of 4% to make a gain of 44% the number of articles to be sold for a rupee is:
(a) 3 (b) 4 (c) 6 (d) 5

Q66. An arc of a circle of radius 42 cm subtends an angle s of 15° at the centre. The length of the arc is [Take $= \frac{22}{7}$]
(a) 11cm. (b) 12cm. (c) $\frac{44}{5}$cm. (d) $\frac{88}{5}$cm.

Q67. If $x = 2 + \sqrt{3}$ then the value of $\sqrt{x} + \frac{1}{\sqrt{x}}$is
(a) $\sqrt{6}$ (b) $2\sqrt{6}$ (c) 6 (d) $\frac{\sqrt{3}}{\sqrt{2}}$

Q68. A can do a piece of work is 6 days , B is 10 days and c is 15 days together they can complete the work in:
(a) 2 (b) 5 (c) 4 (d) 3

Q69. Vinod purchased a Maruti van for ₹ 1,96,000 and rate of depreciation is $14\frac{2}{7}$%. The value of van after 2 years.
(a) ₹1,44,000 (b) ₹1,40,000 (c) ₹1,68,000 (d) ₹1,70,000

Q70. In a school 10% of the number of boys are same in the number as $\frac{1}{4}^{th}$ of the number of girls. What is the ratio of boys to girls in that school?
(a) 3 : 2 (b) 5 : 2 (c) 2 : 1 (d) 4 : 3

Q71. If $a = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ $b = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ then the value of $\frac{a^2}{b} + \frac{b^2}{a}$

(a) 970 (b) 1030 (c) 930 (d) 900

Q72. From a point within an equilateral triangle perpendiculars, drawn to the three sides are 6cm, 7cm, and 8cm. respectively the length of the side of the triangle is

(a) 7cm. (b) 10.5cm. (c) $14\sqrt{3}$ cm. (d) $\frac{14\sqrt{3}}{3}$

Q73. Let $\Delta ABC \sim \Delta DEF$ and then areas be, respectively 64 cm^2 and 121cm^2. If EF = 15.4 cm. find BC.

(a) 10 (b) 12 (c) 13 (d) 11.2

Q74. In ΔABC, $AB = 6\sqrt{3}$ cm. AC = 12cm. BC = 6cm. then find $\angle B$

(a) 120° (b) 60° (c) 90° (d) 45°

Q75. ΔABC is an equilateral Δ of side 2a. Find each of its altitude.

(a) 3a (b) a (c) 4a (d) $\sqrt{3}$ a

Q76. An aeroplane leaves an airport and flies due north at a speed of 1000 km per hour. At the same time another aeroplane leaves the same airport and flies due went at a speed of 1200 km per hour. How far apart will be the two planes after $1\frac{1}{2}$ hours.

(a) 300km (b) 410km (c) $300\sqrt{61}$ km (d) 500km

Q77. Find the values of y for which the distance between the points P (2, –3) and Q (10, y) is 10 units.

(a) (0, 2) (b) (2, 3) (c) (4, 6) (d) (3,–9)

Q78. If the points A (6,1) B (8,2), C (9,4) and D (p,3) are the vertices of a parallelogram taken in order, find the value of p.

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

Q79. In a right ΔABC right angled at B if tan A = 1 value of 2 sin A cos A

(a) 0 (b) 1 (c) –1 (d) 2

Q80. The angle of elevation of the top of a tower from two points at a distance of 4m and 9m from the base of power and in the same straight line with it are complementary. Height of tower is

(a) 8m. (b) 10m. (c) 6m. (d) None of these

Q81. A tangent PQ at a point P of a circle of radius 5cm meets a line through the centre O at a point Q so that OQ = 12cm. length PQ is

(a) 12cm. (b) 13cm. (c) 8.5cm. (d) $\sqrt{119}$ cm.

Q82. The wheels of a car are of diameter 80cm. each. How many complete revolutions does each wheel make in 10 minutes when the car is travelling at a speed of 66km/h.?

(a) 4375 (b) 4300 (c) 4200. (d) 4500

Q83. If the perimeter and the area of a circle arc numerically equal, then the radius of the circle is

(a) 2units (b) π units (c) 4units (d) 7units

Q84. A chord of a circle of radius 15 cm subtends deals an angle 60° at the centre find the area of corresponding minor segment of the circle. (use $\pi = 3.14$ and $\sqrt{3} = 1.73$)

(a) 20cm^2 (b) 15cm^2 (c) 24.44cm^2 (d) 30cm^2

Q85. A metallic sphere of radius 4.2cm. is melted and recast into the shape of a cylinder of radius 6cm. Find the height of the cylinder.

(a) 2.5cm. (b) 2.6cm. (c) 2.744cm. (d) 2.8cm.

Q86. A hemipherical tank full of water is emptied by a pipe at the rate of 3 liters. per second. How many time will it take to empty half the tank if it is 3m in diameter?(Take $\pi = \frac{22}{7}$)

(a) 16.5min. (b) 16min. (c) 17min. (d) 18min.

Q87. A drinking glass is in the shape of a frustum of cone of height 14cm. The diameters of its two circular ends are 4cm and 2cm. Find the capacity of the glass.

(a) 300cm^3 (b) 200cm^3 (c) 308cm^3 (d) 400cm^3

Q88. A die is thrown once. Find the probability of getting a prime number.

(a) $\frac{1}{2}$ (b) 0 (c) 1 (d) 2

Q89. The diagonal of a square A is (a + b). The diagonal of a square whose area is twice the area of square A.

(a) 2(a + b) (b) $2(a + b)^2$ (c) $\sqrt{2}(a + b)$ (d) $\sqrt{2}(a - b)$

Q90. A man spends 40% of his monthly on food and one third of the remaining on transport. If he saves ₹4500 per month, which is half money after spending an food and transport, his monthly salary is

(a) ₹11250 (b) ₹22500 (c) ₹25000 (d) ₹45000

Q91. The selling price of 12 articles is equal to the cost price of 15 articles. The gain percent is

(a) 25% (b) 80% (c) $6\frac{2}{3}\%$ (d) 20%

Q92. In 45 litre of phenol water the ratio of phenol to water is 2:23. The amount of water that should be added to it to make the ratio 3:37 is

(a) 5L. (b) 2L. (c) 4L. (d) 3L.

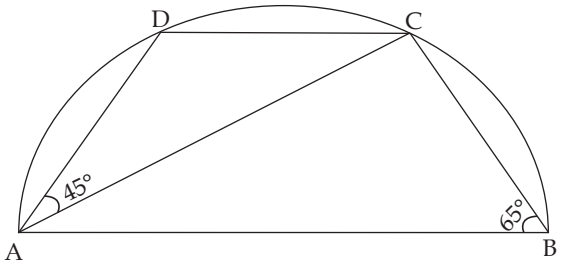
Q93. ABCD is a trapezium such that AB = CD, AD || BC AD = 7cm and BC = 11cm. If area of trapezium ABCD is 54sq.cm. then value of CD is

(a) $\sqrt{29}$cm. (b) $2\sqrt{10}$cm. (c) $\sqrt{21}$cm. (d) None of these

Q94. If $P = \frac{4xy}{x+y}$ then find the value of $\frac{P+2x}{P-2x} + \frac{P+2y}{P+2y}$

(a) 4 (b) 1 (c) 2 (d) 6

Q95. In the given figure, AB is diameter of the circle, C lie on the semicircle. ∠ABC = 65° and ∠CAD=45° find ∠DCA = ?



(a) 45° (b) 25° (c) 20° (d) None of there

Q96. If $x^2 + y^2 + z^2 + 2 = 2(y - x)$ then find the value of $x^3 + y^3 + z^3$:

(a) 0 (b) 2 (c) 3 (d) 1

Q97. Find the greatest number that will divide 148, 246 and 623 leaving remainders 4,6 and 11 respectively.

(a) 12 (b) 16 (c) 14 (d) 15

Q98. Tea costing ₹ 136 a kilogram is mixed with tea costing ₹ 141 a kilogram in the ratio 2:3. The cost of one kilorgram of the mixture is

(a) ₹138 (b) ₹138.50 (c) ₹139 (d) ₹139.50

Q99. A copper wire when bent in the form of square, encloses a region having area 121cm^2. If the same wire is bent in the form of a circle, then the area of the region enclosed by the wire will be (Take $\pi = \frac{22}{7}$)

(a) 154cm^2 (b) 143cm^2 (c) 132cm^2 (d) 121cm^2

Q100. A train cross a telegraph post in 8seconds and a bridge 200m. long in 24 seconds. What is the length of the train?

(a) 100m. (b) 120m. (c) 140m. (d) 160m.

PART–I : REASONING

ANSWER PRACTICE TEST PAPER - 3

1. (c) 39

Explanation:
The pattern is +3, + 5, +7,+ 9, ... So, missing term = 28 + 11 = 39

2. (b) $\frac{19}{42}$

Explanation:
The sequence in the numerators is + 5,+ 10, + 20, and that in the denominators is + 11, + 22, + 44,..... So, the numerator of the missing fraction should 910) i.e. 19 and the denominator should be (be (20+22) Le. 42. Thus, the missing term is $\frac{19}{42}$

3. (c) T

Explanation:

$B \xrightarrow{+2} D \xrightarrow{+2} F \xrightarrow{+3} I \xrightarrow{+3} L \xrightarrow{+4} P \xrightarrow{+4} (T)$

4. (b) HWG

Explanation:

Ist Letter : $B \xrightarrow{+2} D \xrightarrow{+2} F \xrightarrow{+2} (H) \xrightarrow{+2} J$

IInd Letter : $Z \xrightarrow{-1} T \xrightarrow{-1} X \xrightarrow{-1} (W) \xrightarrow{-1} V$

IIIrd Letter : $A \xrightarrow{+2} C \xrightarrow{+2} E \xrightarrow{+2} (G) \xrightarrow{+2} I$

5. (c) aammnn

Explanation: The series is man/man/man/man/man. Thus, the pattern 'man' is repeated.

6. (c) Y88B

Explanation:

Ist Letter : $Q \xrightarrow{+2} S \xrightarrow{+2} U \xrightarrow{+2} W \xrightarrow{+2} (Y)$

IInd Letter : $1 \xrightarrow{\times1\ +1} 2 \xrightarrow{\times2\ +2} 6 \xrightarrow{\times3\ +3} 21 \xrightarrow{\times4\ +4} (88)$

IIIrd Letter : $F \xrightarrow{-1} E \xrightarrow{-1} D \xrightarrow{-1} 11 \xrightarrow{-1} C \xrightarrow{-1} (B)$

7. (b) Idiot

Explanation: The words in each pair are antonyms of each other.

8. (b) Gangue

Explanation: The waste of the house is called garbage. Similarly, the impurities in the ore are called gangue.

9. (d) Australia

Explanation: Ottawa is the capital of Canada and Canberra is the capital of Australia.

10. (a) Jowar–Bajra

Explanation: All are food crops.

11. (c) Bracelet

Explanation: All are items of jewellery

12. (d) Brain

Explanation: All except Brain are sense organs.

13. (b) Rack

Explanation: All except Rack can be closed.

14. (c) Chair: Sofa

Explanation: In all other pairs, second is a part of the first.

15. (c) Tree: Forest

Explanation: In all other pairs, second is a unit of the first.

16. (c) HCPFQK

Explanation: The first, second, third, fourth, fifth, sixth and seventh letters in the word are moved one, two, three, four, five, six and seven steps forward respectively to obtain the corresponding letters of the code.

17. (d) W

Explanation: Each letter in the given message is moved two steps backward to obtain the corresponding letter of the code.

The last letter of the third word in the given sentence is Y, which shall be coded as W

18. (d) Roof

Explanation: A person will stand on the floor and floor' is called roof. So, a person will stand on the roof.

19. (b) Sky

Explanation: The colour of clear sky is 'blue' and as given, 'blue' is called 'sky'. So, the colour of clear sky is 'sky'.

20. (d) Niece

Explanation: Mother's mother– Maternal grandmother; Maternal grandmother's only son– Maternal uncle. So, the man is woman's maternal uncle i.e. the woman is man's niece.

21. (c) Aunt

Explanation: Manju's mother's son–Manju's brother, Manju's brother's father– Manju's father; Manju's father's sister– Manju's aunt.

22. (c) X

Explanation: R is on the left of A i.e. R. A.

A and P are at the ends i.e. P,_ ,_ ,_ , R, A.

S and Z are at the centre i.e. P,_ , S, Z, R, A.

Thus, the arrangement in the row is: P, X, S, Z, R, A. Clearly, X is on the right of P.

23. (d) Cannot be determined

Explanation: In terms of heights, we have:

Rohan > Daksh> Manick, Daksh > Somesh > Farhan.

Thus, the whole sequence may be:

(i) Rohan > Daksh> Manick> Somesh > Farhan; or

(ii) Rohan > Daksh > Somesh > Manick > Farhan; or

(iii) Rohan > Daksh> Somesh > Farhan > Manick.

Thus, either Manick or Farhan may be the shortest. So, the given information is insufficient.

24. (b) 3 km in the East

Explanation: The villager moves from his village at O to his uncle's village at A and thereafter to his father–in–law's village at B. Fig.

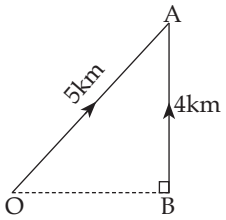
Clearly, ΔOBA is right–angled at B.

So, $OA^2 = OB^2 + AB^2$

$\Rightarrow OB^2 = OA^2 - AB^2$

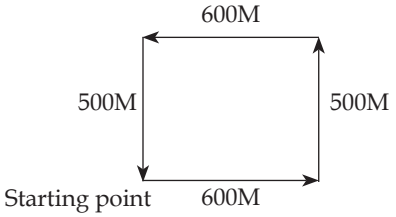
$\Rightarrow OB = \sqrt{(25 - 16)}$ km $= (\sqrt{9})$km = 2 km.

Thus, B is 3 km to the east of his initial position O.



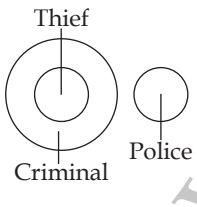
25. (a) 0

Explanation: Pinky is 0M far from the starting point.



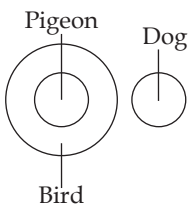
26. (a)

Explanation:



27. (a)

Explanation: Pigeon is a bird and dog is an animal.



28. (b) Q

Explanation: Letter Q represents those Actors who are also Dancers, Singers as well as violinists.

29. (a) 9th

Explanation: Number of boys the row = (15+4+3) = 22.

C is just left of A. So, C is 14th from the left end. Number of boys to the right of C = (22 – 14) = 8

So, C is 9th from the right end of the row.

30. (c) 4th

Explanation: Number of boys to the left of Deepak = (40 – 31) = 9.

So, Deepak is 10th from the left end. Shreya is third to the right of Amit. So, Shreya is 14th from the left end.

Clearly, Shreya is fourth to the right of Deepak.

31. (c) 13 km

Explanation: Clearly, according to Sunita, the distance was more than 12 km but less than 14 km, which is 13 km.

32. (c) Wednesday

Explanation: Desk officer received the application on Friday. Clearly, the application was forwarded to the table of the senior clerk on Thursday. So, the application was received by the inward clerk on Wednesday.

33. (a) 9

Explanation: Using the correct symbols, we have:

Given expression = $16 + 3 - 5 \div 2 \times 4 = 16 + 3 - \frac{5}{2} \times 4$ = 19 – 10 = 9

34. (d) None of these

Explanation: Using the correct symbols, we have:

Given expression = 15 × 2 + 900 ÷ 90 – 100 = 30

+ 10 – 100 = – 60.

35. (b) 30

Explanation: Using the correct symbols, we have:

Given expression = 28 ÷ 7 × 8 – 6 + 4

= 4 × 8 – 6 + 4 = 32 – 6 + 4 = 36 – 6 = 30.

36. (b) 16

Explanation: In the first row, 11 × 2 + (6 ÷ 2) = 25.

In the second row, 6 × 2 + (8 ÷ 2) = 16.

∴ In the third row, missing number = 5 × 2 + (12 ÷ 2) = 10 + 6 = 16.

37. (c) 48

Explanation: The sequence in first column is × 5 .

Thus, 1 × 5 = 5, 5 × 5 = 25, 25 × 5 = 125.
The sequence in third column is × 2. Thus, 7 × 2 = 14, 14 × 2 = 28, 28 × 2 = 56.

The sequence in second column is × 4.

∴ Missing number = 12 × 4 = 48

38. (a) 10C

Explanation: In each row, out of the letters A, B and C, each of these must appear once. In each column, the product of the first and third numbers is equal to the second number. So, the missing number will be (2 × 5) i.e., 10 and the letter will be C.

Thus, the answer is 10C.

39. (c) 343

Explanation: Moving clockwise, the terms are: 2^3, 3^3, 4^3, 5^3, 6^3, 7^3.

40. (d) 9

Explanation: We have: 93 – (27 + 63) = 3;

79 – (38 + 37) = 4.

So, missing number 67 – (16 + 42) = 9.

41. (d) 31

Explanation: We have: $\sqrt{36} + \sqrt{64} + \sqrt{25} + \sqrt{49} = 26$;

$\sqrt{9} + \sqrt{25} + \sqrt{16} + \sqrt{81} = 21$.

So, missing number = $\sqrt{25} + \sqrt{144} + \sqrt{36} + \sqrt{64}$

= (5 + 12 + 6 + 8) = 31.

42. (b) if only conclusion II follows;

Explanation: Since both the premises are universal and affirmative, the conclusion must be universal affirmative and should not contain the middle term. So, it follows that 'All pens are houses'. II is the converse of this conclusion and so it holds. Since the term houses' is distributed in I without being distributed in any of the premises, so I does not follow.

43. (c) if neither conclusion I nor II follows;

Explanation: Since the middle term 'good athletes' is distributed twice in the premises, the conclusion must be particular and should not contain the middle term. So it follows that 'Some of those who win, eat well'

44. (b) if only conclusion II follows;

Explanation: Since the middle term 'tall' is not distributed even once in the premises, no definite conclusion follows. However, II is the converse of the second premise and so it holds.

45. (d)

Explanation: The figure gets laterally inverted and the number of arrows increases by one in each step.

46. (d)

Explanation: Similar figure repeats in every second step. Each time a particular figure reappears, it gets laterally inverte

47. (d)

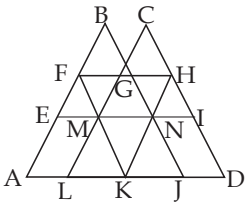
Explanation: Figure (d) consists of five line segments while each one of the other figures consists of four line segments.

48. (b)

Explanation: All other figures can be rotated into each other.

49. (b) 18

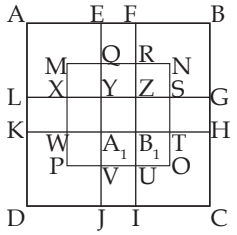
Explanation: We may label the figure as shown.



The simplest triangles are BFG, CGH, EFM, FMG. GMN, GHN, HNI, LMK, MNK and KNJ Le.. 10 in number.
The triangles composed of three coniponents each are FAK and HKD te, 2 in number. The triangles composed of four components each. are BEN, CMI, GLJ and FHK i.e., 4 in number.
The triangles composed of eight components each are BAJ and CLD i.e., 2 in number. Thus, there are 10+2+4+2 18 triangles in the given figure

50. (d) 27

Explanation: The figure may be labelled as shown.



The simplest squares are EFRQ, MQYX, QRZY, RNSZ, LXWK, XYA,W. YZB,A,, ZSTB. SGHT, WA,VP. A,B,UV, B, TOU and VUIJ i.e., 13 in number. The squares having two components each are AEYL, FBGZ, KA,JD and B,HCI i.e., 4 in number.

The squares having four components each are MRB, W, QNTA,, XZUP and YSOV i.e., 4 in number. The squares having seven components each are AFB,K, EBHA,, LZID and YGCJ i.e., 4 in number. There is only one square i.e., MNOP composed of nine components.

There is only one square i.e., ABCD composed of seventeen components.
∴ There are 13+4+4+4+1+1 = 27 squares in the figure.

PART–II : ELEMENTARY MATHEMATICS
ANSWER PRACTICE TEST PAPER - 3

51. (a) *25*

Explanation:

$140\sqrt{x} + 315 = 1015$

$140\sqrt{x} = 1015 - 315$

$140\sqrt{x} = 700$

$\sqrt{x} = \frac{\cancel{700}^{5}}{\cancel{140}_{1}}$

$\sqrt{x} = 5$

$x = 25$ *(squaring both sides)*

52. (a) *2*

Explanation:

$$\frac{1}{\sqrt{2}-2} + \frac{1}{\sqrt{2}+2} + \sqrt{2} + 2$$

$$\left(\frac{\sqrt{2}+2+\sqrt{2}-2}{(\sqrt{2}-2)(\sqrt{2}-2)}\right) + \sqrt{2} + 2$$

$$= \frac{2\sqrt{2}}{\sqrt{2}^2 - 2^2} + \sqrt{2} + 2$$

$$= \frac{2\sqrt{2}}{2-4} + \sqrt{2} + 2$$

$$= \frac{\cancel{2}\sqrt{2}}{\cancel{-2}} + \sqrt{2} + 2$$

$$= -\sqrt{2} + \sqrt{2} + 2 = 2$$

53. (d) *3719*

Explanation:

2	1520
2	760
2	380
2	190
5	95
	19

$3950 = 2^4 \times 5^1 \times 19^1$

$$\text{sum of factors of } 1520 = \frac{(2^{4+1}-1)(5^{1+1}-1)(19^{1+1}-1)}{(2-1)(5-1)(19-1)}$$

$$= \frac{(2^5-1)(5^2-1)(19^2-1)}{1 \times 4 \times 1 \times 8}$$

$$= \frac{31 \times \cancel{24} \times \cancel{360}}{1 \times \cancel{4} \times \cancel{18}} = 3720$$

If $N = a^p b^q c^r$

$$\text{sum of factors} = \frac{(a^{p+1}-1)(b^{q+1}-1)(c^{r+1}-1)}{(a-1)(b-1)(c-1)}$$

Now sum of factors (except unity)

$= 3720 - 1 = 3719$

54. (a) *6*

Explanation:

$$a*b*c = \sqrt{\frac{(a+2)(b+3)}{c+1}}$$

$$6*15*3 = \sqrt{\frac{(6+2)(15+3)}{3+1}}$$

$$= \sqrt{\frac{\cancel{2}8 \times 18}{\cancel{4}}} \qquad = \sqrt{36} = 6$$

55. (a) *38*

Explanation:

No of soldiers $= 1500 - 56 = 1444$

Let the number of rows = number of soldiers in 1 row $= x$

$x \times x = 1444$

$x^2 = 1444$

$x = \sqrt{1444}$

2	1444
2	722
19	361
	19

$1444 = \underline{2 \times 2} \times \underline{19 \times 19}$

$\sqrt{1444} = 2 \times 19$

$= 38$

56. (d) 7225

Explanation:

$$\sqrt{289} \div \sqrt{x} = \frac{1}{5}$$

$$\frac{\sqrt{289}}{\sqrt{x}} = \frac{1}{5}$$

$\sqrt{x} = 5 \times \sqrt{289}$

$\sqrt{x} = 5 \times 17$

$\sqrt{x} = 85$

$x = 7225$

57. (a) *1*

Explanation:

$$\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$$

$= (x^{a-b})^{a+b} \times (x^{b-c})^{b+c} \times (x^{c-a})^{c+a}$

$= x^{a^2-b^2} \times x^{b^2-c^2} \times x^{c^2-a^2}$

$= x^{\cancel{a^2}-\cancel{b^2}+\cancel{b^2}-\cancel{c^2}+\cancel{c^2}-\cancel{a^2}}$

$= x^0 = 1$

58. (b) $27xyz$

Explanation: $x^{\frac{1}{3}} + y^{\frac{1}{3}} + z^{\frac{1}{3}} = 0$

$x^{\frac{1}{3}} + y^{\frac{1}{3}} = -z^{\frac{1}{3}} = 0$

Cubing both sides

$(x^{\frac{1}{3}} + y^{\frac{1}{3}})^3 = (-z^{\frac{1}{3}})^3$

$x + y + 3x^{\frac{1}{3}} y^{\frac{1}{3}}(x^{\frac{1}{3}} + y^{\frac{1}{3}}) = -z$

$x + y + 3x^{\frac{1}{3}} y^{\frac{1}{3}}(-z^{\frac{1}{3}}) = -z$

$x + y - 3x^{\frac{1}{3}} y^{\frac{1}{3}} z^{\frac{1}{3}} = -z$

$x + y + z = 3x^{\frac{1}{3}} y^{\frac{1}{3}} z^{\frac{1}{3}}$

cubing both sides

$(x + y + z)^3 = 27xyz$

59. (a) $5 + 6x$

Explanation:

$x = 2^{\frac{1}{3}} + 2^{\frac{-1}{3}}$

Cubing both sides

$x^3 = \left(2^{\frac{1}{3}} + 2^{\frac{-1}{3}}\right)^3$

$x^3 = 2 + 2^{-1} + 3 \times 2^{\frac{1}{3}} \times 2^{\frac{-1}{3}}\left(2^{\frac{1}{3}} + 2^{\frac{-1}{3}}\right)$

$x^3 = 2 + \frac{1}{2} + 3x$

$x^3 = \frac{5}{2} + 3x$

Multiply both sides by 2

$2x^3 = 5 + 6x$

60. (a) 0

Explanation:

$\log\cot1° + \log\cot2° + \ldots \log89°$

$= \log\cot1° \cot2° \ldots\ldots \cot88°\cot89°$

$\log 1 = 0$

$(\cot1° \cot2 °\cot3° \ldots\ldots \cot89° = 1)$

61. (a) 3

Explanation: $3^n = 27$

$3^n = 3^3$ $\quad n = 3$

$3^{n-2} = 3^{3-2} = 3^1 = 3$

$n - 2 = 1 \Rightarrow n = 3$

62. (a) $\frac{\sqrt{7}}{4}$

Explanation:

$\sin\theta - \cos\theta = \frac{1}{2}$

squaring both sides

$(\sin\theta - \cos\theta)^2 = \left(\frac{1}{2}\right)^2$

$\sin^2\theta + \cos^2\theta - 2\sin\theta\cos\theta = \frac{1}{4}$

$1 - 2\sin\theta\cos\theta = \frac{1}{4}$

$-2\sin\theta\cos\theta = \frac{1}{4} - 1$

$\neq 2\sin\theta\cos\theta = \neq \frac{3}{4}$

$2\sin\theta\cos\theta = \frac{3}{4}$

Now $(\sin\theta + \cos\theta)^2 = \sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta$

$= 1 + \frac{3}{4} = \frac{7}{4}$

$\sin\theta + \cos\theta = \frac{\sqrt{7}}{4}$

63. (a) $\frac{1}{2}$

Explanation:

$\tan(x+y)\tan(x-y) = 1$

$x+y+x-y = 1$ $\quad [\tan\theta\tan(90° - \theta) = 1]$

$2x = 1$

$x = \frac{1}{2}$

64. (b) 15

Explanation:

ΔABC & ΔPQR are similar

$\frac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta PQR} = \frac{AB}{PQ}$

$\frac{36}{24} = \frac{AB}{10}$

$AB = \frac{\cancel{36}^{3} \times 10}{\cancel{24}_{2}} = 15$

65. (c) 6

Explanation:

SP of 9 articles = ₹*1*

SP of 1 article= $\frac{1}{9}$

CP of 1 article $= \frac{1}{9} \times \frac{100}{100-4}$

$\frac{1}{9} \times \frac{\cancel{100}^{25}}{\cancel{96}_{24}} = \frac{25}{216}$

Now gain% = 44%

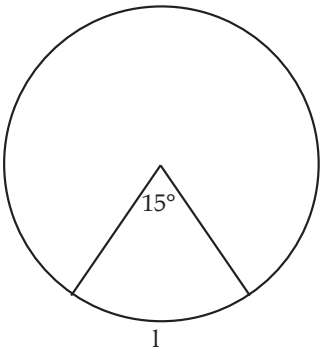
SP of 1 article $= \frac{25}{216} \times \frac{100 + 44}{100}$

$\frac{\cancel{25}^{1}}{\cancel{216}_{6}} \times \frac{\cancel{144}^{36}}{\cancel{100}_{4}} = \frac{1}{6}$

So he must sell 6 articles for ₹ *1*

66. (a) 11

Explanation:



$\theta = 15°$

$= 15 \times \frac{\pi}{180} = \frac{\pi}{12}$

$l = r\theta$

$l = 42 \times \frac{\pi}{12}$

$42 \times \frac{22}{7} \times \frac{1}{12} = 11$

67. (a) $\sqrt{6}$

Explanation:

$x = 2 + \sqrt{3}$

$\sqrt{x} = \sqrt{2 + \sqrt{3}}$

$\sqrt{x} = \frac{1}{\sqrt{2}}\sqrt{4 + 2\sqrt{3}}$

$\sqrt{x} = \frac{1}{\sqrt{2}}\sqrt{3 + 1 + 2\sqrt{3}}$

$\sqrt{x} = \frac{1}{\sqrt{2}}\sqrt{\sqrt{3}^2 + 1^2 + 2 \times \sqrt{3} \times 1}$

$\sqrt{x} = \frac{1}{\sqrt{2}}\sqrt{(\sqrt{3} + 1)^2}$

$\sqrt{x} = \frac{\sqrt{3} + 1}{\sqrt{2}}$

$\frac{1}{\sqrt{x}} = \frac{\sqrt{2}}{\sqrt{3} + 1}$

$= \frac{\sqrt{2}}{\sqrt{3} + 1} \times \frac{\sqrt{3} - 1}{\sqrt{3} - 1}$

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

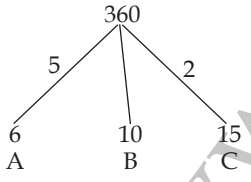
$= \frac{\sqrt{2}(\sqrt{3} - 1)}{2} = \frac{(\sqrt{3} - 1)}{\sqrt{2}}$

$\sqrt{x} + \frac{1}{\sqrt{x}} = \frac{(\sqrt{3} + 1)}{\sqrt{2}} + \frac{(\sqrt{3} - 1)}{\sqrt{2}}$

$= \frac{2\sqrt{3}}{\sqrt{2}} = \sqrt{6}$

68. (d) *3*

Explanation:



Let units of work be 30 (LCM of 6, 10 and 15)

A does in 1 day = 5units

B does in 1 day = 3units

C does in 1 day = 2units

No. of days taken to complete the work if they do together

$= \frac{30}{5+3+2} = \frac{30}{10} = 3$ *days*

69. (d) *144000*

Explanation:

Present price of Van = ₹*196000*

Rate of depreciation $= 14\frac{2}{7}\% = \frac{100}{7}\%$

Time = 2 years

Value of van after 2 years

$196000\left(1 - \frac{10\theta}{70\theta}\right)^2$

$196000 \times \frac{6}{7} \times \frac{6}{7} = 144000$

70. (b) *5 : 2*

Explanation:

Let no. of boys be x

and no. of girls be y

10% of $x = \frac{1}{4}$ *of y*

$\frac{10}{100} \times x = \frac{1}{4} \times y$

$\frac{x}{y} = \frac{1}{4} \times \frac{100}{10} = \frac{5}{2}$

$x : y = 5 : 2$

71. (a) *970*

Explanation:

$a = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ $\qquad b = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$

$ab = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}} \times \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}} = 1$

Now $\frac{a^2}{b^2} + \frac{b^2}{a^2} = \frac{a^3 + b^3}{ab}$

$= \frac{(a + b)^3 - 3ab(a + b)}{ab}$

$= \frac{10^3 - 3 \times 1 \times 10}{1}$

$1000 - 30 = 970$

$a + b = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}} + \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$

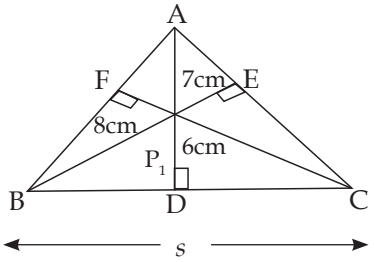
$= \frac{(\sqrt{3} - \sqrt{2})^2 + (\sqrt{3} + \sqrt{2})^2}{(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})}$

$= \frac{3 + 2 - 2\sqrt{6} + 3 + 2 + 2\sqrt{6}}{3 - 2}$

$= \frac{10}{1} = 10$

72. (b) $14\sqrt{2}$

Explanation:



Let side of Δ *is s*

Area of ΔBOC + *Area of* ΔAOC + *Area of* ΔAOB = *Area of* ΔABC

$= \frac{1}{2} \times s \times 6 + \frac{1}{2} \times s \times 7 + \frac{1}{2} \times s \times 8 = \frac{\sqrt{3}}{4} s^2$

$= \frac{1}{2} s(6 + 7 + 8) = \frac{\sqrt{3}}{4} s^2$

$= \frac{1}{2} \times s \times 21 = \frac{\sqrt{3}}{4} s \times s$

$= \frac{21}{1} \times \frac{4}{\sqrt{3}} = s$

$= \frac{42}{\sqrt{3}} = s$

$s = \frac{42}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{42\sqrt{3}}{3} = 14\sqrt{3}$

73. (b) *11.2*

Explanation:

$\Delta ABC \sim \Delta DEF$

$\frac{ar(ABC)}{ar(DEF)} = \frac{64}{121}$

$\frac{BC^2}{EF^2} = \frac{64}{121}$

$\frac{BC^2}{15.4^2} = \frac{64}{121}$

$BC^2 = \frac{64}{121} \times 15.4^2$

$BC = \sqrt{\frac{64 \times 15.4^2}{121}}$

$= \frac{8 \times 15.4}{11} = 11.2cm.$

74. (b) *60°*

Explanation:

$AB = 6\sqrt{3}\ cm$ $\quad AB^2 = 108$

$AB = 12cm$ $\quad AC^2 = 144$

$BC = 6cm.$ $\quad BC^2 = 36$

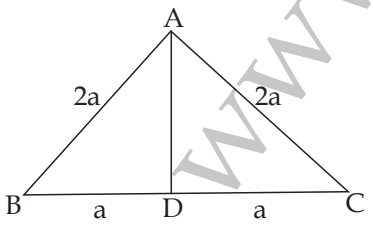
$AB^2 + BC^2 = 108 + 36 = 144$

$AB^2 + BC^2 = AC^2$

So $\Delta ABC$is right angled at B

75. (d) $\sqrt{3a}$

Explanation:



$BD = DC = a$

In ΔABD

$BD^2 + AD^2 = AB^2$

$a^2 + AD^2 = (2a)^2$

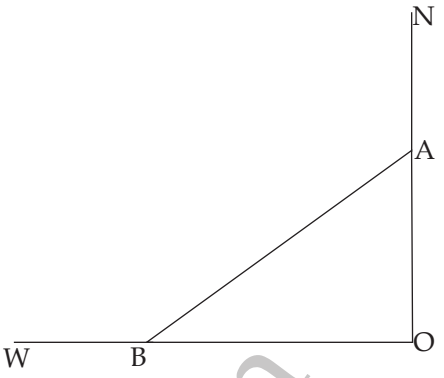
$AD^2 = 4a^2 - a^2$

$AD^2 = 3a^2$

$AD = \sqrt{3}\, a$

76. (c) $300\sqrt{61}\ km$

Explanation:



Distance covered by I plane in north = $1000 \times \frac{3}{2}$

= 1500km.

Distance covered by 2nd plane in north = $1200 \times \frac{3}{2}$

= 1800km.

Distance between the planes after $1\frac{1}{2}$ hours.

$AB^2 = OA^2 + OB^2$ *[Pythagoras Theorm]*

$(AB)^2 = 1500^2 + 1800^2$

$= 2250000 + 3240000$

$(AB)^2 = 5490000$

$AB^2 = (300\sqrt{61}\ km)^2$

77. (a) *3, 9*

Explanation:

$PQ = 10$

$\sqrt{(10 - 2)^2 + (y-(-3))^2} = 10$

$\sqrt{8^2 + (y+3)^2} = 10$

$64 + (y+3)^2 = 100$

$(y+3)^2 = 100-64$

$(y+3)^2 = 36$

$(y+3)^2 = (\pm 6)^2$

$y+3 = 6$ $\quad y+3 = -6$

$y = 3$ $\quad y = -9$

78. (c) *7*

Explanation:

A(6,1); B(8,2);C(9,4) & D (9,3) are

vertices of paralleogram.

mid pt of BD= mid pt of AC

$\left(\frac{8+p}{2}, \frac{2+3}{2}\right) = \left(\frac{6+9}{2}, \frac{1+4}{2}\right)$

$\frac{8+p}{2} = \frac{6+9}{2}$

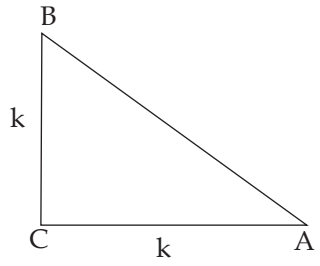
$8 + p = 15$

$p = 15 - 8$

$p = 7$

79. (b) *1*

Explanation:



$\tan A = 1 = \frac{k}{k} = \frac{BC}{AC}$

Let BC = k and AC = k

In ΔABC

$AB^2 = AC^2 + BC^2$

$AB^2 = k^2 + k^2$

$AB^2 = 2k^2$

$AB = \sqrt{2}\,k$

$\sin A = \frac{BC}{AC} = \frac{k}{\sqrt{2}\,k} = \frac{1}{\sqrt{2}}$

$\cos A = \frac{AC}{AB} = \frac{k}{\sqrt{2}\,k} = \frac{1}{\sqrt{2}}$

$2\sin A\cos A = 2 \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = 1$

80. (c) *6cm.*

Explanation:

Let AB = h meters be the height

In ΔABC

$\frac{h}{4} = \tan\theta$ ... (1)

In ΔABD

$\frac{h}{9} = \tan\theta\ (90 - \theta)$

$\frac{h}{9} = \cot\theta$ ...(2)

Multiply (1) & (2)

$\frac{h}{4} \times \frac{h}{9} = \tan\theta \times \cot\theta$

$\frac{h^2}{36} = \cancel{\tan\theta} \times \frac{1}{\cancel{\tan\theta}}$

$\frac{h^2}{36} = 1$

$h^2 = 36$

$h^2 = 6^2$

$h = 6m.$

81. (d) $\sqrt{119}$

Explanation:

$\angle P = 90°$

In ΔOPQ

$OP^2 + PQ^2 = OQ^2$

$5^2 + PQ^2 = 12^2$

$PQ^2 = 144 - 25$

$PQ^2 = 119$

$\cancel{PQ^2} = \sqrt{119}^{\cancel{2}}$

82. (a) *4375*

Explanation:

Diameter of wheel = 80cm

radius of wheel $= \frac{80}{2} = 40cm.$

Circumference of wheel $= 2\pi r$

$= 2 \times \frac{22}{7} \times 40 = \frac{1760}{7}cm.$

$= \frac{176}{70}m.$ $\left(1cm. = \frac{1}{100}m\right)$

Distance that will be covered in 10min=

$\cancel{66} \times \frac{\cancel{10}}{\cancel{60}} = 11km. = 11000m.$

If $\frac{176}{70}m.$ *is covered in = 1 revolution*

Then 1 m. is covered in $= \frac{1}{\frac{176}{70}} = \frac{70}{176}$

So 11000 is covered in $= \frac{\cancel{35}\cancel{70}}{\cancel{176}_{\cancel{16}_{2}}} \times \cancel{11000}^{\cancel{1000}^{125}}$

$= 4375$ *revolutions*

83. (a) *2 units*

Explanation:

Area of circle = circumference of circle

$\cancel{\pi r^2} = \cancel{2\pi r}$

$r = 2$

84. (c) $24.44cm^2$

Explanation:

OA = OB

$\angle 1 = \angle 2$ *[Angles opposite to equal sides are equal]*

$60° + \angle 1 + \angle 2 = 180°$

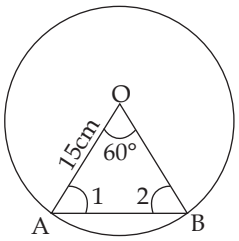
$60° + \angle 1 + \angle 1 = 180°$

$2\angle 1 = 120°$

$\angle 1 = \frac{\cancel{120°}^{60}}{\cancel{2}_{1}}$

ΔAOB is an equilateral Δ

OA = AB = OB



Area of sector $= \frac{60°}{360°}\pi r^2$

$= \frac{\cancel{60°}^{1}}{\cancel{360°}_{\cancel{6}_{2}}} \times \frac{314}{100} \times \cancel{15}^{5} \times 15$

$= 117.75cm^2$

Area of Δ OAB $= \frac{\sqrt{3}}{4}s^2$

$\frac{1.73}{4} \times 15 \times 15$

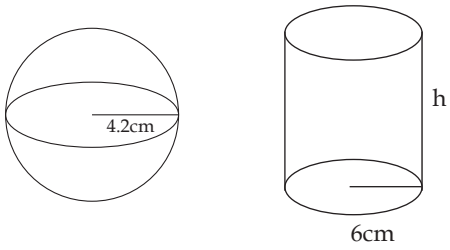
$= 93.3125cm^2$

Area of minor segment $= 117.75cm^2 - 93.3125cm^2$

$= 24.4375cm^2 = 24.44cm^2$

85. (c) *2.744cm.*

Explanation:



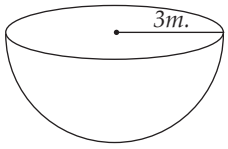
Volume of cylinder= volume of sphere

$\pi 6^2 h = \frac{4}{3}\pi (4.2)^3$

$h = \frac{\cancel{4}}{\cancel{3}} \times \frac{\cancel{42}}{10} \times \frac{\cancel{14}}{\cancel{42}} \times \frac{\cancel{7}}{\cancel{42}} \times \frac{1}{\cancel{36}} = 2.7444cm.$

86. (a) *16.5min*

Explanation:



Diameter of tank = 3m

radius $= \frac{3}{2}m.$

Volume of hemispherical tank $= \frac{2}{3}\pi r^3$

$= \frac{\cancel{2}^{1}}{\cancel{3}_{1}} \times \frac{\cancel{22}^{11}}{7} \times \frac{\cancel{3}^{1}}{\cancel{2}_{1}} \times \frac{3}{\cancel{2}_{1}} \times \frac{3}{\cancel{2}} =$

$\frac{99}{14} m^3 = \frac{99000}{14} l$ $\quad [1m^3 = 1000l]$

half capacity $= \frac{99000}{14} \div 2$

$= \frac{99000}{28} l.$

If $3\frac{4}{7}$ *l. is emptied is = 1sec.*

Then 1l. is emptied is $= \frac{1}{\frac{25}{7}} s = \frac{7}{25} s.$

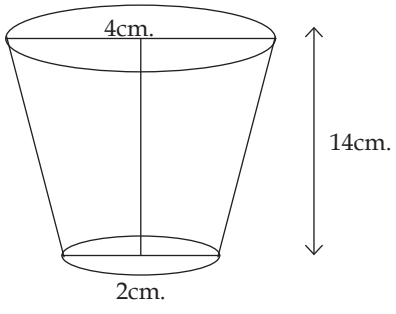
So $\frac{99000}{28}$ *l. is emptied is* $= \frac{\cancel{1}^{1}}{\cancel{7}_{1}} \times \frac{\cancel{99000}^{\cancel{24750}^{990}}}{\cancel{28}_{\cancel{7}_{1}}}$

$= 990 seconds$

$= 16.5 minutes$

87. (c) *308cm³*

Explanation:



$r_1 = \frac{4}{2} = 2cm.$

$r_2 = \frac{2}{2} = 1cm.$

$h = 14cm.$

volume of glass $= \pi(r_1^2 + r_2^2 + r_1 r_2) \times h$

$\frac{22}{7} (2^2 + 1^2 + 2 \times 1) \times 14$

$\frac{\cancel{22}}{\cancel{7}_{1}} \times \frac{1}{\cancel{7}} \times 14 = 308cm^3$

88. (a) $\frac{1}{2}$

Explanation:

when a die is thrown there are 6 outcomes

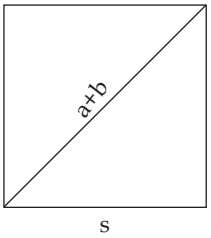
s= {1,2,3,4,5,6}

Prime numbers = 2,3,5

P (prime number) $= \frac{\cancel{3}_{1}}{\cancel{6}_{2}} = \frac{1}{2}$

89. (c) $\sqrt{2}$ *(a+b)*

Explanation:



Let side of sq. be s.

$\sqrt{2} s = a + b$

$s = \frac{a+b}{\sqrt{2}}$

Area of sq A = side²

$\left(\frac{a+b}{\sqrt{2}}\right)^2 = \frac{(a+b)^2}{2}$

Now area of new square $= \cancel{2} \times \frac{(a+b)^2}{\cancel{2}} = (a+b)^2$

side² $= (a+b)^2$

side = a+b

diagonal of new side $= \sqrt{2}$ *side*

$= \sqrt{2}\ (a+b)$

90. (b) ₹ *22500*

Explanation:

Suppose family income of man is ₹ *x*

expenditure food = 40% of $x = \frac{2x}{5}$

Remaining amount $= x - \frac{2x}{5} = \frac{3x}{5}$

expenditure on transport $= \frac{1}{3} \times \frac{3x}{5} = \frac{x}{5}$

remaining amount $= \frac{3x}{5} - \frac{x}{5} = \frac{2x}{5}$

ATQ

$\frac{1}{\cancel{2}_{1}} \times \frac{\cancel{2x}^{1}}{5} = 4500$

$x = 4500 \times 5 =$ ₹ *22500*

91. (b) *25%*

Explanation:

SP of 12 articles = CP of 15 articles

Let CP of 1 article = ₹ *1*

Let CP of 15 article = ₹ *15*

SP of 12 articles = ₹ *15*

SP of 1 articles $= \frac{\cancel{15}}{\cancel{12}} = \frac{5}{4}$

$gain = SP - CP = \frac{5}{4} - 1 = \frac{1}{4}$

$gain\ \% = = \frac{\frac{1}{4}}{1} 100 = 25\%$

92. (d) 3 l.

Explanation:

Total amount of mixture = 45l

$Amount\ of\ phenol = \frac{2}{\cancel{25}} \times \cancel{45} = 3.6l$

$Amount\ of\ water = \frac{23}{\cancel{25}} \times \cancel{45} = \frac{207}{5} = 41.4l.$

Let xl. of water is added.

ATQ

$\frac{3.6}{41.4 + x} = \frac{3}{37}$

$124.2 + 3x = 133.2$

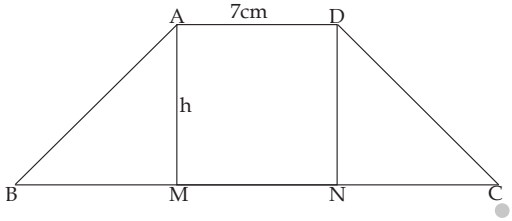
$3x = 133.2 - 124.2$

$3x = 9$

$x = 3l.$

93. (b) $2\sqrt{10}$ cm.

Explanation:



Area of trapezium = 54cm²

$\frac{1}{2}(AD + BC) \times h = 54cm^2$

$\frac{1}{2}(AD + BC) \times h = 54cm^2$

$\frac{1}{2}(7 + 11) \times h = 54$

$\frac{1}{\cancel{2}} \times \cancel{18}^{9} \times h = 54$

$h = \frac{\cancel{54}^{6}}{\cancel{9}_{1}} = 6cm.$

In ΔABM & ΔDCN

AB = DC (given)

∠M = ∠N (each 90°)

AM = DN

ΔABM ≅ ΔDCN (RHS ≅)

BM = CN (CPCT)

BM + CN = 11 – 7 = 4cm.

BM = CN = 2

Now is ΔCDN

$DN^2 + CN^2 = DC^2$ *[Pythagoras Theorem]*

$6^2 + 2^2 = DC^2$

$36 + 4 = DC^2$

$DC^2 = 40$

$DC^2 = (2\sqrt{10})^2$

$DC = 2\sqrt{10}$ cm.

94. (c) 2

Explanation:

$P = \frac{4xy}{x + y}$

$\frac{P}{2x} = \frac{2y}{x + y}$

applying componendo & dividendo

$\frac{P + 2x}{P - 2x} = \frac{2y + x + y}{2y - x - y} = \frac{3y + x}{y - x}$

$P = \frac{4xy}{x + y}$

$\frac{P}{2y} = \frac{2x}{x + y}$

applying componendo & dividendo

$\frac{P + 2y}{P - 2y} = \frac{2x + x + y}{2x - x - y}$

$\frac{P + 2y}{P - 2y} = \frac{3x + y}{x - y}$

Now

$\frac{P + 2y}{P - 2x} + \frac{P + 2y}{P - 2y}$

$\frac{3x + x}{y - x} + \frac{3x + y}{x - y}$

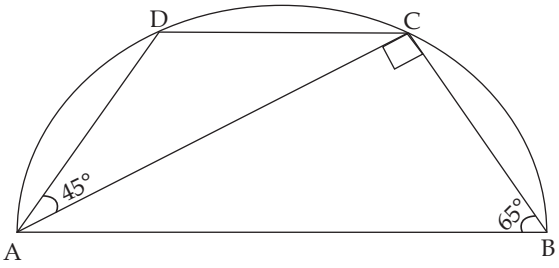
$\frac{3y + x}{y - x} + \frac{3x + y}{y - x}$

$\frac{3y + x - 3x - y}{y - x} = \frac{2y - 2x}{y - x}$

$\frac{2\cancel{(y - x)}}{\cancel{y - x}} = 2$

95. (c) 20°

Explanation:



∠ACB = 90°[angle in semi circle is right angle]

∠B + ∠D = 180°(ABCD is cyclic quadritatoal)

65° + ∠D = 180°

∠D = 180° – 65°

∠D = 115°

In ΔADC

45° + 115° + ∠DCA = 180° (sum of angles of Δ is 180°)

160° + ∠DCA = 180°

∠DCA = 180° – 160° = 20°

96. (c) *0*

Explanation:

$x^2 + y^2 + z^2 = 2(y - x)$

$x^2 + y^2 + z^2 + 2 - 2y + 2x = 0$

$(x^2 + 2x + 1) + (y^2 - 2y + 1) + z^2 = 0$

$(x + 1)^2 + (y - 1)^2 + z^2 = 0$

$(x + 1)^2 = 0 \quad (y - 1)^2 = 0 \quad z^2 = 0$

$x + 1 = 0 \quad y - 1 = 0 \quad z = 0$

$x = -1 \quad y = 1$

$x^3 + y^3 + z^3 = (-1)^3 + 1^3 + 0^3$

$= -1 + 1 = 0$

97. (a) *12*

Explanation:

148 – 4 = 144

246 – 6 = 240

623 – 11 = 612

[Note: remainders are subtracted]

Now find HCF of 144, 240 and 612

2	144
2	72
2	36
2	18
3	9
	3

2	240
2	120
2	60
2	30
3	15
	5

2	612
2	306
3	153
3	51
	17

$144 = \underline{2 \times 2} \times 2 \times 2 \times \underline{3} \times 3$

$240 = \underline{2 \times 2} \times 2 \times 2 \times \underline{3} \times 5$

$612 = \underline{2 \times 2} \times 3 \times \underline{3} \times 17$

$HCF = 2 \times 2 \times 3 = 12$

12 is the greatest number that will divide 148, 246 and 623 leaving remainders 4, 6 & 11 respectively.

98. (c) ₹*139*

Explanation:

cost of 2 kg tea = 2 ×136 = ₹272

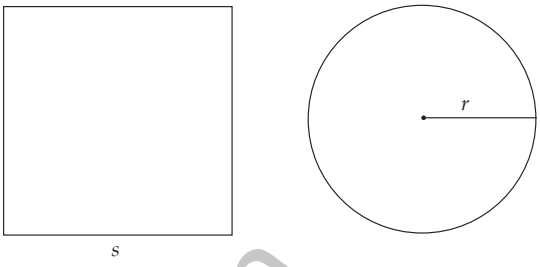
cost of 3 kg tea = 141×3 = ₹423

cost of 5 kg tea = ₹272+₹423 = ₹695

Now 1 kg mixture is sold $= \frac{695}{5} =$ ₹*139*

99. (a) 154 cm^2

Explanation:



Area of square = 121 cm^2

$side^2 = (11\ cm)^2$

side = 11 cm

Perimeter of square = 4×11 = 44 cm

Circumference of circle= Perimeter of square

$2\pi r = 44$

$2 \times \frac{22}{7} \times r = 44$

$r = \frac{\cancel{22}^{\,1}}{\cancel{44}^{\,\cancel{2}^{\,1}}} \times \frac{7}{\cancel{22}^{\,1}}$

$r = 7$

Area of circle = πr^2

$= \frac{22}{\cancel{7}^{\,1}} \times 7 \times \overset{1}{\cancel{7}} = 154\ cm^2$

100. (a) *100m.*

Explanation:

Let the length of the train be l

A.T.Q

$\frac{l}{8} = \frac{l+200}{24}$

$24l = 8[l+200]$

$24l = 8l + 1600$

$16l = 1600$

$l = \frac{\cancel{1600}}{\cancel{16}} = 100$

$l = 100m$

PRELIMINARY INTERVIEW BOARD

TERRITORIAL ARMY COMMISSION : PRACTICE TEST PAPER - 3

PAPER–1: GENERAL KNOWLEDGE & ENGLISH

A1

Max Time : 2 Hours **(Please Read The Instructions Carefully)** **Max Marks : 100**

Roll No……..

INSTRUCTIONS

1. Paper 2 has two parts: Part I & Part II
   (a) Part I : General Knowledge (50 marks)
   (b) Part II: English (50 marks)
2. Each section carries 50 objectives type of questions.
3. There will be four possible answers to every question. Candidates are required to fill correct answer in the OMR sheet with Black ball pen only.
4. For each correct answer, 1 mark will be granted and 0.5 mark will be deducted for every wrong answer.
5. If a candidate gives more than one answer, it will be treated as a wrong answer and 0.5 mark will be deducted. There will be no penalty for questions left unanswered.
6. Candidates should not mark in the question paper. They can use blank pages provided in the question paper for rough work.
7. To be eligible to qualify, a candidate must obtain minimum 40% marks each in Section I & II separately and a minimum of 50% aggregate in total.

PART–1 : GENERAL KNOWLEDGE

Q1. An oscilloscope is an instrument which allows us to see waves produced by
(a) Visible light (b) X-rays (c) Sound (d) Gamma rays

Q2. No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be
(a) either plane or convex (b) plane only (c) concave (d) convex only

Q3. Two layers of a cloth of equal thickness provide warmer covering than a single layer of cloth with double the thickness. Why?
(a) Because of the air encapsulated between two layers (b) Since effective thickness of two layers is more
(c) Fabric of the cloth plays the role (d) Weaving of the cloth plays the role

Q4. Magnetic, electrostatic and gravitational forces come under the category of
(a) non-contact forces (b) contact forces (c) frictional forces (d) non-frictional

Q5. The atomic theory of matter was first proposed by
(a) John Dalton (b) Rutherford (c) J.J. Thomson (d) Niels Bohr

Q6. Which one among the following fuels is used in gas welding?
(a) LPG (b) Ethylene (c) Methane (d) Acetylene

Q7. Electricity is produced through dry cell from
(a) chemical energy (b) thermal energy (c) mechanical energy (d) nuclear energy

Q8. Iron sheet kept in moist air covered with rust. Rust is
(a) an element (b) a compound
(c) a mixture of iron and dust (d) a mixture of iron, oxygen and water

Q9. Which one of the following hormones is essential for the uptake of glucose by cells in the human body?
(a) GH (b) TSH (c) Insulin (d) Cortisol

Q10. 'Altitude sickness' is caused at high altitude due to
(a) high partial pressure of oxygen (b) low partial pressure of oxygen
(c) low level of haemoglobin to (d) high partial pressure of carbon dioxide

Q11. The HIV virus weakens the immunity of a person because it destroys
(a) mast cells (b) platelets (c) erythrocytes (d) lymphocytes

Q12. Which one of the following hormones contains peptide chain?
(a) Oxytocin (b) Corticotropin (c) Insulin (d) Cortisone

Q13. The site of Harappa is located on the bank of river
(a) Saraswati (c) Beas (b) Indus (d) Ravi

Q14. Who among the following Governor Generals formed the Triple Alliance against Tipu Sultan?
(a) Warren Hastings (b) Lord Cornwallis (c) Lord Wellesley (d) Lord William Bentinck

Q15. The Cabinet Mission Plan for India envisaged a
(a) Federation (b) Confederation
(c) Unitary form of Government (d) Union of States

Q16. Who among the following Chinese travellers visited the Kingdoms of Harsrhavardhana and Kumar Bhaskar Varma?
(a) I-Tsing (b) Fa-Hien (c) Hiuen Tsang (d) Sun Shuyun

Q17. Which one among the following states was first annexed by Lord Dalhousie under the Doctrine of Lapse?
(a) Nagpur (b) Jhansi (c) Sambalpur (d) Satara

Q18. Which one among the following Indus cities was known for water management?
(a) Lothal (b) Mohenjodaro (c) Harappa (d) Dholavira

Q19. The Name of Ram Prasad Bismil is associated with
(a) Kanpur Conspiracy Case (b) Alipore Conspiracy Case
(c) Kakori Conspiracy Case (d) Meerut Conspiracy Case

Q20. The Circle of illumination divides Earth into two hemispheres known as
(a) East and West (b) North and South (c) Day and night (d) Summer and Winter

Q21. Which one among the following is a sea without having coastline?
(a) North sea (b) Sargasso sea (c) Baltic sea (d) Bering sea

Q22. In soil, water that, is readily available to plant roots is
(a) gravitational water (b) capillary water (c) hygroscopic water (d) bound water

Q23. Mid-latitude cyclones
(a) usually move across North-America from (b) are generally found only over the ocean
(c) generally bring clear skis and little precipitation (d) are formed in regions of strong temperature

Q24. Red soil colour is caused by
(a) aluminium compounds (b) mercury compounds (c) iron compound (d) clay

Q25. The westerlies have their origin in the
(a) polar highs (b) subtropical highs (c) equatorial lows (d) sub polar lows

Q26. Satellite having the same orbital period as the period of rotation of the Earth about its ouwn axis is known as
(a) polar satellite (b) stationary satellite (c) geostationary satellite (d) INSAT

Q27. Notification regarding commencement on cessation of a state of war is the responsibility of
(a) Ministry of Home Affairs (b) Ministry of Defence
(c) Ministry of External Affairs (d) None of the above

Q28. The Planning Commission of India has been constituted
(a) under constitutional provision with specific mention for it
(b) through an Act of Parliament
(c) through a cabinet decision in this regard
(d) through constitutional amendment

Q29. Electoral disputes arising out of Presidential and Vice Presidential Elections are settled by
(a) Election Commission of India (b) Joint Committee of Parliament
(c) Supreme Court of India (d) Speaker of Lok Sabha

Q30. Power of the Supreme Court of India to decide the between centre and state falls under
(a) advisory jurisdiction (b) original jurisdiction (c) appellate jurisdiction (d) constitutional jurisdiction

Q31. The Governor may recommend the imposition of the President's rule in the state
(a) on the recommendation of the State Legislature
(b) on the recommendation of the President
(c) on the recommendation of the Chief Minister
(d) if he is convinced that the Government of the State cannot be carried on in accordance with the provisions of the Constitution of India

Q32. Which one among the following writs literally means you many have the body?
(a) Certiorari (b) Habeas Corpus (c) Mandamus (d) Quo Warranto

Q33. The Speaker of the Lok Sabha may be removed from office by
(a) the majority party in the house adopting a no confidence motion
(b) a resolution passed by not less than half of the total membership of the house
(c) a resolution passed by at least two-thirds of the total membership of the house
(d) a resolution passed by a majority of all the members of the house

Q34. Under flexible exchange rate system, the exchange rate is determined
(a) predominantly by market mechanism (b) by the Central Bank
(c) as a weighted index of a group of currencies (d) by the World Trade Organization

Q35. Rise in the price of a commodity means
(a) rise in the value of currency only
(b) fall in the value of currency only
(c) rise in the value of commodity only
(d) fall in the value of currency and rise in the value of commodity.

Q36. An exceptional demand curve is one that slopes
(a) downward to the right (b) upward to the right (c) horizontally (d) upward to the left

Q37. 'Arihant is a
(a) Multi barrel rocket launcher (b) Airborne Early Warning and Control System
(c) Unmarmed Combat Aerial Vehicle (d) Nuclear-powered ballistic missile submarine

Q38. Which Indian armed force has created a first-of-its kind 'human rights cell'?
(a) India Navy (b) Indian Army (c) Indian Coast Guard (d) Indian Air Force

Q39. What is 'INS Karanj', which was making news recently, with reference to Indian defence?
(a) Scorpene submarine (b) Aircraft carrier (c) Frigate (d) Destroyer

Q40. Which state /UT plays host to the Khelo India Winter Games 2021?
(a) Delhi (b) Jammu and Kashmir (c) Maharashtra (d) Uttar Pradesh

Q41. Which state of India houses the Shaheed Veer Narayan Singh International Cricket Stadium?
(a) Jharkhand (b) Chattisgarh (c) Madhya Pradesh (d) Maharashtra

Q42. Which country houses the headquarters of the International Tennis Federation?
(a) Canada (b) Switzerland (c) France (d) United Kingdom

Q43. Which sport's competition is known as the "Davis Cup"?
(a) Tennis (b) Football (c) Cricket (d) Volleyball

Q44. Which one of the following is a peacetime Gallentry Award?
(a) Shaurya Chakra (b) Vir Chakra (c) Yudh Seva Medal (d) Param Vir Chakra

Q45. The National Dope Testing Laboratory functions under
(a) Ministry of Health and Family Welfare (b) Ministry of Science and Technology
(c) Ministry of Youth Affairs and Sports (d) Ministry of Home Affairs

Q46. What is the rank of India in the World Press Freedom index 2021?
(a) 142 (b) 152 (c) 162 (d) 172

Q47. The Commercial Crew Program (CCP), which was making news recently, is a flagship initiative of which space agency?
(a) ISRO (b) NASA (c) JAXA (d) Roscosmos

Q48. Which state/UT announced that all departments of the government will use only electric vehicles?
(a) Odisha (b) Delhi (c) West Bengal (d) Telangana

Q49. Which organisation is set to launch Covid-19 Oxygen Emergency Taskforce?
(a) UNICEF (b) Indian Medical Association
(c) AIIMS (d) WHO

Q50. 'B.1.526' is a new highly contagious Covid-19 mutant variant first recorded in which country?
(a) China (b) USA (c) South Africa (d) India

PART–II : ENGLISH

Analyze the content of the passage and then answer the questions that follow passage.

The enjoyment of physical possession of things would seem to be one of the prerogatives of wealth which has been little impaired. Presumably nothing has happened to keep the man who can afford them from enjoying his Rembrandt and his home-grown orchids. But enjoyment of things has always been associated with the third prerogative of wealth which is the distinct it confers. In a world where nearly everyone was poor, the distinction was very great. It was the natural consequence of rarity. In England it is widely agreed, the ducal families are not uniformly superior. There is a roughly normal incidence of intelligence and stupidity, good taste and bad taste, morality, immorality. But very few people are dukes and duchesses, although the later have become rather more frequent with modern easing of divorce laws. As a result, even though they may be intrinsically unexpectional they are regarded with some awe. So it has long have been with the rich. Were dukes numerous their position would deteriorate. As the rich have become more numerous, they have inevitably becomes a debased currency.

Q51. The distinction conferred by wealth
(a) was unfair to the poor
(b) was unlikely to spread throughout the world
(c) was very great when there were many rich people
(d) was very great when there were few rich people

Q52. The enjoyment of the physical possession of things
(a) is one of the privileges of wealth which has not been changed
(b) is one of the privileges of wealth which should be curtailed
(c) has little to do with the prerogatives of wealth
(d) is a prerogative of wealth which cannot be disputed

Q53. Ducal families in England
(a) are generally agreed to be fairly common
(b) are generally agreed to be fairly superior
(c) are superior because they are rich
(d) are generally agreed not to be always better than others

Q54. There are more duchesses now because
(a) it is easier for dukes to divorce and remarry
(b) dukes are more immoral than they used to be
(c) there position has deteriorated
(d) they are debased

Q55. Among the ducal families
(a) there is great deal of immortality
(b) there is a fairly even spread of virtues and vices
(c) there is a great deal of bad taste
(d) there is either great intelligence or great stupidity

Choose the word which best expresses nearly the same meaning of the given word.

Q56. HIATUS
(a) Atrocious (b) Gap (c) Dominance (d) Obscure

Q57. MACABRE
(a) Innocent (b) Tarried (c) Gruesome (d) Pleasing

Q58. FEIGN
(a) Hesitate (b) Pretend (c) Deserve (d) Attend

Q59. GRIT
(a) Bold (b) Courage (c) Grease (d) Level

Q60. FOMENT
(a) Instigate (b) Shield (c) Frustrate (d) Waver

In each of the following question, out of the given words, one word is mis-spelt. Find the mis-spelt word.

Q61. (a) Impetuous (b) Impetinent (c) Imperial (d) Implication

Q62. (a) Prefer (b) Defer (c) Difer (d) Refer

Q63. (a) Mercenary (b) Machinery (c) Missionery (d) Visionary

Choose the word which best expresses the opposite meaning of the word.

Q64. ELAN
(a) Brashness (b) Dignity (c) Composure (d) Nervousness

Q65. PENCHANT
(a) Disinclination (b) Lone (c) Directness (d) Lack of skill

Q66. SUBLIME
(a) Base (b) Concise (c) Partial (d) Insist

Q67. PRIMITIVE
(a) Polite (b) Naive (c) Weak (d) Sophisticated

Q68. REGRESSION
(a) Reverse (b) Relapse (c) Regenerate (d) Retreat

Fill up the blanks with the most appropriate word from the option given below.

Q69. The battalion operating from the mountain was able to tie _____ three enemy divisions.
(a) up (b) down (c) on (d) with

Q70. A great literary or artistic work is known as _____ .
(a) par excellence (b) bete noire (c) peccadillo (d) magnum opus

Q71. Since the British were masters of the seas, no _____ power could venture into Indian waters under British rule.
(a) territorial (b) continental (c) maritime (d) geo-political

Q72. One dark night a Darvesh _____ passing by a dry well.
(a) wasn't (b) happened to be (c) discovered in (d) found to

Q73. The neighbour grabbed the boy, and rolled him on the road to _____ the flames.
(a) cover (b) kill (c) burn out (d) fizz out

In each of the following sentences find out which part of the sentence has an error.

Q74. If he did not know (a)/ what to do (b)/ he would have asked us. (c)/ No error (d)/

Q75. I would love to be able to swim (a)/ if I am not afraid (b)/ of water (c)/ No error (d)/

Q76. Only when you have your children (a)/ you will understand (b)/ how difficult it is (c)/ No error (d)/

Q77. If she will go to the university next year (a)/ we will have the (b)/ house to ourselves (c)/ No error (d)/

Q78. I told goodbye to (a)/ Deepesh but he (b)/ ignored me completely (c)/ No error (d)/

Choose the best expression amongst multiple choices for a given idiom/proverb.

Q79. To get admission in present day educational institutions, all children should be born with a silver spoon in the mouth.
(a) be born in a rich family (b) be born to silver spoon manufacture
(c) always hold a silver spoon (d) be born with silver spoon

Q80. A man of straw means
(a) A very active person (b) A worthy fellow
(c) An unreasonable person (d) A man of no substance

Q81. To be above board.
(a) To have a good height (b) To be honest in any business deal
(c) Having no debts. (d) To try to be beautiful

Q82. To cry wolf.
(a) To listen eagerly (b) To give false alarm (c) To turn pale (d) To keep off starvation

In each of the following question out of the four alternatives, choose the one which can be substitute for the given word/ sentence.

Q83. List of the business or subjects to be considered at a meeting
(a) Schedule (b) Timetable (c) Agenda (d) Plan

Q84. Leave or remove from a place considered dangerous
(a) Evade (b) Evacuate (c) Avoid (d) Exterminate

Q85. A prima facie case is such
(a) As it seems at first sight (b) As it is made to seem at first sight
(c) As it turns out to be at the end (d) As it seems to the court after a number of hearings

In these questions, the first and last sentences of the passage are numbered 1 and 6. The rest of passage is split into four parts and named P, Q, R and S. These four parts are not given in their proper order. Read the sentence and find out which of the four combinations is correct.

Q86. S1: The city is almost a slum and stinks most of time.
P : The slush on the road did not deter them.
Q : The occasional slips and falls were considered a small price to pay for the trip.
R : They were excited, fascinated by the sight of fresh snow on the roads.
S : Even so, it looked beautiful to tourists of various categories.
S6: But some visitors came away with the unforgettable sight of young labours scantily clad.
The Proper sequence should be:
(a) RQPS (b) QPRS (c) RSQP (d) SPQR

Q87. S1: Venice is a strange and beautiful city in the north of Italy.
P : There are about four hundred old stone bridges joining the island of Venice.
Q : In this city there are no motor cars, no horses, no buses.
R : These small islands are near one another.
S : It is not an island but a hundred and seventeen islands.
S6: This is because Venice has no streets.
The Proper sequence should be:
(a) PQRS (b) PRQS (c) SRPQ (d) PQSR

Q88. S1: The Hound of Baskervilles was feared by the people of the area.
P : Some people spoke of seeing a huge, shadowy form a Hound at midnight on the moor.
Q : But they spoke of it in tones of horror.
R : Nobody had actually seen the hound.
S : This shadowy form did not reveal any details about the animal.
S6: The Hound of Baskervilles remains an unsolved mystery.
The Proper sequence should be:
(a) SPQR (b) SPRQ (c) PSRQ (d) PQRS

Q89. S1: A gentleman who lived alone always had two plates placed on the table at dinner time.
P : One day just as he sat down to dine, the cat rushed in to the room.
Q : One plate was for himself and other was for his cat.
R : she drooped a mouse into her own plate and another into her master plate.
S : He used to give the cat a piece of meat from his own plate.
S6: In this way the cat showed her gratitude to her master.
The Proper sequence should be:
(a) QSPR (b) PSRQ (c) QRSP (d) RPQS

For Underlined part of the sentence chooses part of the sentence from given choices, to correct or improve it.

Q90. No one could explain how a calm and balanced person like him could *penetrate* such a mindless act on his friends.
(a) perpetuate (b) perpetrate (c) precipitate (d) No improvement

Q91. Five years ago today, I *am sitting* in a small Japanese car, driving across Poland towards Berlin.
(a) was sitting (b) sat (c) have been sitting (d) No improvement

Q92. I took the cycle *which he bought yesterday*.
(a) that he bought yesterday (b) that which he had bought yesterday
(c) that he had bought yesterday (d) No improvement

Q93. Please make it a point to send you letter *at my address*.
(a) on my address (b) to my address (c) in my address (d) No improvement

Q94. If you are living near a market place you should be ready *to bear* the disturbances caused by traffic.
(a) to bear upon (b) to bear with (c) to bear away (d) No improvement

In each or the following questions, a sentence has been given in Active (or Passive) voice. Out of the four alternatives suggested, select the one which best express the same sentence in Passive (or Active) voice.

Q95. The people elected him Mayor.
(a) Him was elected Mayor the people. (b) He was elected Mayor by the people.
(c) Mayor is elected by the people. (d) He is elected by the people Mayor.

Q96. Someone saw him picking up a gun.
(a) He was seen pick up a gun by someone (b) He was seen picking up a gun by someone
(c) He was seen when he was picking up a gun (d) He was seen by someone pick a gun

Q97. The boy has rung the bell
(a) The bell has been rung by the boy. (b) The bell was being rung by the boy.
(c) The bell was rung by the boy. (d) The bell has been being rung by the boy.

Rearrange the following part of the sentence in form of a meaningful sentence.

Q98. Mohan, the son of my friend, gave me a set of pens (P)/ which is very precious (Q)/ while working in Japan (R)/ who died in an accident (S)/
(a) P Q R S (b) S R P Q (c) R S P Q (d) S P Q R

Q99. The clerk on the desk (P)/ left the money (Q)/ in the safe (R)/ which he should have locked up (S)/
(a) P Q R S (b) R S P Q (c) Q P R S (d) Q P S R

Q100. There must be countries now in which peasants can spend several years in universities (P)/ so that (Q)/ a lot of young persons (R)/ are going without substantial meals (S)/
(a) S R Q P (b) P Q R S (c) S Q R P (d) Q P S R

PART–I : GENERAL KNOWLEDGE
ANSWER PRACTICE TEST PAPER - 3

1. (c) Sound
2. (a) either plane or convex
3. (a) Because of the air encapsulated between two layers
4. (a) non-contact forces
5. (a) John Dalton
6. (d) Acetylene
7. (a) chemical energy
8. (b) a compound
9. (c) Insulin
10. (b) low partial pressure of oxygen
11. (d) lymphocytes
12. (c) Insulin
13. (d) Ravi
14. (b) Lord Cornwallis
15. (d) Union of States
16. (c) Hiuen Tsang
17. (d) Satara
18. (d) Dholavira
19. (c) Kakori Conspiracy Case
20. (c) Day and night
21. (b) Sargasso sea
22. (b) capillary water
23. (d) are formed in regions of strong temperature
24. (c) iron compound
25. (b) subtropical highs
26. (c) geostationary satellite
27. (c) Ministry of External Affairs
28. (c) through a cabinet decision in this regard
29. (c) Supreme Court of India
30. (b) original jurisdiction
31. (d) if he is convinced that the Government of the State cannot be carried on in accordance with the provisions of the Constitution of India
32. (b) Habeas Corpus
33. (d) a resolution passed by a majority of all the members of the house
34. (a) predominantly by market mechanism
35. (b) fall in the value of currency only
36. (a) downward to the right
37. (d) Nuclear-powered ballistic missile submarine
38. (b) Indian Army
39. (a) Scorpene submarine
40. (b) Jammu and Kashmir
41. (b) Chattisgarh
42. (d) United Kingdom
43. (a) Tennis
44. (a) Shaurya Chakra
45. (c) Ministry of Youth Affairs and Sports
46. (a) 142
47. (b) NASA
48. (b) Delhi
49. (d) WHO
50. (b) USA

PART–II : ENGLISH
ANSWER PRACTICE TEST PAPER - 3

51. (d) was very great when there were few rich people
52. (a) is one of the privileges of wealth which has not been changed
53. (d) are generally agreed not to be always better than others
54. (a) it is easier for dukes to divorce and remarry
55. (b) there is a fairly even spread of virtues and vices
56. (b) Gap
57. (c) Gruesome
58. (b) Pretend
59. (b) Courage
60. (a) Instigate
61. (b) Impetinent
62. (c) Difer
63. (c) Missionery
64. (d) Nervousness
65. (a) Disinclination
66. (a) Base
67. (d) Sophisticated
68. (c) Regenerate
69. (b) down
70. (d) magnum opus
71. (c) maritime
72. (b) happened to be
73. (b) kill
74. (a) If he did not know
    If he hadn't known what to do, he would have asked us.
75. (b) if I am not afraid
    I would love to be able to swim, if I was not afraid of water.
76. (c) you will understand
    Only when you have your children will you understand how difficult it is.

77. (a) If she will go to the university next year
If she goes to the university next year, we will have the house ourselves.

78. (a) I told goodbye to
I said goodbye to Deepesh but he ignored me completely.

79. (a) be born in a rich family

80. (d) A man of no substance

81. (b) To be honest in any business deal

82. (b) To give false alarm

83. (c) Agenda

84. (b) Evacuate

85. (a) As it seems at first sight

86. (d) SPQR

87. (c) SRPQ

88. (a) SPQR

89. (a) QSPR

90. (b) perpetrate

91. (a) was sitting

92. (c) that he had bought yesterday

93. (b) to my address

94. (b) to bear with

95. (b) He was elected Mayor by the people.

96. (b) He was seen picking up a gun by someone

97. (a) The bell has been rung by the boy.

98. (b) S R P Q

99. (d) Q P S R

100. (c) S Q R P