(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. 11,13,17, 19, 23,25, ?
   (a) 26   (b) 27   (c) 29   (d) 37

Q2. $\frac{2}{\sqrt{5}}, \frac{3}{5}, \frac{4}{5\sqrt{5}}, \frac{5}{25}$?

   (a) $\frac{6}{5\sqrt{5}}$ (b) $\frac{6}{25\sqrt{5}}$ (c) $\frac{6}{125}$ (d) $\frac{7}{25}$

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. U, B, I, P, W, ?
   (a) D   (b) F   (c) Q   (d) Z

Q4. ABD, DGK, HMS, MTB, SBL, ?
   (a) XKW   (b) ZAB   (c) ZKU   (d) ZKW

Q5. a _ ba _ b _ b _ a _ ma _
   (a) abaab   (b) abbab   (c) aabba   (d) bbabb

Q6. 2A11, 4D13, 12G17, ?
   (a) 36I19   (b) 36J21   (c) 48J21   (d) 48J23

Direction Choose the correct alternative which shows the same relationship.

Q7. Misogamy: Marriage :: Misogyny : ?
    (a) Children   (b) Husband   (c) Relations   (d) Women

Q8. Coherent : Consistent :: Irate : ?
   (a) Angry   (b) Unreasonable   (c) Unhappy   (d) Irritated

Q9. Victory: Encouragement :: Failure : ?
   (a) Sadness   (b) Defeat   (c) Anger   (d) Frustration

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

Q10. Hair: Grass: Fur : ?
    (a) Feather   (b) Cloth   (c) Wood   (d) Leather

Q11. Snake : Chameleon : Lizard : ?
   (a) Crocodile   (b) Frog   (c) Tortoise   (d) Whale

Direction Choose the odd one out.

Q12. Find the odd one out.
    (a) Polyester   (b) Cotton   (c) Terylene   (d) Nylon

Q13. Find the odd one out.
   (a) House   (b) Wall   (c) Roof   (d) Beam

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) Principal: School   (b) Soldier : Barrack   (c) Artist: Troupe   (d) Singer : Chorus

Q15. (a) Fan: Blades   (b) Lamp : Bulb   (c) Clock: Alarm   (d) Bicycle : Pedal

Q16. If in a certain code, GLAMOUR is written as IJC NMWP and MISRULE is written as OGUSSNC, then how will TOPICAL be written in that code?
    (a) VMRJECN   (b) VMRHACJ   (c) VMRJACJ   (d) VNRJABJ

Q17. If DELHI can be coded as CCIDD, how would you code BOMBAY?
    (a) AJMTVT   (b) AMJXVS   (c) MJXVSU   (d) WXYZAX

Q18. If 'eraser' is called 'box', ' box' is called 'pencil', 'pencil' is called 'sharpener' and 'sharpener' is called "bag', what will a child write with?
    (a) Eraser   (b) Box   (c) Pencil   (d) Sharpener

Q19. If 'pen' is 'table', 'table' is 'fan', 'fan' is 'chair' and 'chair' is 'roof, on which of the following will a person sit?
    (a) Fan   (b) Chair   (c)Roof   (d) Table

Q20. Looking at a portrait of a man, Harsh said, "His mother is the wife of my father's son. Brothers and sisters I have none." At whose portrait was Harsh looking?
    (a) His son   (b) His cousin   (c) His uncle   (d) His nephew

Q21. Introducing a man to her husband, a woman said, "His brother's father is the only son of my grandfather." How is the woman related to this man?
    (a) Mother   (b) Aunt   (c) Sister   (d) Daughter

Q22. In a March Past, seven persons are standing in a row. Q is standing left to R but right to P. O is standing right to N and left to P. Similarly, S is standing right to R and left to T. Find out who is standing in the middle.
    (a) P   (b) Q   (c) R   (d)

Q23. Garima is taller than Sarita but not taller than Reena. Reena and Tanya are of the same height. Garima is shorter than Anu. Amongst all the girls, who is/are the shortest?
    (a) Anu   (b) Reena and Tanya   (c) Garima   (d) Sarita

Q24. A person starts from a point A and travels 3 km eastwards to B and then turns left and travels thrice that distance to reach C. He again turns left and travels five times the distance he covered between A and B and reaches his destination D. The shortest distance between the starting point and the
    (a) 12 km   (b)15 km   (c) 16 km   (d) 18 km

Q25. Pratap starts from school and walks 7 km towards East. He takes a left and walks 4 km, then takes a right and walks 2 km, again takes a right and walks 3 km. Which direction is he facing now?
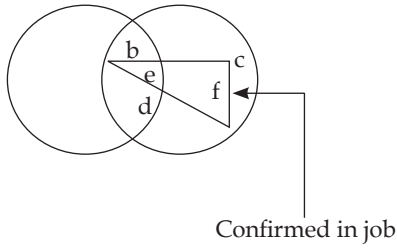   (a) South   (b) North   (c) East   (d) West

Q26. Which of the following diagrams indicates the best relation between Man, Worker and Garden?

(a)   (b)   (c)   (d)
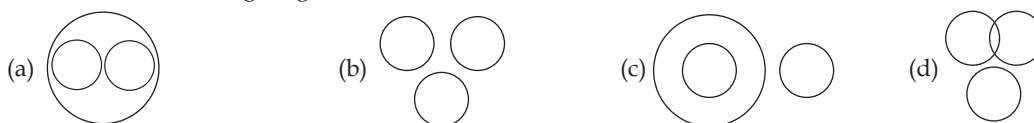
Q27. Which of the following diagrams indicates the best relation between Earth. Sea and Sun?

(a)   (b)   (c)   (d)
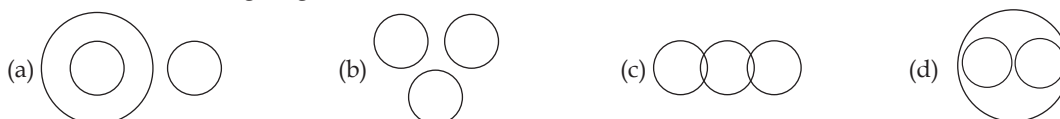
Q28. Read the figure and find the region representing person who are educated and employed but not confirmed.

Confirmed in job

(a) ac   (b)abc   (c)bd   (d) adc

Q29. Rohit is seventeenth from the left end of a row of 29 boys and Karan is seventeenth from the right end in the same row. How many boys are there between them in the row?
(a) 3   (b) 5   (c) 6   (d) Data inadequate

Q30. In a class, among the passed students, Amisha is twenty–second from the top and Sajal, who is 5 ranks below Amisha, is thirty–fourth from the bottom. All the students from the class have appeared for the exam. If the ratio of the students who passed in the exam to those who failed is 4: 1 in that class, how many students are there in the class?
(a) 60   (b) 75   (c) 90   (d) Data inadequate

Q31. Ashish leaves his house at 20 minutes to seven in the morning, reaches Kunal's house in 25 minutes, they finish their breakfast in another 15 minutes and leave for their office which takes another 35 minutes. At what time do they leave Kunal's house to reach their office ?
(a) 7.40 a.m.   (b) 7.20 a.m.   (c) 7.45 a.m.   (d) 8.15 a.m.

Q32. There are twenty people working in an office. The first group of five works between 8.00 A.M. and 2.00 P.M. The second group of ten works between 10.00 A.M. and 4.00 P.M. And the third group of five works between 12 noon and 6.00 P.M. There are three computers in the office which all the employees frequently use. During which of the following hours the computers are likely to be used most?
(a) 10.00 A.M. – 12 noon   (b) 12 noon – 2.00 P.M.   (c) 1.00 P.M.– 3.00 P.M.   (d) 2.00 P.M.–4.00 P.M.

Q33. If + means ÷, ÷ means –, – means ×, × means +, then 12 + 6 ÷ 3 – 2 × 8 = ?
(a) –2   (b) 2   (c) 4   (d) 8

Q34. If '+' means 'divided by', '–' means 'add', '×' 'means minus' and '/'means 'multiplied by', what will be the value of the following expression? [{(17 × 12) – (4/2)}+ (23 – 6)]/0
(a) infinite   (b) 0   (c) 118   (d) 219

Q35. If 'when' means 'x', 'you' means '', 'come' means and 'will' means , then what will be the value of " 8 when 12 will 16 you 2 come 10"?
(a) 45   (b) 94   (c) 96   (d) 112

Q36. Find the missing term.

13	54	?
7	45	32
27	144	68

(a) 42   (b) 36   (c) 6   (d) 4

Q37. Find the missing term.

7	4	5
8	7	6
3	9	?
29	19	31

(a) 3   (b) 4   (c) 5   (d) 6

Q38. Find the missing term.

Z4	X3	V9
A6	C2	?
T5	R4	P15

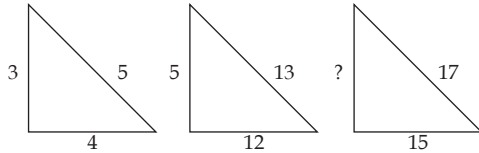(a) E10   (b) E12   (c) S10   (d) S12

Q39. Find the missing character in the following figure.
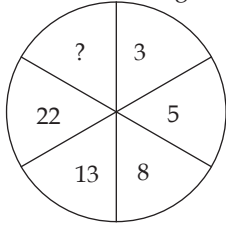
(a) 1   (b) 26   (c) 39   (d) 45
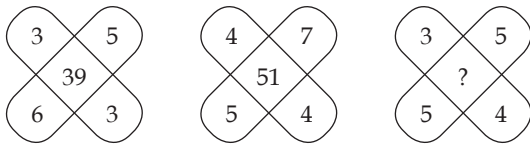
Q40. Find the missing character in the following figure.

(a) 2   (b) 6   (c) 8   (d) 64

Q41. Find the missing character in the following figure.


(a) 35   (b) 37   (c) 45   (d) 47

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 huts are mansions. All mansions are temples.
     Conclusions: I. Some temples are huts.
                     II. Some temples are mansions.
     (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: Every minister is a student. Every student is inexperienced.
     Conclusions :   I. Every minister is inexperienced.
                     II. Some inexperienced are students
     (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 artists are smokers. Some smokers are drunkards.
     Conclusions :   I. All smokers are artists.
                     II Some drunkards are not smokers
     (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.
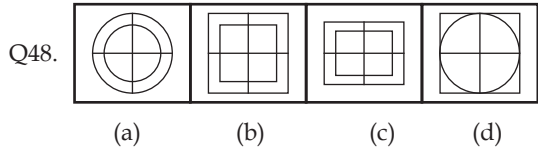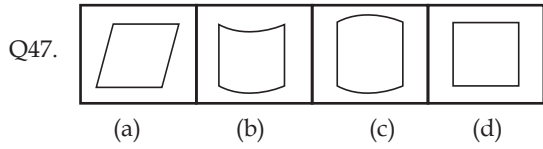
Q45. Find out the next figure
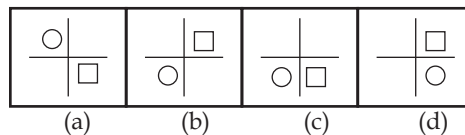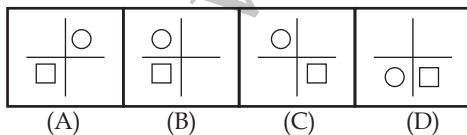
Q46. Find out the next figure
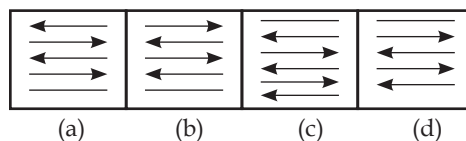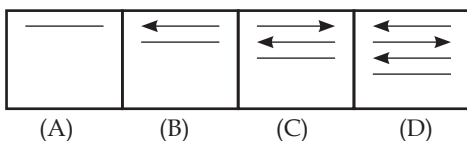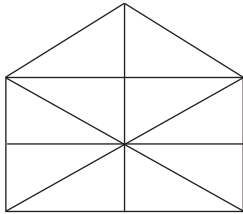
Direction Each of the following problems, contains 4 figures marked (a), (b), (c), (d). Find the odd figure.

Q47.

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

Q48.

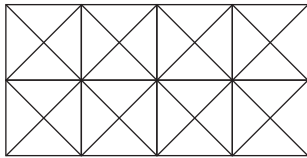(a)   (b)   (c)   (d)

Q49. How many triangles are there puzzles .

(a) 10   (b) 19   (c) 21   (d) 23

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


(a) 11   (b) 21   (c) 24   (d) 26.

PART–II : ELEMENTARY MATHEMATICS

Q51. $(a^{m-n})^l \times (a^{n-l})^m \times (a^{l-m})^n$?
(a) 1   (b) 0   (c) 2   (d) a^{lmn}

Q52. The least possible number which must be subtracted from 575 to make a perfect square number is :
(a) 5   (b) 50   (c) 46   (d) 37

Q53. Mr. Baghwan wants to plant 36 mango trees, 144 orange trees and 234 apple trees in his garden. If he wants to plant the equal no. of trees in every row, but the rows mango, orange and apple trees will be separate, then the minimum number of rows in his garden is:
(a) 18   (b) 23   (c) 36   (d) can't be determined

Q54. If $x^a = y^b = z^c$ and $y^2 = zx$ then the value of $\frac{1}{a} + \frac{1}{c}$ is:
(a) $\frac{1}{b}$ (b) $\frac{2}{b}$ (c) $\frac{3}{b}$ (d) $\frac{4}{b}$

Q55. If $64^2 – 36^2 = 20k$ then the value of k is:
(a) 120   (b) 80   (c) 140   (d) None of these

Q56. $\dfrac{(941 + 149)^2 + (941 – 149)^2}{941 \times 941 + 149 \times 149}$
(a) 2   (b) –2   (c) 0   (d) 1

Q57. The square root of $\dfrac{\left(3\frac{1}{4}\right)^4 - \left(4\frac{1}{3}\right)^4}{\left(3\frac{1}{4}\right)^2 - \left(4\frac{1}{3}\right)^2}$
(a) $5\frac{7}{12}$ (b) $5\frac{5}{12}$ (c) $5\frac{12}{13}$ (d) $5\frac{1}{6}$

Q58. The LCM of two numbers is 1020 and their HCF is 34, the possible pair of numbers is
(a) 225, 34   (b) 102, 204   (c) 204, 170   (d) None of these

Q59. If $x^2 + y^2 = 25$ and $xy = 12$ then the value of $x^{-1} + y^{-1}$ is
(a) $\frac{12}{5}$ (b) $\frac{7}{12}$ (c) $\frac{-7}{12}$ (d) both (b) & (c)

Q60. If 4 is added to the numerator of a fraction, it becomes $\frac{1}{3}$ and if 3 is added to the denominator of the same fraction it becomes $\frac{1}{6}$ then the sum of the numerator and denominator is:
(a) 32   (b) 7   (c) 4   (d) 3

Q61. When $\frac{m}{n} = 25\frac{n}{m}$ then the value of m : n is
(a) $\frac{1}{25}$ (b) 5   (c) $\frac{1}{5}$ (d) 2.5

Q62. The average age of A, B, C, D & E is 40 years. The average age of A and B is 35 years and the average age of C and D is 42 years. The average age of E is
(a) 46 years   (b) 48 years   (c) 32 years   (d) None of these

Q63. Columbus started his journey from Lucknow to Kolkata which is 200 km, at the speed of 40km/h. then he went to Banglore which is 300 km at the speed of 20km/h. Further he went to Ahmadabad which is 500 km at the speed of 10km/h. The average speed of Columbus.
(a) $15\frac{5}{7}$ km/h   (b) $12\frac{3}{4}$ km/h   (c) 15.6 km/h   (d) $14\frac{2}{7}$ km/h

Q64. The average age of 3 children of Arihant Singh is 12 years and their ratio of ages is 3 : 4 : 5. The average age of the youngest and oldest child is if he had only 3 children.
(a) 12   (b) 21   (c) 8   (d) 9

Q65. If $a + b : a – b = 15 : 1$ thus the value of $a^2 – b^2$ is
(a) 56   (b) 15   (c) 112   (d) 8

Q66. The age of Chandni and Radhika are in the ratio 5 : 3. If Chandni's age is 20 years the age the Radhika
(a) 10   (b) 11   (c) 13   (d) 12

Q67. Renuka got married 8 years ago. Today her age is $1\frac{1}{3}$ times her age at the time of marriage. Her daughter's age is $\frac{1}{8}$ times her age. Her daughter's age is:
(a) 3 years   (b) 4 years   (c) 6 years   (d) 8 years

Q68. In a mixture of 120 litres, the ratio of milk and water is 2 : 1. If the ratio of milk and water is 1 : 2 , then the amount of water (in litres) is required to be added is:
(a) 20   (b) 40   (c) 80   (d) 120

Q69. If $\sqrt{2} : (1 + \sqrt{3}) :: \sqrt{6} : x$ then x is equal to
(a) $1 + \sqrt{3}$ (b) $\sqrt{3} - 1$ **(c) $\sqrt{3} - 3$**   (d) $2\sqrt{3}$

Q70. The price of a car depreciates in the first year by 25%, in the second year by 20%, in the third year by 15% and so on. What will be its price after 3 years, if the present cost of the car is ₹10,00,000:
(a) ₹7,80,000   (b) ₹5,10,000   (c) ₹6,90,000   (d) ₹1,70,000

Q71. A number increased by 37.5% gives 99 the number is
(a) 140   (b) 61.5   (c) 72   (d) 48

Q72. An item costing ₹600 is being sold at 20% loss. If price is further reduced by 12.5% the selling price will be
(a) ₹400   (b) ₹380   (c) ₹420   (d) ₹525

Q73. On selling an article for ₹576 a trader loses $4\frac{1}{6}$%. In order to gain % he must sell that article for:
(a) ₹636   (b) ₹676   (c) ₹625   (d) can't be determined

Q74. The difference between CI & SI on a sum of money lent for 2 years at 10% is 40. The sum is
(a) ₹1600   (b) ₹2000   (c) ₹4000   (d) ₹None of these

Q75. Find the amount of ₹2500 invested at 12% during the period from 4th February, 2005 to 18th April 2005.
(a) ₹3000   (b) ₹3800   (c) ₹2560   (d) ₹2600

Q76. A can do a work in 15 days and B can do it in 18 days. with the help of C all of them complete the work in 6 days. How long will it take C to finish the work alone?
(a) 30 days   (b) 22 days   (c) $\frac{45}{2}$ days   (d) 25 days

Q77. 24 men can complete a job in 40 days. The number of men required to complete the job in 32 days is:
(a) 30   (b) 40   (c) 25   (d) 50

Q78. A circle has two parallel chords of lengths 6cm and 8cm. If the chords are 1cm apart and the centre is on the same side of the chords, then the diameter of the circle is of length.
(a) 5cm.   (b) 6cm.   (c) 8cm.   (d) 10cm.

Q79. In the given figure, AP = 3cm. BA = 5cm. and CP = 2cm. Find CD.
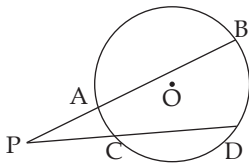
(a) 12cm.   (b) 10cm.   (c) 9cm.   (d) 6cm.

Q80. The value of is $\left(\log \frac{14}{3} + \log \frac{11}{5} - \log \frac{22}{15} \right)$
(a) $\log 77$ (b) $\log 11$ (c) $\log 7$ (d) None of these

Q81. If you save ₹ 1 today, ₹ 2 the next day, ₹ 3 the succeeding day and so on. What will be your savings in 365 days?
(a) ₹66579   (b) ₹66795   (c) ₹56795   (d) None of these

Q82. If the A.M. of two positive members a and b is twice their G.M. then a : b is:
(a) $2 : \sqrt{3}$ (b) $2 : 7 + 4\sqrt{3}$ (c) $2 + \sqrt{3} : 2 - \sqrt{3}$ (d) $7 + 4\sqrt{3} : 7 - 4\sqrt{3}$

Q83. A vertical pole of length 6 m casts a show 4 m long on the ground and at the same time a tower carts a shadow 28m long. Find the height of the tower:
(a) 40   (b) 42   (c) 45   (d) 50

Q84. Sides of two similar triangles are in the ratio 4 : 9. Area of these triangles are in the ratio
(a) 2 : 3   (b) 4 : 9   (c) 81 : 16   (d) 16 : 81

Q85. A ladder 10m. long reaches a window 8m. above the ground. Find the distance of the foot of the ladder from the base of the wall.
(a) 6m.   (b) 8m.   (c) 10m.   (d) 12m.

Q86. If $\tan A = \cot B$, then A + B.
(a) 0   (b) 60°   (c) 30°   (d) 90°

Q87. If A, B and C are interior angles of a triangle ABC, then $\sin \frac{B + C}{2}$ will be.
(a) 0   (b) $\tan A$ (c) $\sin \frac{A}{2}$ (d) $\cos \frac{A}{2}$

Q88. $\sec A (1 - \sin A)(\sec A + \tan A)$
(a) 1   (b) 0   (c) –1   (d) 2

Q89. log tan A + log cot A
(a) 0   (b) 0.2   (c) 1   (d) 2

Q90. From a point on a bridge across a river, the angles of depressiory of the bank on opposite sides of the river are 30° and 45° respectively. If the bridge is at a height of 3m from the banks, then the width of the river.
(a) $3\sqrt{3}$ (b) $3(\sqrt{3} - 1)$ (c) $3(\sqrt{3} + 1)$ (d) 4

Q91. XY and X'Y' are two parallel tangents of a circle with centre O. and another tangent AB with point of contact C intersecting XY at A and X'Y' at B then ∠AOB
(a) 30°   (b) 60°   (c) 70°   (d) 90°

Q92. A horse is tied to a pig at one corner of a square shaped grass field of side 15m. by means of a 5 m long rope. Then area of that part of the field in which the horse can graze (use π = 3.14)
(a) 19.625m²   (b) 30m²   (c) 40m²   (d) 50m²

Q93. 2 cubes each of volume 64cm³ are joined end to end. Find the surface area of the resulting cuboid.
(a) 100cm²   (b) 80cm²   (c) 160cm²   (d) 200cm²

Q94. A 20 m. deep well with diameter 7m. is dug and the earth from digging is evenly spread out to form a platform 22m. by 14m. Find the height of the platform.
(a) 2.5m.   (b) 2m.   (c) 5m.   (d) 7m.

Q95. Water in a canal 6m. wide and 1.5m deep is flowing with a speed of 10km/h. How much area will it irrigate in 30 minutes, if 8cm of standing water is needed.
(a) 560000m²   (b) 600000m²   (c) 700000m²   (d) 562500m²

Q96. A bag contains 5 red balls and 3 blue balls. One ball is drawn at random. Probability of taking out a red ball.
(a) 0   (b) 1   (c) $\frac{3}{8}$ (d) $\frac{5}{8}$

Q97. The value of $\dfrac{243^{\frac{n}{5}} \times 3^{2n+1}}{9^n \times 3^{n-1}}$
(a) 1   (b) 9   (c) 3   (d) 3^n

Q98. If $x = \sqrt{3} + \sqrt{2}$ then $x^2 + \dfrac{1}{x^2}$ is equal to
(a) 36   (b) 10   (c) 32   (d) 34

Q99. If $\tan \theta = \dfrac{a}{x}$ then $\dfrac{x}{\sqrt{a^2 + x^2}}$ will be the value of
(a) $\cos\theta$ (b) $\sin\theta$ (c) $\text{cosec}\theta$ (d) $\sec\theta$

Q100. A river 3m. deep and 40 m. wide is flowing at the rate of 2km per hour. How much water will fall into the sea in a minute
(a) 400000L.   (b) 4000000L.   (c) 40000L.   (d) 4000L.

1. (c) 29

    Explanation:
    The pattern is +2, +4, +2, +4, ... So, missing term = 25+ 4 = 29.

2. (b) $\dfrac{6}{25\sqrt{5}}$

    Explanation:
    Clearly, the numerators of the given fractions are consecutive natural numbers. So, the numerator of the missing fraction should be 6. Also, the denominator of each fraction is multiplied by $\sqrt{5}$ to obtain the denominator of the next fraction. So, the denominator of the missing fraction should be $25\sqrt{5}$. Hence, the missing term is $\dfrac{6}{25\sqrt{5}}$

3. (a) D

    Explanation:

    $U \xrightarrow{+7} B \xrightarrow{+7} I \xrightarrow{+7} P \xrightarrow{+7} W \xrightarrow{+7} \boxed{D}$

4. (d) ZKW

    Explanation:

    Ist Letter : $A \xrightarrow{+3} D \xrightarrow{+4} H \xrightarrow{+5} \boxed{M} \xrightarrow{+6} S \xrightarrow{+7} \boxed{Z}$

    IInd Letter : $B \xrightarrow{+5} G \xrightarrow{+6} M \xrightarrow{+7} T \xrightarrow{+8} B \xrightarrow{+9} \boxed{K}$

    IIIrd Letter : $D \xrightarrow{+7} K \xrightarrow{+8} S \xrightarrow{+9} B \xrightarrow{+10} L \xrightarrow{+11} \boxed{W}$

5. (d) bbabb

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

6. (c) 48J21

    Explanation:

    Ist Letter : $2 \xrightarrow{\times 2} 4 \xrightarrow{\times 3} 12 \xrightarrow{\times 4} \boxed{48}$

    IInd Letter : $A \xrightarrow{+3} D \xrightarrow{+3} G \xrightarrow{+3} \boxed{J}$

    IIIrd Letter : $11 \xrightarrow{+2} 13 \xrightarrow{+4} 17 \xrightarrow{+6} \boxed{23}$

7. (d) Women

    Explanation: First is a hatred for the second.

8. (a) Angry

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

9. (d) Frustration

    Explanation: First causes the second.

10. (a) Feather

    Explanation: All protect the surface which they cover.

11. (a) Crocodile

    Explanation: All are reptiles.

12. (b) Cotton

    Explanation: All except Cotton are synthetic fibres while cotton is a natural fibre.

13. (a) House

    Explanation: All others are parts of a house.

14. (c) Principal: School

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

15. (c) Clock: Alarm

    Explanation: In all other pairs, second is an essential part which serves the main purpose of the first.

16. (c) VMRJACJ

    Explanation: The first, third and sixth letters of the word are each moved two steps forward; the second, fifth and seventh letters are each moved two steps backward, while the fourth letter is moved one step forward to obtain the corresponding letters of the code.

17. (b) AMJXVS

    Explanation: The first, second, third, fourth,..... letters of the word are moved one, two, three, four,...... steps backward respectively to obtain the corresponding letters of the code.

18. (d) Sharpener

    Explanation: A child will write with a 'pencil' and 'pencil' is called 'sharpener. So, a child will write with a 'sharpener'.

19. (c) Roof

    Explanation: A person will sit on a 'chair' but a 'chair' iscalled 'roof. So, a person will sit on the roof.

20. (a) His son

    Explanation: Since Harsh has no brother or sister, so he is his father's only son. So, wife of Harsh's father's son– Harsh's wife.Thus, Harsh's wife is the man's mother or the man is Harsh's son.

21. (c) Sister

    Explanation: Only son of woman's grandfather– Woman's father; Man's brother's father–Man's father. So, man's father is woman's father i.e. woman is the man's sister.

22. (b) Q

    Explanation: Q is left to R and to the right of P i.e. P, Q, R.

    O is to the right of N and left of P i.e. N, O, P. S is to the right of R and left of T i.e. R, S, T.

    So, the order is: N, O, P, Q, R, S, T. Clearly, Q is in the middle..

23. (d) Sarita

Explanation: Let the first letter of the name of each girl represent her height. Then,

Garima is taller than Sarita ⇒ G> S.

Garima is not taller than Reena ⇒ R ≥ G.

Reena and Tanya are of the same height ⇒ R = T.

Garima is shorter than Anu ⇒ A > G.

All the above indicate that Garima is either shorter than or equal in height to each of the girls except Sarita, while Sarita is shorter than Garima. Thus, Sarita is the shortest.

24. (b) 15 km

Explanation: The movements of the person are as shown in Fig.

Clearly, AB = 3 km,

BC = 3AB = (3 × 3) km = 9 km,

CD = 5AB = (6 × 3) km = 15 km.

Draw AE ⊥ CD.

Then, CE = AB = 3 km and AE = BC = 9 km.

DE = (CD–CE) = (15 – 3)km = 12 km.

In ∆AED, $AD^2 = AE^2 + DE^2$

⇒ $AD=(\sqrt{9^2+ (12)^2})$ km = $\sqrt{225}$ km = 15 km.

∴ Required distance AD = 15.
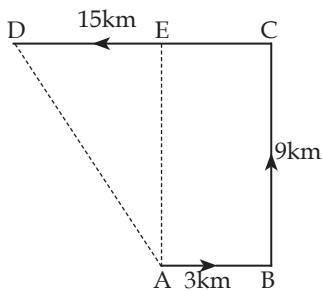
25. (a) South

Explanation: Pratap is facing south direction now.
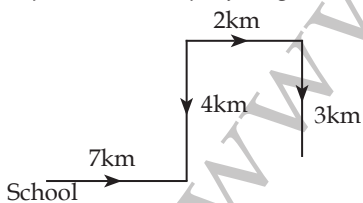
26. (d)

Explanation: Some man can be workers while some workers can be man, Garden is a separate entity.
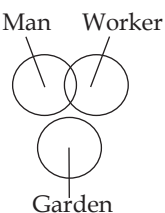
27. (a)

Explanation:

28. (c) bd

Explanation:

29. (a) 3

Explanation: Karan is 17th from the right end.

Number of boys to the left of Karan = (29 – 17) = 12.

So, Karan is 13th from the left end. Also, Rohit is 17th from the left end.

Clearly, there are 3 boys between Rohit and Karan.

30. (b) 75

Explanation: Amisha is 22nd from the top and Sajal is 5 ranks below Amisha. So, Sajal is 27th from the top. Also, Sajal is 34th from the bottom.

∴ Number of students passed (26 + 1 + 33) = 60.

Let the number of students passed and the number failed be 4x and x respectively.

Then, 4x = 60 or x = 15.

Hence, number of students in the class = (60 + 15) = 75.

31. (b) 7.20 a.m.

Explanation: Ashish leaves his house at 6.40 a.m.

He reaches Kunal's house in 25 minutes, i.e., at 7.05 a.m. Both leave for office 15 minutes after 7.05 a.m., i.e., at 7.20 a.m.

32. (b) 12 noon – 2.00 P.M.

Explanation: Clearly, the computers would be used most when all the three groups are working simultaneously and this happens during the period 12 noon to 2 p.m.

33. (c) 4

Explanation: Using the correct symbols, we have:

Given expression = 12 ÷ 6 – 3 × 2 + 8 = 2 – 6 + 8 = 10 – 6 = 4.

34. (b) 0

Explanation: Using the correct symbols, we have:

Given expression = [{(17 – 12) + (4 ×2)} ÷ (23 + 6)] × 0 = 0.

35. (b) 94

Explanation: Using the correct symbols, we have:

Given expression = 8 × 12 + 16 ÷ 2 – 10

= 96 + 8 – 10 = 104 – 10 = 94.

36.   (d) 4

Explanation: In the first column, 13 + 7 × 2 = 27.

In the second column, 54 + 45 × 2 = 144.

Let the missing number be x. Then, in the third column, we have :

$x + 32 × 2 = 68 \Leftrightarrow x = 4.$

37.   (c) 5

Explanation: In the first column, 29 – 8= 7 × 3 = 21;

in the second column, 19 – 7 = 4 × 3 = 12.

Let the missing number in the third column be x.

Then, 31 – 6 = 5 × x or 5x = 25 or x = 5.

38.   (b) E12

Explanation: Each row consists of alternate letters. Thus, first row contains letters V, X, Z; third row contains letters P, R, T. So, the missing letter is E. The numbers in each column form an arithmetic series. Thus, first column contains numbers 4, 5, 6. The second column contains numbers 2, 3, 4.

The numbers in the third column will form the series 9, 12, 15. So, the answer is E12.

39.   (c) 39

Explanation: We have: 3 × 2 – 1 = 5, 5 × 2 – 2 = 8, 8 × 2 – 3 = 13, 13 × 2 – 4 = 22.

So, missing number = 22 × 2 – 5 = 39.

40.   (c) 8

Explanation: We have: $3^2 + 4^2 = 5^2$;

$5^2 + (12)^2 = (13)^2.$ *Let the missing number be x.*

Then, $x^2 + (15)^2 (17)^2 \Leftrightarrow x^2 = 64 \Leftrightarrow x = 8.$

41.   (b) 37

Explanation: We have: (3 × 3) + (5 × 6) = 39;

(4 × 4) + (7 × 5) = 51.

So, missing number (3 × 4) + (5 × 5) = 37.

42.   (d) if both conclusions I and II follow.

Explanation: As discussed above, it follows that 'All huts are temples'. I is the converse of this conclusion and so it holds. II is the converse of the second premise and so it also holds.

43.   (d) if both conclusions I and II follow.

Explanation: 'Every' is equivalent to 'All'. Thus, since both the premises are universal and affirmative, the conclusion must be universal affirmative and should not contain the middle term. So, I follows. II is the converse of the second premise and thus it also holds.

44.   (c) if neither conclusion I nor II follows

Explanation: Since the middle term 'smokers' is not distributed even once in the premises, no definite conclusion follows.

45.   (b)

Explanation: The circle and the square move to the adjacent portion in an ACW direction alternately.

46.   (b)

Explanation: In each step, all the existing arrows get laterally inverted; the line segment is replaced by a new arrow pointing towards the left and a new line segment appears at the lowermost position.

47.   (c)

Explanation: In each one of the other figures, the opposite sides (either curved or straight) are parallel to each other.

48.   (d)

Explanation: In each one of the other figures, the inner and the outer elements are similar.

49.   (c) 21

Explanation: The figure may be labelled as shown. The simplest triangles are ABI, BIC, AIJ, CIJ, AHJ, CDJ, JHG, JDE, GJF and EJF i.e., 10 in number.
The triangles composed of two components each are ABC, BCJ, ACJ, BAJ, AJG, CJE and GJE i.e., 7 in number.
The triangles composed of four components each are ACG, ACE, CGE and AGE i.e., 4 in number.

∴ *Total number of triangles in the figure = 10 + 7+ 4 = 21.*
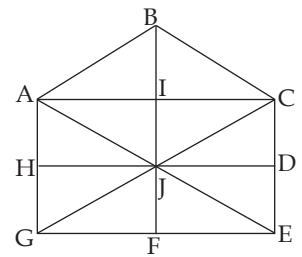
50.   (c) 24

Explanation: We shall label the given figure as shown.

The squares composed of two components each are BNQM, CORN, DPSO, MQTL, NRUQ, OSVR, PFWS, QUJT, RVIU and SWHV i.e., 10 in number.
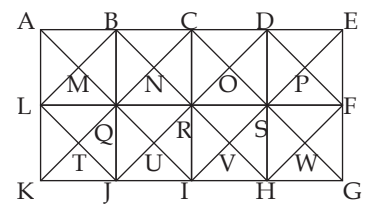
The squares composed of four components each are ABQL, BCRQ, CDSR, DEFS, LQJK, QRIJ, RSHI and SFGH i.e., 8 in number. The squares composed of eight components each are BRJL, CSIQ and DFHR i.e., 3 in number.
The squares composed of sixteen components each are ACIK, BDHJ and CEGI i.e., 3 in number. Thus, there are 10+8+3+3= 24 squares in the figure.

51. (a) *1*

Explanation:

$=(a^{m-n})^l \times (a^{n-l})^m \times (a^{l-m})^n$

$=a^{ml-nl} \times a^{nm-lm} \times a^{ln-mn}$

$=a^{ml-nl+nm-lm+ln-mn}$

$=a^0 = 1$

52. (c) *46*

Explanation:

$$\begin{array}{r} 23 \\ 2\overline{)5\ 75} \\ 4 \\ 43\overline{)175} \\ 129 \\ \overline{46} \end{array}$$

46 must be subtracted from 575 to make it a perfect square.

53. (a) *18*

Explanation:

For this we have to find HCF.

2	36
2	18
3	9
	3

2	144
2	72
2	36
2	18
3	9
	3

2	234
3	117
3	39
	13

$36 = \underline{2} \times 2 \times \underline{3 \times 3}$

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

$234 = \underline{2 \times 3 \times 3} \times 13$

$HCF = 2 \times 3 \times 3 = 18$

Minimum number of rows = 18

54. (a) $\dfrac{2}{b}$

Explanation:

Let $x^a = y^b = z^c = k$

$x^a = k \quad y^b = k \quad z^c = k$

$x = k^{\frac{1}{a}} \quad y = k^{\frac{1}{b}} \quad z = k^{\frac{1}{c}}$

$y^2 = zx$

$\left(k^{\frac{1}{b}}\right)^2 = k^{\frac{1}{c}} \, k^{\frac{1}{a}}$

$k^{\frac{2}{b}} = k^{\frac{1}{a}+\frac{1}{c}}$

$\dfrac{1}{a} + \dfrac{1}{c} = \dfrac{2}{b}$

55. (a) *140*

Explanation:

$64^2 - 36^2 = 20k$

$20k = (64+36)(64-36)$

$[a^2 - b^2 = (a+b)(a-b)]$

$20k = 100 \times 28$

$k = \dfrac{\overset{5}{\cancel{100}} \times 28}{\underset{1}{\cancel{20}}} = 140$

56. (a) *2*

Explanation:

$= \dfrac{(941 + 149)^2 + (941-149)^2}{941 \times 941 + 149 \times 149}$

$\dfrac{941^2 + 149^2 + 2\times 941 \times 149 + 941^2 + 149^2 - 2\times 941 \times 149}{941 \times 941 + 149 \times 149}$

$= \dfrac{2(941^2 + 149^2)}{941^2 + 149^2}$

57. (a) $5\dfrac{5}{12}$

Explanation:

$= \sqrt{\dfrac{\left(3\frac{1}{4}\right)^4 - \left(4\frac{1}{3}\right)^4}{\left(3\frac{1}{4}\right)^2 - \left(4\frac{1}{3}\right)^2}}$

$= \sqrt{\dfrac{\left(\left(3\frac{1}{4}\right)^2 + \left(4\frac{1}{3}\right)^2\right)\left(\left(3\frac{1}{4}\right)^2 - \left(4\frac{1}{3}\right)^2\right)}{\left(3\frac{1}{4}\right)^2 - \left(4\frac{1}{3}\right)^2}}$

$= \sqrt{\left(\dfrac{13}{4}\right)^2 + \left(\dfrac{13}{3}\right)^2}$

$= \sqrt{\dfrac{169}{16} + \dfrac{169}{9}} = \sqrt{169\left(\dfrac{1}{16} + \dfrac{1}{9}\right)}$

$= \sqrt{169 \times \dfrac{25}{144}} = 13 \times \dfrac{5}{12} = \dfrac{65}{12} = 5\dfrac{5}{12}$

58. (c) *204, 170*

Explanation:

Let two numbers be a and b

product of two numbers = HCF × LCM

$a \times b = 34 \times 1020$

$a \times b = 34 \times 34 \times 30$

$a \times b = (34 \times 6) \times (34 \times 5)$

$a \times b = 204 \times 170$

59. (a) *both (b) and (c)*

Explanation:

$x^2 + y^2 = 25, \ xy = 12$

$(x + y)^2 = x^2 + y^2 + 2xy$

$\qquad = 25 + 2 \times 12$

$\qquad = 25 + 24 = 49$

$(x+y)^2 = (7)^2 \implies x + y = 7$

$x^{-1} + y^{-1} = \dfrac{1}{x} + \dfrac{1}{y} = \dfrac{y+x}{xy} = \dfrac{\pm 7}{12}$

60. (a) 32

Explanation:

Let numerator be x and denominator be y

Fraction = $\frac{x}{y}$

$\frac{x+4}{y} = \frac{1}{3}$

3x + 12 = y

3x – y + 12 = 0 ...(1)

$\frac{x}{y+3} = \frac{1}{6}$

6x = y + 3

6x – y – 3 = 0 ...(2)

sub (1) from (2)

6x – y – 3 = 0
3x – y + 12 = 0
– + –
———————
3x   –15 = 0

3x = 15   x = $\frac{15}{3}$ = 5

put x = 5 in (1)

3 × 5 – y + 12 = 0

15 – y + 12 = 0

27 = y

y = 27

numerator = 5

denumerator = 27

sum = 5 + 27 = 32

61. (b) 5

Explanation:

$\frac{m}{n} = 25\frac{n}{m}$

$\frac{m^2}{n^2} = 25$

$\left(\frac{m}{n}\right)^2 = 5^2$

m : n = 5 : 1

62. (b) 46

Explanation:

sum of ages of A, B, C, D & E = 40 × 5 = 200years

sum of ages of A & B = 35 × 2 = 70

sum of ages of C & D = 42 × 2 = 84

A + B + C + D + E = 200

70 + 84 + E = 200

154 + E = 200

E = 200 – 154 = 46

63. (d) $14\frac{2}{7}$ km/h

Explanation:

Average speed = $\frac{Total\ distance}{Total\ time\ taken}$

Total dis. = 200km + 300km + 500km = 1000km

total time = $\frac{200}{40} + \frac{300}{20} + \frac{500}{10}$

= 5 + 15 + 50 = 70 hours.

Average speed = $\frac{1000}{70}$ km.

= $14\frac{2}{7}$ km/h.

64. (a) 12

Explanation:

Sum of ages of 3 children 3 × 12 = 36 years

Let their ages be 3x, 4x and 5x

3x + 4x + 5x = 36

12x = 36

$x = \frac{36}{12} = 3$

age of youngest child = 3x = 3 × 3 = 9 years

age of eldest child = 5x = 3 × 5 = 15 years

average age of youngest and eldest child = $\frac{9+15}{2} = \frac{24}{2}$

= 12 years

65. (b) 15

Explanation:

$\frac{a+b}{a-b} = \frac{15}{1}$

a + b = 15(a–b)

a + b = 15a – 15b

b + 15b = 15a – a

16b = 14a

$\frac{16}{14} = \frac{a}{b}$, $\frac{8}{7}$

$\frac{a}{b} = \frac{8}{7}$

$a^2 – b^2 = 8^2 – 7^2 = 64 – 49 = 15$

66. (d) 11

Explanation:

Let ages of Chandi & Radhika are 5x and 3x respectively

5x = 20

$x = \frac{20}{5}$, 4

x = 4

age of Radhika = 3x

= 3 × 4 = 12years

67. (b) 8 years

Explanation:

Let age of Renuka = x

age of Renuka at the time of her marriage (x –8) years

$x = 1\frac{1}{3}(x - 8)$

$x = \frac{4}{3}(x - 8)$

$3x = 4x - 32$

$x = 32$

daughter's age $= \frac{1}{8_1} \times \overset{4}{32} = 4$ *years*

68. (d) *80*

Explanation:

amount of mixture = 120 l.

amount of milk $= \frac{2}{3} \times 120 = 80l.$

amount of water $= \frac{1}{3} \times 120 = 40l.$

ATQ

$\frac{80}{40+x} = \frac{1}{2}$ *[let x l of water is added]*

$160 = 40 + x$

$120 = x$

$x = 120$ *years*

69. (c) $\sqrt{3} + 3$

Explanation:

$\sqrt{2} : (1 + \sqrt{3}) : \sqrt{6} : x$

Product of extremes = Product of means

$\sqrt{2}\,x = (1 + \sqrt{3}) \times \sqrt{6}$

$x = \frac{(1+\sqrt{3})\,\sqrt{6}}{\sqrt{2}}$

$x = \sqrt{3}\,(1 + \sqrt{3})$

$= \sqrt{3} + 3$

70. (b) *510000*

Explanation:

Present price of car = ₹ 10,00,000

$R_1 = 25\%\ R_2 = 20\%\ R_3 = 15\%$

Value of car after 3 years

$1000000 \left(1- \frac{25}{100}\right)\left(1- \frac{20}{100}\right)\left(1- \frac{15}{100}\right)$

$1000000 \times \frac{75}{100} \times \frac{80}{100} \times \frac{85}{100}$
$= 510000$

71. (c) *72*

Explanation:

Let the number be x

x + 37.5% of x = 99

$x + \frac{375}{1000}x = 99$

$\frac{1375}{1000}x = 99$

$x = \overset{9}{99} \times \frac{\overset{40\ 8}{1000}}{\underset{55\ \ 1}{\underset{5}{1375}}} = 72$

72. (c) ₹ *420*

Explanation:

CP of watch = ₹600

$SP = 600 \left(\frac{100-20}{100}\right)\left(\frac{100-12.5}{100}\right)$

$\overset{}{600} \times \frac{\overset{2}{80}}{\underset{1}{100}}_4 \times \frac{\overset{35}{875}}{1000} = ₹\ 420$

73. (c) ₹ *625*

Explanation:

SP of article = ₹576

loss% = 4%

$CP = 576 \times \frac{100}{100-4} =$

$\overset{36\ 6}{576} \times \frac{100}{\underset{6}{96}_6} = ₹600$

now gain % $= 4\frac{1}{6}\% = \frac{25}{6}\%$

$SP = 600 \times \left(\frac{100 + \frac{25}{6}}{100}\right)$

$\overset{}{600} \times \frac{625}{\underset{}{600}} = ₹\ 625$

74. (c) *4000*

Explanation:

Let principal to P

Time = 2 years   *Rate = 10%*

CI – SI = ₹40

$P\left(\left(1+ \frac{10}{100}\right)^2 - 1\right) - \frac{P \times 2 \times 10}{100} = 40$

$P\left(\left(\frac{11}{100}\right)^2 - 1\right) - \frac{20P}{100} = 40$

$P\left(\frac{121 - 100}{100}\right) - \frac{20P}{100} = 40$

$\frac{21P}{100} - \frac{20P}{100} = 40$

$\frac{P}{100} = 40$

$P = 40 \times 100$

$= 4000$

75. (c) ₹*2560*

Explanation:

No. of days = 25 + 31 + 17 = 73 days

$= \frac{73}{365}$ *years*

Rate = 12%

Principal = ₹2500

$$SI = \frac{P \times R \times T}{100}$$

$$\frac{2500 \times 12 \times 75}{100 \times 365} = 60$$
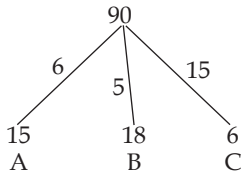
Amount = P + SI

2500 + 60

= ₹2560

76. (c) $\frac{45}{2}$ days

Explanation:

Let units of work be = 90

(LCM of 15, 18 & 6)

No. of units of work done by C alone 1 day =

15 – (5 + 6) = 15 – 11 = 4 units

Time taken by C to finish the work $\frac{90}{4} = \frac{45}{2}$ days

77. (c) 30

Explanation:

Let x more men are required to do the jobs in 32 days.

A.T.Q

(x + 24) × 32 = 40 × 24
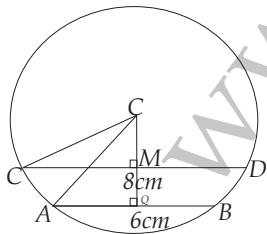
$$x + 24 = \frac{40 \times 24}{32}$$

x + 24 = 30

x = 30 – 24 = 6

No.of men required = x +24

= 6 + 24 = 30 days

78. (d) 10cm

Explanation:

$OM \perp CD \qquad OM \perp AB$

$CM = \frac{8}{2} = 4cm$

$AN = \frac{8}{2} = 3cm$

Perpendicular from centre to the chord object the chord

Let OM = x

In Δ OCM

$OC^2 = OM^2 + CM^2$ [Pythagoras Theorem]

$OC^2 = x^2 + 4^2$ ...(1)

In Δ AON

$AO^2 = ON^2 + AN^2$ [Pythagoras Theorem]

$AO^2 = [x + 1]^2 + 3^2$ ...(2)

Now AO = OC   [radii of same circle]

$AO^2 = OC^2$

$(x + 1)^2 + 3^2 = x^2 + 4^2$

$x^2 + 1 + 2x + 9 = x^2 + 16$

2x + 10 = 16

2x = 16–10

2x = 6

x = 3

$OC^2 = x^2 + 4^2$

$= 3^2 + 4^2 = 9 + 16 = 25$

$OC^2 = 5^2$

OC = 5cm

diameter = 2 × radius

diameter = 2× 5cm

diameter = 10cm

79. (b) 10

Explanation:

AP = 3cm

BA = 5cm   PB = 3 + 5 = 8cm.

CP = 2cm

Let CD = x

PA × PB = PC × PD
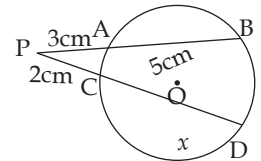
3 × 8 = 2 × (x + 2)

$$\frac{3 \times 8}{2} = x + 2$$

x + 2 = 12

x = 12– 2

x = 10

80. (c) log 7

Explanation:

$log\ \frac{14}{3} + log\ \frac{11}{5} - log\ \frac{22}{15}$

$log\left(\frac{\frac{14}{3} \times \frac{11}{5}}{\frac{22}{15}}\right) = log(\frac{14}{3} \times \frac{11}{5} \times \frac{15}{22}) = log\ 7$

81. (b) 66795

Explanation:

It becomes an AP. whose first term will be 1 and last term will be 365

1, 2, 3, 4, 5, ... 365

sum of terms $= \frac{n}{2}(a + l)$

Total saving in 365 days = $\frac{365}{2}(1 + 365)$

$\frac{365}{2} \times 366 = 66795$

82. (c) $2+\sqrt{3}\ :\ 2+\sqrt{3}$

Explanation:

AM between a and b = $\frac{a+b}{2}$

GM between a and b = $\sqrt{ab}$

$AM = 2GM$

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

$$\frac{a+b}{2\sqrt{ab}} \quad \frac{2}{1}$$

apply componendo & dividendo

$$\frac{a+b+2\sqrt{ab}}{a+b-2\sqrt{ab}} = \frac{2+1}{2-1}$$

$$\frac{\sqrt{a}^2+\sqrt{b}^2+2\sqrt{a}\sqrt{b}}{\sqrt{a}^2+\sqrt{b}^2-2\sqrt{a}\sqrt{b}} = \frac{3}{1}$$

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

$$\frac{\sqrt{a}+\sqrt{b}}{\sqrt{a}-\sqrt{b}} = \frac{\sqrt{3}}{1}$$

apply componendo & dividend

$$\frac{\sqrt{a}+\sqrt{b}+\sqrt{a}-\sqrt{b}}{\sqrt{a}+\sqrt{b}-\sqrt{a}+\sqrt{b}} = \frac{\sqrt{3}+1}{\sqrt{3}-1}$$

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

squaring both sides

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

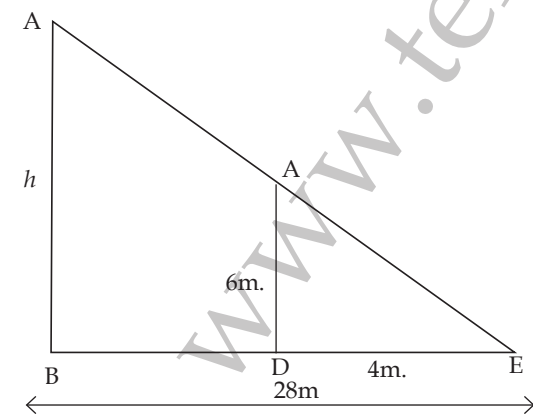$$\frac{a}{b} = \frac{3+1+2\sqrt{3}}{3+1-2\sqrt{3}}$$

$$\frac{a}{b} = \frac{4+2\sqrt{3}}{4-2\sqrt{3}}$$

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

83.   (d) *42*

Explanation:

Let height of tower AB = h meters

In ΔCDE & ΔABE

∠E = ∠E *(common)*

∠B = ∠D *(each 90°)*

ΔCDE ~ ΔABE *(AA~)*

$$\frac{AB}{BE} = \frac{CD}{DE}$$

$$\frac{h}{28} = \frac{6}{4}$$
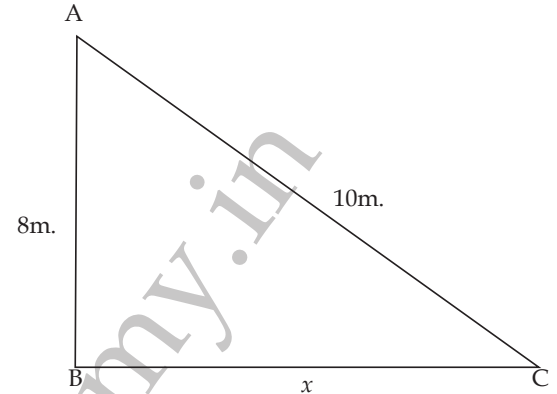
$$h = \frac{28 \times 6}{4} = 42$$

84.   (d) *16 : 81*

Explanation:

Let the sides are 4x and 9x

Since Δs similar areas will be proportional to squares of representative sides = $4^2 : 9^2 = 16 : 81$

85.   (d) *6m.*

Explanation:

Let distance between foot of ladder and the wall be x

In Δ ABC

$BC^2 + AC^2 = AC$ *[Pythagoras Theorem]*

$x^2 + 8^2 = 10^2$

$x^2 + 64 = 100$

$x^2 = 100 - 64$

$x^2 = 36$

$x^2 = 6^2$

$x = 6m$

86.   (d) *90°*

Explanation:

tan A = cot B

tan A = tan[90° – B]

cotθ = tan[90° – B]

A = 90° – B

A + B = 90°

87.   (d) $\frac{cos\,A}{2}$

Explanation:

A + B + C = 180°

B + C = 180°– A

divide both sides with 2

$$\frac{B+C}{2} = \frac{180° - A}{2}$$

$$\frac{B+C}{2} = 90° - \frac{A}{2}$$

$$sin\left(\frac{B+C}{2}\right) = sin\left(90° - \frac{A}{2}\right)$$

$$sin\left(\frac{B+C}{2}\right) = cos\,\frac{A}{2}$$

88. (d) *1*

Explanation:

$secA\ (1-sinA)\ (secA + tanA)$

$\dfrac{1}{cosA}\ (1-sinA)\ \left(\dfrac{1}{cosA}+\dfrac{sinA}{cosA}\right)$

$=\dfrac{(1-sinA)\ (1+sinA)}{cos^2A}$

$=\dfrac{1-sin^2A}{cos^2A}=\dfrac{\cancel{cos^2A}}{\cancel{cos^2A}}=1$

89. (d) *0*

Explanation:

log tan A + log cot A

log tan A . cot A

$log\left(\cancel{tanA}\times\dfrac{1}{\cancel{tanA}}\right)=log\ 1=0$

90. (d) $3(\sqrt{3}+1)m.$

Explanation:

Let AB = x+y be the river ∠A = 45˚

∠B = 30ᵒ

In Δ ACD

$\dfrac{CD}{AD} = tan\ 45^o$

$\dfrac{3}{x}=1$

x = 3

In ΔBCD

$\dfrac{CD}{DB} = tan\ 30^o$

$\dfrac{3}{y}=\dfrac{1}{\sqrt{3}}$

$y=3\sqrt{3}$

$AB = x+y = 3+3\sqrt{3}$

$= 3(\sqrt{3}+1)m.$

91. (d) *90°*

Explanation:
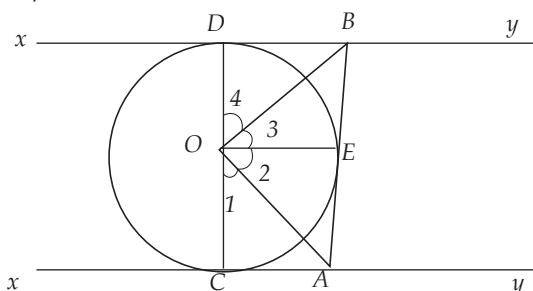
In ΔOCA & ΔOEA

OC= OE (radii)

∠C = ∠E (each 90°)

OA =OA(common)

ΔOCA ≅ ΔOEA (RHS≅)

∠1 = ∠2(CPCT)

similarly ∠3 = ∠4

∠1 + ∠2 + ∠3 + ∠4 = 180°

[sum of angles on a line is 180°]

∠2 + ∠2 + ∠3 + ∠3 = 180°

2∠2 + 2∠3= 180°

2(∠2 + ∠3) = 180°

2∠AOB = 180°

$∠AOB =\dfrac{180°}{2}= 90°$

92. (a) *19.625*

Explanation:
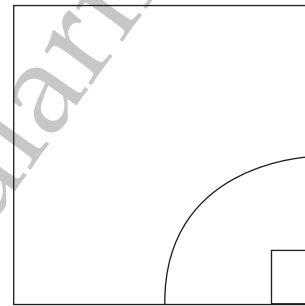
Rope will act as radius so radius = 5m.

Area that can be grazed $=\dfrac{90°}{360°}\times\pi r^2$

$\dfrac{\overset{1}{\cancel{90°}}}{\underset{4}{\cancel{360°}}}\times\dfrac{\overset{1}{\cancel{314}}}{\underset{20}{\cancel{100}}}\times\overset{1}{\cancel{5}}\times\overset{1}{\cancel{5}}=\dfrac{157}{8}m^2 = 19.625m^2$

93. (a) $160cm^2$

Explanation:
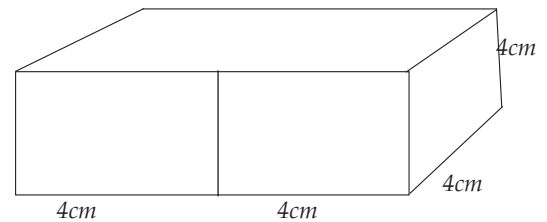
When two cubes are joined a cuboid is formed.

Volume of cube = $64cm^3$

$side^3 = 64cm^3$

$side^3 = (4cm)^3$

length of cuboid= 4 + 4 = 8cm

breadth of cuboid = 4cm

height of cuboid = 4cm.

SA of cuboid = (2lb + bh + lh)

2(8 × 4 + 4 × 4 + 4 × 8)

$2(32 + 16 + 32)$

$2 \times 80 = 160cm^2$

94. (a) 2.5m

Explanation:

7m.
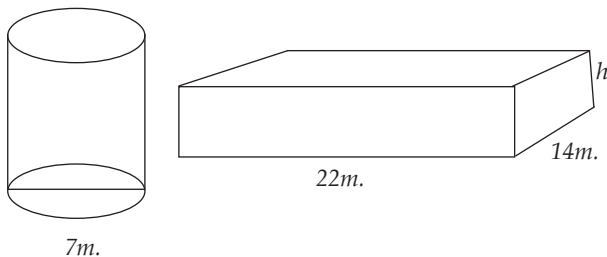
Volume of earth dug out $= \pi r^2 h$

$\dfrac{\overset{11}{22}}{\underset{1}{7}} \times \dfrac{\overset{1}{7}}{\underset{1}{2}} \times \dfrac{7}{2}_1 \times \overset{10}{20} = 770m^3$

Let height of platform be h meter

Volume of earth speed = volume of earth taken

$l \times b \times h = 770^3$

$22m \times 14m \times h = 770m^3$

$h = \dfrac{770m^3}{22 \times 14m^2}$

$h = \dfrac{5}{2}m$

$h = 2.5m$

95. (a) 562500m²

Explanation:

Volume of water flowed in 1 hour $= l \times b \times h$

$10000 \times 1.5 \times 6$

$10000 \times \dfrac{15}{10} \times 6 = 90000m^3$

water flowed in 30 minutes $\left(\dfrac{1}{2}h\right)$.

$= \dfrac{90000}{2} = 45000m^3$

Area $\times h = 45000m^3$

Area $\times \dfrac{8}{100} = 45000$

Area $= \overset{22500}{45000} \times \overset{25}{\dfrac{100}{8}}_{2}$

$= 562500m^2$

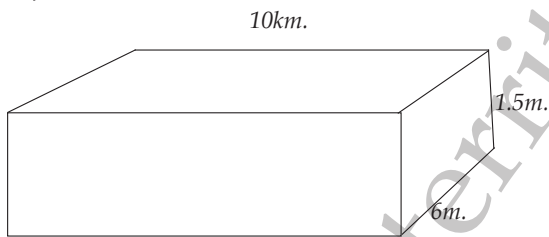**96.** (a) $\dfrac{5}{8}$

Explanation:

No. of red balls = 5

No. of blue balls = 3

Total balls = 5 + 3 = 8

P (a red ball) $= \dfrac{5}{8}$

97. (a) 9

Explanation:

$\dfrac{243^{\frac{n}{5}} \cdot 3^{2n+1}}{9^n \times 3^{n-1}}$

$= \dfrac{(3^5)^{\frac{n}{5}} \cdot 3^{2n+1}}{(3^2)^n \times 3^{n-1}}$

$= \dfrac{3^{5 \times \frac{n}{5}} \times 3^{2n+1}}{3^{2n} \times 3^{n-1}}$

$= \dfrac{3^{5 \times \frac{n}{5}} \times 3^{2n+1}}{3^{2n} \times 3^{n-1}}$

$= \dfrac{3^n \times 3^{2n+1}}{3^{2n} \times 3^{n-1}} = \dfrac{3^{3n+1}}{3^{3n-1}}$

$= 3^{3n+1-(n-1)}$

$= 3^{3n+1-(n-1)} = 3^{1+1} = 3^2 = 9$

98. (a) 10

Explanation:

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

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

$\dfrac{\sqrt{3} - \sqrt{2}}{\sqrt{3}^2 - \sqrt{2}^2} = \dfrac{\sqrt{3} - \sqrt{2}}{3 - 2} = \sqrt{3} - \sqrt{2}$

$\left(x + \dfrac{1}{x}\right)^2 = x^2 + \dfrac{1}{x^2} + 2 \times x \times \dfrac{1}{x}$

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

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

$12 - 2 = x^2 + \dfrac{1}{x^2}$

$x^2 + \dfrac{1}{x^2} = 10$

99. (a) $\cos \theta$

Explanation:

$\tan\theta = \dfrac{a}{x}$

In ΔABC
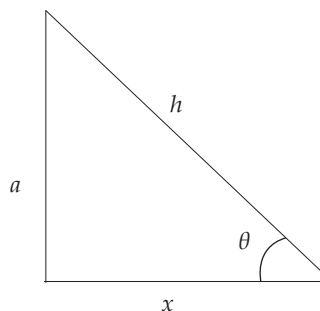
$AC^2 = BC^2 + AC^2$

[Pythagorean Theorem]

$AC^2 = x^2 + a^2$

$AC = \sqrt{x^2 + a^2}$

$\cos\theta = \dfrac{x}{\sqrt{x^2 + a^2}}$

100.   (a) *40,00,000 l.*

Explanation:
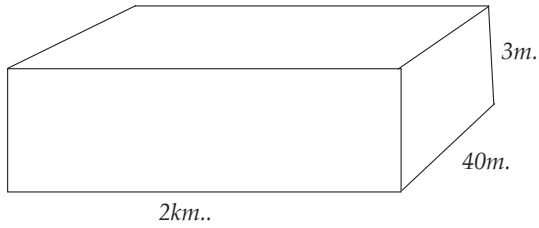
Length =2km = 2000m.

Breadth = 40m

Height = 3m

Volume of water formed is

1 hour = l × b× h

    = 2000m ×3m ×40m

    = 2,40,000m³

    = 24,00,00,000 l.   (1m³ = 1000l)

Water flowed in 60 min. = 24,00,00,000 l.

Water flowed in 1 min. = $\dfrac{\overset{4000000}{24,00,00,000}}{60}$ *l*

        = 40,00,000 l.

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. Dispersion process forms spectrum due to white light falling on a prism. The light wave with shortest wavelength
(a) refracts the most　　　　　　　　　　(b) does not change the path
(c) refracts the least　　　　　　　　　　(d) is reflected by the side of the prism

Q2. The main source of energy in sun is
(a) nuclear fusion　　　(b) nuclear fission　　　(c) chemical reaction　　　(d) mechanical energy

Q3. The gas used in a refrigerator is
(a) cooled down on flowing　　　　　　　(b) heated up on flowing
(c) cooled down when compressed　　　　(d) cooled down when expanded

Q4. The celsius temperature is a/an
(a) relative temperature　　(b) absolute temperature　(c) specific temperature　(d) approximate temperature

Q5. What type of mixture is smoke?
(a) Solid mixed with a gas　(b) Gas mixed with a gas　(c) Liquid mixed with a gas (d) Gas mixed with a liquid and a solid

Q6. Which allotropy of carbon is in rigid three-dimensional structure?
(a) Graphite　　　　　(b) Fullerene　　　　　(c) Diamond　　　　　(d) Carbon black

Q7. What is the role of positive catalyst in a chemical reaction?
(a) It increases the rate of reaction　　　　(b) It decreases the rate of reaction
(c) It increases the yield of the products　　(d) It provides better purity of the products

Q8. Iodised salt is a
(a) mixture of potassium iodide and common salt
(b) mixture of molecular iodide and common salt
(c) compound formed by combination of potassium iodide and common salt
(d) compound formed by molecular iodine and common salt

Q9. The living content of cell is called protoplasm. It is composed of:
(a) Cytoplasm only　　　　　　　　　　(b) Cytoplasm and nucleoplasm
(c) Nucleoplasm only　　　　　　　　　(d) Cytoplasm, nucleoplasm and other organelles

Q10. Penicillin inhibits synthesis of bacterial
(a) cell wall　　　　　(b) protein　　　　　(c) RNA　　　　　(d) DNA

Q11. Neutrophils and lymphocytes originate from
(a) kidney tubule　　　(b) bone marrow　　　(c) spleen　　　(d) lymph node

Q12. Plants contain a variety of sterols like stigmasterol, ergosterol, sitosterol etc. which very closely resemble cholesterol. These plant sterols are referred as:
(a) Phytosterols　　　(b) Caleiferols　　　(c) Ergocaleiferols　　　(d) Lumisterols

Q13. The earliest Buddhist literature which deal with the stories of the various birth of Buddha are
(a) Vinaya pitakas   (b) Sutta pitakas   (c) Abhidamma pitakas   (d) Jatakas

Q14. In 1856, Awadh would not have been annexed with the British Empire if the Nawab of Awadh had
(a) allied with the British
(b) not refused to introduce reforms as suggested by the British
(c) fought against the British
(d) a natural heir

Q15. The Russian revolutionaries derived their ideology from the doctrines of
(a) Lenin and Stalin   (b) Marx and Lenin   (c) Marx and Engels   (d) Lenin and Engels

Q16. Which among the following are the five principles of peaceful co-existence of Panchsheel as outlined by Jawaharlal Nehru?
(a) Mutual respect, military collaboration, economic collaboration, de-colonisation and territorial integrity
(b) Mutual respect for each other territorial integrity and sovereignty, non-aggression, non-interference, equality and mutual benefit and peaceful co-existence
(c) Peaceful co-existence, economic collaboration cultural interaction, territorial integrity and decolonisation
(d) Disarmament, peaceful co-existence, economic collaboration, cultural interaction and territorial integrity

Q17. When Lord Mountbatten became the first Governor-General of India, who among the following became the Governor General for Pakistan?
(a) Lord Mountbatten   (b) Muhammad Ali Jinnah (c) Liaquat Ali Khan   (d) Shaukat Ali

Q18. 'Dyarchy' was first introduced in India under
(a) Morley-Minto reforms   (b) Montford reforms   (c) Simon Commision plan(d) Government of India Act, 1935

Q19. Who drafted the Constitution of Muslim League, 'The Green Book'?
(a) Rahamat Ali   (b) Muhammad Iqbal   (c) Muhammad Ali Jinnah (d) Maulana Muhammad Ali Jauhar

Q20. 'Global Dimming' means
(a) gradual increase of the temperature of ionosphere
(b) gradual loss of biodiversity hot spots
(c) gradual reduction in the amount of global direct irradiance at the Earth surface
(d) gradual increase in the melting of ice in polar regions

Q21. Nearly 30% of the solar radiations return back to the space without contributing anything to the Earth's surface temperature. This amount of radiation is known as
(a) black body   (b) tropopause   (c) earth's albedo   (d) mesopause

Q22. The planetary winds that blow from the sub-tropical high pressure belts to the equator are known as
(a) westerlies   (b) doldrums   (c) polar winds   (d) trade winds

Q23. Which parts of the Earth's surface experience least variation in incoming solar radiation throughout the year?
(a) Poles   (b) Equatorial regions
(c) Tropics of Cancer and Capricorn   (d) Arctic and Antarctic circles

Q24. The highest of all spring tides occurs at the time of
(a) full or new moon in association with winter solstice   (b) full or new moon in association with equinox
(c) full or new moon in association with summer solstice (d) winter as well as summer solstices

Q25. On which one among the following island, does the Negrito tribe called 'the Onge' live?
(a) North Andaman   (b) Little Andaman   (c) Little Nicobar   (d) Great Nicobar

Q26. Veliconda hills, which is a part of Eastern Ghats, is situated in
(a) Odisha   (b) Tamil Nadu   (c) Karnataka   (d Andhra Pradesh

Q27. In the Rajya Sabha, the states have been given seats
(a) in accordance with their population   (b) equally
(c) on the basis of population and economic position   (d) on the basis of present economic status

Q28. The Preamble is useful in constitutional interpretation because it
(a) uses value loaded words
(b) contains the real objective and philosophy of constitution makers
(c) is a source of power and limitation the
(d) gives and exhaustive list of basic features of the Constitution

Q29. Under which law it is prescribed that all proceedings in the Supreme Court of India shall be in English language?
(a) The Supreme Court Rules, 1966   (b) A Legislation made by the Parliament
(c) Article 145 of the Constitution of India   (d) Article 348 of the Constitution of India

Q30. While a proclamation of emergency is in operation the duration of the Lok Sabha can be extended for a period
(a) not exceeding three months   (b) not exceeding nine-months
(c) of one year at a time   (d) of two years at a time

Q31. The purpose of Directive Principles of State Policy is to
(a) lay down positive instructions which would guide State Policy at all levels
(b) implement Gandhiji's idea for a decentralised state
(c) check the use of arbitrary powers by the government
(d) promote welfare of the backward sections of the society

Q32. The Chief Election Commissioner of India holds office for a period of
(a) six years
(b) during the pleasure of the President
(c) for 6 years or till the age of 65 years, whichever is earlier
(d) for 5 years or till the age of 60 years, whichever is earlier

Q33. The tenure of every Panchayat shall be for five years from the date of
(a) its first meeting
(b) issue of notification for the conduct of elections to the Panchayat
(c) declaration of the election results
(d) taking oath of office by the elected members

Q34. A market in which there are large numbers of sellers of a particular product, but each seller sells somewhat differentiated but close products is termed as
(a) Perfect competition   (b) Monopoly   (c) Monopolistic competition (d) Oligopoly

Q35. MONEX is associated with
(a) Montreal experiment   (b) Monetary experiment   (c) Lunar experiment   (d) Monsoon experiment

Q36. In India, mergers and acquisition of firms are regulated by
(a) National Manufacturing Competitiveness Council   (b) Competition Commission of India
(c) Security and Exchange Board of India   (d) Department of Industrial Policy and Promotion

Q37. What is Arjun Mk1A, which was seen in the news recently, with reference to Indian defence?
(a) Anti-tank Guided Missile   (b) Main Battle Tank
(c) Fighter Jet   (d) Unmanned Ariel Vehicle

Q38. The Vijaynagar Advanced Landing Ground of the Indian Air Force, which was reopened recently, is located in
(a) Jammu and Kashmir   (b) Arunachal Pradesh   (c) Karnataka   (d) Himachal Pradesh

Q39. Who has launched the 1st community radio station in north Kashmir?
(a) CRPF   (b) BSF   (c) Indian Navy   (d) Indian Army

Q40. National Sports Day (NSD) is celebrated on which date in India?
(a) August 28   (b) August 29   (c) August 26   (d) August 27

Q41. Rovers Cup is related to which of the following sports?
(a) Football   (b) Cricket   (c) Hockey   (d) Tennis

Q42. Who is known as the father of the modern Olympic Games?
(a) Woodrow Wilson   (b) Pierre de Coubertin   (c) Spyridon Samaras   (d) Herbert Hoover

Q43. In which place, the first modern Olympic Games was held?
(a) Paris   (b) Athens   (c) Berlin   (d) Amsterdam

Q44. Pakyong Airport is located in
(a) Sikkim   (b) Jammu and Kashmir   (c) Arunachal Pradesh   (d) Mizoram

Q45. Which one of the following is the highest altitude zoo in the world?
(a) Cheyenne Mountain Zoo   (b) Pandit G. B Pant High Altitude Zoo
(c) Himalayan Zoological Park, Gangtok   (d) Padmaja Naidu Himalyan Zoological Park

Q46. NISAR Synthetic Aperture Radar which was making news recently, is a collaboration of ISRO with which space agency?
(a) JAXA   (b) NASA   (c) SpaceX   (d) ESA

Q47. OTPRMS certificates, which was seen in the news recently, is associated with which Union Ministry?
(a) Ministry of Education   (b) Ministry of Skill Development and Entrepreneurship
(c) Ministry of Labour and Employment   (d) Ministry of Agriculture and Rural Development

Q48. Which panel has recently been appointed by the Rajya Sabha Chairman regarding the two channels of the Parliament-RSTV and LSTV?
(a) Surya Prakash Committee   (b) Suraj Prakash Committee
(c) Swaraj Prakash Committee   (d) Suraj Singh Committee

Q49. Covishield, the first vaccine to get emergency-use nod from DGCI, is being manufactured by which company?
(a) Bharat Biotech   (b) Serum Institute of India   (c) Biocon   (d) Dr Reddys Labs

Q50. Who has launched anti-Covid drug 2-DG in India?
(a) Dr Reddys   (b) Serum Institute of India   (c) Biocon   (d) DRDO

PART–II : ENGLISH

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

Nehru's was a many sided personality. He enjoyed reading and writing books as much as he enjoyed fighting political and social evils or residing tyranny. In him, the scientist and the humanist were held in perfect balance. While he kept looking at special problems from a scientific standpoint. He never forgot that we should nourish the total man. As a scientist, he refused to believe in a benevolent power interested in men's affairs. but, as a self proclaimed non-believer, he loved affirming his faith in life and the beauty of nature. Children he adored. Unlike Wordsworth, he did not see him trailing clouds of glory from the recent sojourn in heaven. He saw them as a blossoms of promise and renewal, the only hope for mankind.

Q51. Nehru though that children
(a) were tailing clouds of glory
(b) held promise for a better future
(c) were like flowers to be loved and admired
(d) held no hope for mankind

Q52. Nehru enjoyed
(a) reading and writing books
(b) fighting political and social evils
(c) resisting tyranny
(d) doing all the above and much more

Q53. Which of the statements reflects Nehru point of view?
(a) Humanism is more important than science
(b) Science is supreme and humanism is subordinate to it
(c) Science and Humanism are equally important
(d) There is no ground between science and humanism

Q54. In this passage, 'a benevolent power interested in men's affairs' means
(a) a supernatural power of god
(b) beauty of nature
(c) the spirit of science
(d) the total man

Q55. A 'many-side personality' means
(a) a complex personality
(b) a secretive person
(c) a person having varied interests
(d) a capable person

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

Q56. TALISMAN
(a) Fiction
(b) Charm
(c) Aptitude
(d) Strength

Q57. ACCOUTERMENTS
(a) Relatives
(b) Companions
(c) Blemishes
(d) Belongings

Q58. BONHOMIE
(a) Friendliness
(b) Wrath
(c) Very
(d) Greed

Q59. TRIVIAL
(a) Significant
(b) Momentous
(c) Unimportant
(d) Critical

Q60. COLLAPSE
(a) Rise
(b) Failure
(c) Rebirth
(d) Debt

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

Q61. (a) Seize
(b) Decieve
(c) Believe
(d) Reign

Q62. (a) Acomodate
(b) Accommodate
(c) Accomoda
(d) Accomodete

Q63. (a) Arguement
(b) Argumant
(c) Argument
(d) Arguemant

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

Q64. SALUTATORY
(a) Sad
(b) Valedictory
(c) Derivative
(d) Promising

Q65. GRISLY
(a) Fragrant
(b) Haggard
(c) Pleasant
(d) Shapely

Q66. RAMPANT
(a) Furious
(b) Stylish
(c) Restrained
(d) Healthy

Q67. TRITE
(a) Hackneyed
(b) Correct
(c) Original
(d) Certain

Q68. PREDILECTION
(a) Antipathy
(b) Ignorance
(c) Dissonance
(d) Disharmony

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

Q69. Real friends, genuinely wanting the best for the organisation, _____ different garbs.
(a) come in
(b) clad in
(c) dressed in
(d) clothed in

Q70. What are you _____ in the kitchen cupboard?
(a) looking in   (b) looking on   (c) looking to   (d) looking for

Q71. The prisoner showed no _____ for his crimes.
(a) hatred   (b) obstinacy   (c) remorse   (d) anger

Q72. The Romans were _____ science.
(a) bad in   (b) bad to   (c) bad for   (d) bad at

Q73. Despite his _____ he had to suffer.
(a) punishment   (b) fault   (c) negligence   (d) innocence

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

Q74. If I had been thirsty (a)/ I would have drank the lemonade (b)/ without waiting for you. (c)/ No error (d)/

Q75. We have already seen the movie (a)/ so we refused and (b)/ went to the stadium instead. (c)/ No error (d)/

Q76. Now the time was to (a)/ escape and he opened the window (b)/ and jumped out. (c)/ No error (d)/

Q77. The officer is angry on the clerk (a)/ for not completing the job (b)/ on time. (c)/ No error (d)/

Q78. Everyone who was injured (a)/ in the accident (b)/ were taken to the hospital (c)/ No error (d)/

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

Q79. He is on the wrong side of seventy.
(a) more than seventy years old   (b) less than seventy years old
(c) seventy years old   (d) eighty years old

Q80. She didn't realize that the clever salesman was taking her for a ride
(a) forcing her to go with him   (b) trying to trick her
(c) taking her in a car   (d) pulling her along

Q81. To drive home.
(a) To find one's root   (b) To return to place of rest
(c) Back to original position   (d) To emphasise

Q82. Over the years, we remained loyal through thick and thin.
(a) in married life   (b) in spite of all the difficulties
(c) to our principles   (d) to employers and subordinates

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

Q83. One who possesses many talents
(a) Versatile   (b) Nubile   (c) Exceptional   (d) Gifted

Q84. One who has little faith in human sincerity and goodness
(a) Egoist   (b) Fatalist   (c) Stoic   (d) Cynic

Q85. A person who knows many foreign languages
(a) Linguist   (b) Grammarian   (c) Polyglot   (d) Bilingual

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: Ants eat worms, centipedes and spiders.
P : They are usually much quicker than the ant itself.
Q : Nevertheless, these animals do not make easy game for ants.
R : Besides, they have an extraordinary number of ways of escaping.
S : They also eat larvae and insect adults such as flies, moths and spring tails.
S6: Some jump, and some give out a pungent repellent substance.
The Proper sequence should be:
(a) SQPR   (b) SPRQ   (c) SQRP   (d) SRQP

Q87. S1: Satyajit Ray made several films for children.
P : Later film makers have followed his lead.
Q : Today other nations are making the children's film in a big way.
R : This was at a time when no director considered children as potential audience.
S : Ray was, thus, a pioneer in the field.
S6: But today few think of Ray as a maker of children's films.
The Proper sequence should be:
(a) PSRQ   (b) RSQP   (c) RSPQ   (d) SQRP

Q88. S1: Hungary, with a population of about 10 million, lies between Czechoslovakia to the north and Yugoslavia to the south.
P : Here a great deal of grain is grown.
Q : In recent years, however, progress has been made also in the field of industrialisation.
R : Most of this country consists of an extremely fertile plain, through which the river Danube flows.
S : In addition to grain, the plain produces potatoes, sugar, wine and livestock.
S6: The new industries derive mainly from agricultural production.
The Proper sequence should be:
(a) QRSP   (b) RPSQ   (c) PRSQ   (d) RQSP

Q89. S1: Palaeobotany is the study of fossil plants preserved in rocks dating back in millions of years.
P : Records of the history of the world are contained in fossils.
Q : Through the ages, plants have evolved from simple to more complex forms.
R : First there were water plants then land plants appeared during the Paleozoic era.
S : But since the fossil remains appear locked in rock layers, they are closely related to the geologist area of investigation.
S6: The fossil plants indicate the age of the rock, and also point to facts regarding climate, temperature and topography.
The Proper sequence should be:
(a) RQSP   (b) SQRP   (c) PSQR   (d) QRPS

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

Q90. I hope you won't object _to me watching_ while you work.
(a) against me watching   (b) me to watch   (c) to my watching   (d) No improvement

Q91. You cannot forbid _him leaving_.
(a he leaving   (b) his leaving   (c) him to leave   (d) No improvement

Q92. 20 kms _are not a great distance_ in these days of fast moving vehicles.
(a) is not a great distance   (b) is no distance   (c) aren't a great distance   (d) No improvement

Q93. _The more they earn, more they spend._
(a) More they earn, more they spend   (b) More they earn, the more they spend
(c) The more they earn, the more they spend   (d) No improvement

Q94. It became clear that the strangers were heading _into_ a serious disaster.
(a) along   (b) towards   (c) for   (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. I cannot accept your offer.
(a) Your offer cannot be accepted by me.   (b) I cannot be accepted by your offer.
(c) The offer cannot be accepted by me.   (d) Your offer cannot be accepted.

Q96. You can play with these kittens quite safely.
(a) These kittens can played with quite safely.   (b) These kittens can play with you quite safely.
(c) These kittens can be played with you quite safely.   (d) These kittens can be played with quite safely.

Q97. She makes cakes every Sunday.
(a) Every Sunday cakes made by her.   (b) Cakes are made by her every Sunday.
(c) Cakes make her every Sunday.   (d) Cakes were made by her every Sunday.

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

Q98. Athens it was also (P)/ the first democracy in the world (Q)/ was not only (R)/ an almost perfect democracy (S)/
(a) R S P Q   (b) P Q R S   (c) R Q P S   (d) Q P S R

Q99. The practice of taking performance-boosting drugs among athletes but checking it is not going to be easy (P)/ is generally conceded to be unfair (Q)/ of the detection technology (R)/ for the user is generally one jump ahead (S)/
(a) R S P Q   (b) Q P S R   (c) Q P R S   (d) P Q R S

Q100. Whenever I see the model who started it (P) / is the face of the man (Q) / of our factory (R) / what comes to my mind (S)/
(a) S R Q P   (b) R S Q P   (c) Q P R S   (d) P Q R S

PART–I : GENERAL KNOWLEDGE
ANSWER PRACTICE TEST PAPER - 4

1. (a) refracts the most
2. (a) nuclear fusion
3. (c) cooled down when compressed
4. (b) absolute temperature
5. (d) Gas mixed with a liquid and a solid
6. (c) Diamond
7. (c) It increases the yield of the products
8. (c) compound formed by combination of potassium iodide and common salt
9. (d) Cytoplasm, nucleoplasm and other organelles
10. (b) protein
11. (b) bone marrow
12. (a) Phytosterols
13. (d) Jatakas
14. (b) not refused to introduce reforms as suggested by the British
15. (c) Marx and Engels
16. (b) Mutual respect for each other territorial integrity and sovereignty, non-aggression, non-interference, equality and mutual benefit and peaceful co-existence
17. (b) Muhammad Ali Jinnah
18. (a) Morley-Minto reforms
19. (c) Muhammad Ali Jinnah
20. (c) gradual reduction in the amount of global direct irradiance at the Earth surface
21. (c) earth's albedo
22. (d) trade winds
23. (b) Equatorial regions
24. (b) full or new moon in association with equinox
25. (b) Little Andaman
26. (d) Andhra Pradesh
27. (a) in accordance with their population
28. (b) contains the real objective and philosophy of constitution makers
29. (d) Article 348 of the Constitution of India
30. (c) of one year at a time
31. (a) lay down positive instructions which would guide State Policy at all levels
32. (c) for 6 years or till the age of 65 years, whichever is earlier
33. (a) its first meeting
34. (c) Monopolistic competition
35. (d) Monsoon experiment
36. (b) Competition Commission of India
37. (a) Anti-tank Guided Missile
38. (b) Arunachal Pradesh
39. (d) Indian Army
40. (b) August 29
41. (a) Football
42. (b) Pierre de Coubertin
43. (b) Athens
44. (a) Sikkim
45. (d) Padmaja Naidu Himalyan Zoological Park
46. (b) NASA
47. (a) Ministry of Education
48. (a) Surya Prakash Committee
49. (b) Serum Institute of India
50. (d) DRDO

PART–II : ENGLISH
ANSWER PRACTICE TEST PAPER - 4

51. (b) held promise for a better future
52. (d) doing all the above and much more
53. (c) Science and Humanism are equally important
54. (a) a supernatural power of god
55. (c) a person having varied interests
56. (b) Charm
57. (b) Companions
58. (a) Friendliness
59. (c) Unimportant
60. (b) Failure
61. (b) Decieve
62. (b) Accommodate
63. (c) Argument
64. (a) Sad
65. (c) Pleasant
66. (c) Restrained
67. (c) Original
68. (a) Antipathy
69. (a) come in
70. (d) looking for
71. (c) remorse
72. (d) bad at
73. (d) innocence
74. (b) I would have drank the lemonade
    If I had been thirsty I would have drunk the lemonade without waiting for you.
75. (a) We have already seen the movie
    We had already seen the movie, so we refused and went to the stadium instead.

76. (a) Now the time was to
    Now was the time to escape and he opened the window and jumped out.

77. (a) The officer is angry on the clerk
    The officer is angry with the clerk for completing the job on time.

78. (c) were taken to the hospital
    Everyone who was injured in the accident was taken to the hospital.

79. (a) more than seventy years old

80. (b) trying to trick her

81. (d) To emphasise

82. (b) in spite of all the difficulties

83. (a) Versatile

84. (d) Cynic

85. (a) Linguist

86. (a) SQPR

87. (c) RSPQ

88. (b) RPSQ

89. (d) QRPS

90. (c) to my watching

91. (c) him to leave

92. (a) is not a great distance

93. (c) The more they earn, the more they spend

94. (b) towards

95. (a) Your offer cannot be accepted by me.

96. (d) These kittens can be played with quite safely.

97. (b) Cakes are made by her every Sunday.

98. (c) R Q P S

99. (b) Q P S R

100. (b) R S Q P