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 0.5 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, 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 questions, select the related word from the given alternatives:-

Q1. Timid : Ass :: Cunning : ?
(a) Ant   **(b) Fox**   (c) Rabbit   (d) Horse

Q2. Antonyms : Synonyms :: Analysis : ?
(a) Synthesis   (b) Synchronize   (c) Simplify   (d) Summarise

Q3. Editor : Newspaper :: ? : ?
(a) Farmer : Sell   (b) Wall : Mason   (c) Chef : Knife   **(d) Poet : Poem**

Q4. Amnesia : Memory :: Paralysis : ?
(a) Legs   **(b) Movement**   (c) Limbs   (d) Handicapped

Q5. 8 : 81 :: 10 : ?
(a) 100   **(b) 121**   (c) 120   (d) 111

Q6. Select the word-pair in which the two words are related in the same way as are the two words in the word-pair **Spoke : Wheel**
(a) Word : Sentence   (b) Printer : Computer   (c) Square : Side   (d) Tree : Branch

Q7. Select the set in which the numbers are related in the same way as are the numbers of the following set. (16, 64, 8)
(a) (15, 60, 8)   (b) (18, 90, 6)   (c) (10, 80, 8)   (d) (14, 62, 4)

Q8. AC : CF :: MO : ?
(a) QR   (b) PQ   (c) OQ   **(d) OR**

Q9. BECD : YVXW :: DGEF : ?
(a) VRTS   **(b) WTVU**   (c) WUTV   (d) XUWV

Q10. A is B's sister. C is B's mother. D is C's father. E is D's mother. Then how is A related to D?
(a) Grandmother   (b) Daughter   (c) Grandfather   **(d) Granddaughter**

Q11. A and B are brother and sister respectively. C is A's father. D is C's sister and E is D's mother. How is B related to E?
(a) Granddaughter   (b) Great Granddaughter   (c) Aunt   (d) Daughter

Q12. Raghu and Babu are twins. Babu's sister is Reema. Reema's husband is Rajan. Raghu's mother is Laxmi. Laxmi's husband is Rajesh. How is Rajesh related to Rajan?
(a) Father-in-law   (b) Cousin   (c) Uncle   (d) Son-in-law

Q13. Gopal said, pointing at Govind, "His father is my father's only son." How is Gopal related to Govind?
(a) Grandfather   (b) Grandson   (c) Son   **(d) Father**

Directions: In the following questions you have to identify the correct response from the given options according to following symbols:

Q14. If '−' stands for division '+' stands for subtraction, '÷' stands for multiplication, '×' stands for addition, then which one of the following is correct?
(a) 70 − 2 + 4 ÷ 5 × 6 = 44   **(b) 70 − 2 + 4 ÷ 5 × 6 = 21**   (c) 70 − 2 + 4 ÷ 5 × 6 = 341   (d) 70 − 2 + 4 ÷ 5 × 6 = 36

Q15. If '+' means '÷', '−' means '+', '×' means '−' and '÷' means '×', then 8 ÷ 4 − 6 + 3 × 4 = ?
(a) 4   (b) 14   (c) 28   **(d) 30**

Q16. If '+' means '÷', '−' means '×', '÷' means '+' & '×' means '−', then 36 × 12 + 4 ÷ 6 + 2 − 3 = ?
(a) 4   (b) 6½   (c) 18   **(d) 42**

Q17. Which of the following interchange would make the equation 8 × 20 ÷ 3 + 9 − 5 = 38
(a) (8, 9)   **(b) (3, 5)**   (c) (3, 9)   (d) (3, 8)

Q18. In the following question, by using which mathematical operator will expression become correct?
9 ? 27 ? 3 ? 4 ? 3
(a) +, +, < and ×   **(b) +, ÷, > and ×**   (c) ×, ÷, = and ×   (d) +, ÷, < and +

Q19. If 1 # 3 # 7 = 21 and 12 # 1 # 3 = 36, then 14 # 2 # 0 = ?
(a) 28   **(b) 0**   (c) 16   (d) 7

Q20. A man drives his car 6 km towards west, then turns left and drives 3 km and again turns left and drives 3 km. Find out the final direction of the man from his original position.
(a) South−West   (b) North−West   (c) North−East   (d) South−East

Directions: In each of the following questions, a series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

Q21. 56, 90, 132, 184, 248, ?
(a) 368   (b) 316   (c) 362   **(d) 326**

Q22. 14, 19, 29, 49, 89, ?
(a) 139   (b) 149   (c) 159   **(d) 169**

Q23. 225, 289, ? , 441.
(a) 361   (b) 375   (c) 383   (d) 386

Q24. 2, 5, 9, ? , 20, 27.
(a) 14   (b) 16   (c) 18   (d) 24

Q25. 1, 6, 13, 22, 33, ?
(a) 47   (b) 43   **(c) 46**   (d) 44

Q26. If SEVEN is coded as 23136 and EIGHT as 34579, what will be the code for NINE?
(a) 6463   (b) 6364   (c) 6346   (d) 6436

Q27. If in certain code, 'EDITION' 3891965, then how 'TIDE' will be written in that code?
(a) 3819   **(b) 1983**   (c) 1839   (d) 1586

Q28. PROHIBITION is coded as 68032124205. How will you code INHIBITION?
(a) 2531214205   (b) 2532125205   (c) 2542124205   **(d) 2532124205**

Q29. If E=5, PEN=35, then PAGE = ?
(a) 27   (b) 28   **(c) 29**   (d) 30

Q30. If MEAT is written as TEAM, then BALE is written
(a) EBLA   **(b) EALB**   (c) ELAB   (d) EABL

Q31. If MIGRANT is coded as LHFQZMS, then how will GEL be coded as?
(a) Q X K   **(b) F D K**   (c) I X Z   (d) I F G

Q32. B is twice as old as A but twice younger than F. C is half the age of A but is twice older than D. Who is second oldest?
(a) B   (b) F   (c) D   (d) C

Q33. Five friends are sitting on bench. A is to the left of B but on the right of C. D is to the right of B but on the left of E. Who are at extremes?
(a) AB   (b) AD   (c) BD   **(d) CE**

Q34. The salaries of B, R, G, A and M are compared with one-another, M receives more salary than that of A & G. The salary of R is less than the three persons. The salary of B is least. Whose salary is second lowest?
(a) M   **(b) R**   (c) A   (d) G

Direction Find the missing number from the given responses in each of the following questions:
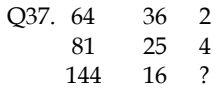
Q35.

3 ∨ 2   1 ∨ 5   3 ∨ 4
35   126   ?
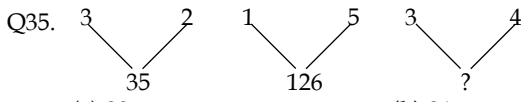
(a) 90   **(b) 91**   (c) 103   (d) 75

Q36.

3	2
4	24

2	–1
–2	4

6	5
0	?

(a) 1   (b) 30   (c) 11   **(d) 0**

Q37.   64   36   2
        81   25   4
       144   16   ?

(a) 6   **(b) 8**   (c) 3   (d) 16

Q38.

4	10	6
12	96	48
16	152	?

(a) 110   **(b) 104**   (c) 112   (d) 124

Q39.

5	4	41
15	5	?
9	11	202

(a) 261   (b) 212   (c) 209   (d) 122

Q40. The age of Ram is double as that of Shyam and half as that of Suresh. If the sum of their age is 70. What is the age of Ram?
(a) 20   (b) 30   (c) 40   (d) 10

Q41. Anil is as much younger to Vivek as he is older to Tarun. If the total of the ages of Vivek & Tarun is 48 years, how old is Anil?
(a) 20   (b) 33   **(c) 24**   (d) 18

Q42. If 4 cats kill 4 rats in 4 minutes, how many minutes will it take 8 cats to kill 8 rats?
(a) 8   **(b) 4**   (c) 2   (d) 16

Q43. The last three digits of the binary equivalent of the number 85432578 is?
(a) 001   (b) 100   (c) 110   **(d) 010**

Q44. A man takes 6 Km distance to go around the rectangular area. If the area of the rectangle is 2 sq Km find the difference between length & breadth?
(a) 2 Km   (b) 0.5 Km   **(c) 1 Km**   (d) 0.75 Km

Direction: Which one of the given responses would be a meaningful order of the following words?

Q45. (a) Doctor   (b) Fever   (c) Prescribe   (d) Diagnose   (e) Medicine
(a) b, a, c, d, e   (b) a, d, c, b, e   **(c) b, a, d, c, e**   (d) b, d, c, e, a

Q46. (1) Brother   (2) Husband   (3) Father   (4) Son   (5) Son -in- law
(a) 3, 2, 1, 5, 4   (b) 4, 1, 2, 5, 3   **(c) 4, 1, 5, 2, 3**   (d) 3, 1, 4, 2, 5

Q47. Which of the following states the relationship between Sociology, psychology and Humanities?

(a) ⊙⊙   (b) ◎   (c) ⊙⊙   (d) ⊙⊙⊙
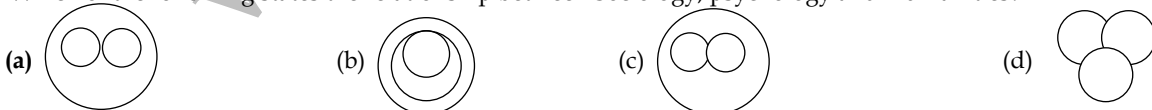
Q48. In the following figure, which member represents the women doctor who are not employed

9 → Women
6   1   5 → Employed
3   2   4
7
8   Doctors
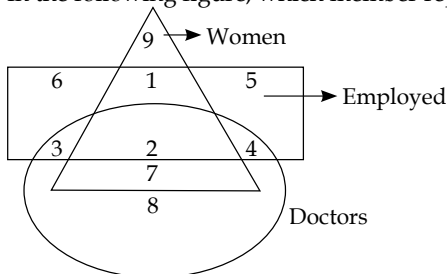
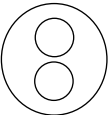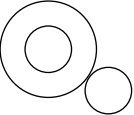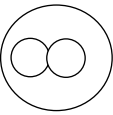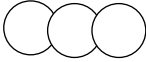**(a) 7**   (b) 3   (c) 1   (d) 8

Q49. In Venn diagram the rectangle represents WOMEN, the pentagon represents ENTREPRENEURS and the triangle represents MOTHERS. The numbers given in the diagram represents number of persons in that category?
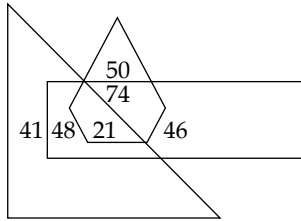
How many WOMEN are ENTREPRENEURS but not MOTHER

(a) 21   **(b) 74**   (c) 50   (d) 46

Q50. Select the Venn diagram which best represents relationship among the given three classes? MALE, FATHER, BROTHER

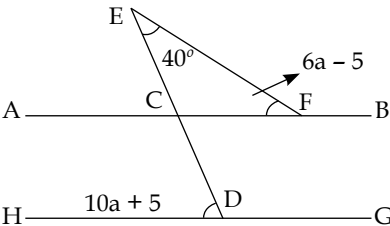(a)   (b)   **(c)**   (d)

PART–II : ELEMENTARY MATHEMATICS

Q51. A fruit seller has a certain number of apples of which 5% are rotten. He sells 75% of the remainder and he is left with 190 apples. What was the initial number of apples with fruit seller?

(a) 1000   (b) 900   **(c) 800**   (d) 700

Q52. Two numbers are in the ratio 3 : 5. If 13 is subtracted from each, the new number are in the ratio of 10 : 21. If 15 is added to each of the original number then the ratio becomes?

(a) 5 : 7   (b) 23 : 33   (c) 4 : 5   **(d) 24 : 35**

Q53. Ramesh marks his goods 30% above cost price. If he sells the item for 910/- after allowing a discount of 15% find his cost price?

(a) 823.5   (b) 758   (c) 814.2   (d) 856.5

Q54. 'A' does 30% of a work in 30 days. He then call 'B' and they together finish the remaining work in 20 days. How long B alone world take to do the whole work?

(a) 40   (b) 80   (c) 120   (d) 160

Q55. If for two real constant a and b, the expression $ax^3 + 3x^2 – 8x + b$ is exactly divisible by $(x + 2)$ and $(x – 2)$, then?

(a) a = 2, b = 12   (b) a = 12, b = 2   **(c) a = 2, b = –12**   (d) a = –2, b = 12

Q56. If the diameter of a wire is decreased by 10%, by how much percent (approx) will the length be increased to keep the vol constant?

(a) 5%   (b) 17%   (c) 20%   **(d) 23%**

Q57. The ratio of the outer and inner perimeters of a circular path is 23 : 22. If the path is 5m wide, the diameter of the inner circle is?

(a) 55m   (b) 110m   **(c) 220m**   (d) 230m

Q58. In statistics, a suitable graph for representing the partitioning of total into subpart is?

(a) An ogive   (b) a pictograph   (c) a histogram   **(d) a pie chart**

Q59. The sum of twice a number and thrice its reciprocal is 25/2. What is the number?

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

Q60. Three numbers are in the ratio of 3 : 4 : 5 and their LCM is 4200. Their HCF is?

(a) 70   (b) 60   (c) 20   (d) 15

Q61. Find the value of 2.8 + (5.2 ÷ 1.3 × 2) – 6 × 3 ÷ 8 + 2?

(a) 6.45   (b) 4.55   (c) 8.45   **(d) 10.55**

Q62. If x = $2 +\sqrt{3}$, then the value of $\frac{x^2 – x + 1}{x^2 + x + 1}$ is ?

(a) $\frac{2}{3}$ (b) $\frac{3}{4}$ (c) $\frac{4}{5}$ **(d) $\frac{3}{5}$**

Q63. On a journey across Mumbai, a taxi average 25 km per hr for 50% of the distance, 20 km pr hr for 40% of it and 10 km per hr for remaining. The average speed in (km/hr) for the complete journey is?

(a) 16   (b) 18   **(c) 20**   (d) 22.5

Q64. Find the wrong number in the sequence 5, 10, 17, 26, 38, 50, 65

(a) 10   (b) 26   **(c) 38**   (d) 65

Q65. If $x + y + z = 3$ and $x^2 + y^2 + z^2 = 101$, then what is the value of $\sqrt{x^3 + y^3 + z^3 – 3xyz}$

(a) 28   (b) 26   (c) 24   **(d) 21**

Q66. In a class of 60 students, 40% are girls. The average weight of the whole class is 59.2 and the average weight of the girls is 55 kg. What is the average weight of the boys?

(a) 61 Kg   **(b) 62 Kg**   (c) 63 Kg   (d) 64 Kg

Q67. The ratio of age of two boys is 5 : 6, after two years the ratio will be 7 : 8. The ratio of their age after 12 yrs will be?

(a) $\frac{21}{22}$ (b) $\frac{15}{16}$ **(c) $\frac{17}{18}$**   (d) $\frac{11}{12}$

Q68. A canister holds 36 Ltr of mixture of milk and water in a ratio 3 : 1. 15 Ltr of milk is added to the canister. The new ratio of the mixture is ?

(a) 12 : 5   **(b) 14 : 3**   (c) 7 : 4   (d) 9 : 4

Q69. The sum of two positive numbers is 20% of the sum of their square and 25% of the difference of their squares. If the numbers are x & y then $\frac{x+y}{x^2}$ is equal to ?

(a) $\frac{1}{4}$　　　　　(b) $\frac{3}{8}$　　　　　(c) $\frac{1}{3}$　　　　　**(d) $\frac{2}{9}$**

Q70. The top of two poles of height 24m and 36m are connected by a wire. If the wire makes an angle of 60° with the horizontal, then the length of the wire is?

(a) 6m　　　　　(b) 8m　　　　　**(c) $8\sqrt{3}$ m**　　　　　(d) $3\sqrt{3}$ m

Q71. If the opposite sides of a quadrilateral and also its diagonal are equal, then each of the angles of quadrilateral is?

(a) 90°　　　　　(b) 105°　　　　　(c) 120°　　　　　(d) 60°

Q72. Find length of the arc whose central angle is 45° and radius of the circle is 28 cm?

(a) 11　　　　　**(b) 22**　　　　　(c) 33　　　　　(d) 44

Q73. In a farm there are cows and hens. If heads are counted they are 180, if legs are counted they are 420. The number of cows in the farm is?

(a) 150　　　　　(b) 130　　　　　(c) 50　　　　　**(d) 30**

Q74. 114 sweets are distributed among 20 children such that each girl gets 6 sweets and each boy gets 5 sweets. The number of boy is?

(a) 6　　　　　(b) 7　　　　　(c) 8　　　　　(d) 9

Q75. If a sum of money on compound interest becomes three times in 4 years, then at the same interest rate, the sum will become 27 times in?

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

Q76. Simple interest on a sum for 10 years is equal to 5% of the principle. In how many years interest will be equal to the principle?

(a) 100　　　　　(b) 150　　　　　**(c) 200**　　　　　(d) 250

Q77. The sum of three consecutive integers is 81. The middle one is?

(a) 24　　　　　(b) 25　　　　　(c) 26　　　　　**(d) 27**

Q78. The sum of two numbers is 1215 and their HCF is 81. How many such pairs of numbers can be formed?

(a) 3　　　　　**(b) 4**　　　　　(c) 6　　　　　(d) None of the above

Q79. If $\sqrt{y} = \sqrt{4} - \sqrt{6}$ then find the value of $(y^2 - 20y + 12)$?

(a) 4　　　　　**(b) 8**　　　　　(c) 10　　　　　(d) 12

Q80. The average of prime numbers between 1 and 30 is?

(a) $11\frac{3}{7}$　　　　　(b) $12\frac{7}{9}$　　　　　**(c) $12\frac{9}{10}$**　　　　　(d) $12\frac{7}{9}$

Q81. A man covered a certain distance by a train running at the speed of 50 km/h and covers the same distance by walking back at the speed of 5 Km/h. If the whole journey took 5 hr and 30 min. then what was the distance (in Km) of one side?

(a) 18　　　　　(b) 20　　　　　**(c) 25**　　　　　(d) 30

Q82. A certain number of men complete a work n 60 days. If there are 8 more men, the work can be finished in 10 days less. The number of men originally is?

(a) 30　　　　　(b) 32　　　　　(c) 36　　　　　**(d) 40**

Directions: The following pie chart shows the expenditure (in percentage) of five companies P, Q, R, S and T in one year 2020?

Total expenditure – 48Cr

P 24%　T 20%　S 16%　R 18%　Q 22%
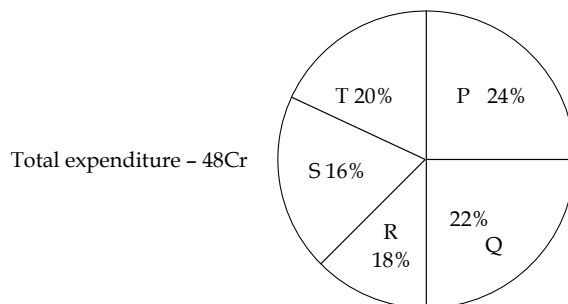
Q83. What was the total expenditure in (Rs Cr) of the company Q, R & T together?

(a) 19.2　　　　　**(b) 28.8**　　　　　(c) 24.3　　　　　(d) 31.4

Q84. By how much percent expenditure of company Q & R together is greater than that of company P?

(a) 33.33%　　　　　(b) 60%　　　　　**(c) 66.67%**　　　　　(d) 75%

Q85. Two chords, AB and CD of a circle meet at a point O, outside the circle. It is given that AB = 7 cm, CD = 4 cm, OB = 5 cm. What is length of OD?

(a) 5 cm   **(b) 6 cm**   (c) 7.5 cm   (d) 10 cm

Q86. The curved surface area of a cylinder is 594 cm² and its vol is 1336.5 cm³. What is the height (in cm) of the cylinder?

(a) 114   **(b) 21**   (c) 24.5   (d) 10.5

Q87. Dinesh can row at 18 Km/h in still water. If speed of stream is 6 Km/h, then how long will Dinesh take to row upto a distance of 6km and return to the starting point?

(a) 40 Min   **(b) 45 Min**   (c) 50 Min   (d) 52 Min

Q88. If $\cos \theta = \frac{3}{5}$, then the value of $\sin \theta$ is ?

(a) $\frac{2}{5}$ **(b) $\frac{4}{5}$**   (c) $\frac{2}{3}$ (d) can not be determined

Q89. If $3\sqrt{5} + \sqrt{125} = 17.88$, then what will be the value of $\sqrt{80} + 6\sqrt{5}$?

(a) 13.41   (b) 20.46   (c) 21.66   **(d) 22.35**

Q90. Water contains $14\frac{2}{7}$ % of hydrogen and the rest is oxygen. In 350g of water, oxygen will be?

(a) 300   (b) 250   (c) 200   (d) None of the above

Q91. The area of smallest square which can be formed with rectangle of dimension 6 cm × 4 cm, is?

(a) 16 cm²   (b) 24 cm²   (c) 36 cm²   **(d) 144 cm²**

Q92. The mean proportion between $(8 + \sqrt{15})$ and $(32 - 4\sqrt{15})$ is?

(a) 14   (b) 13   (c) 12   (d) 11

Q93. If AB is parallel to HG, what is the value of a ?

(a) 15   (b) 2.5   **(c) 7.5**   (d) 9.5

Q94. A well is dug 20 m and it has a diameter of 7m. The earth taken out is spread as a regular plot 22 m× 14m dimension, then height of the platform formed is?

(a) 2.1 m   **(b) 2.5 m**   (c) 2.9 m   (d) 3.5 m

Q95. If $\tan\left(\frac{\theta}{2}\right) \tan\left(\frac{2\theta}{5}\right) = 1$. What is the value of (in degree) θ?

(a) 45° **(b) 90°**   (c) 100° (d) 120°

Q96. If $x\left(3 - \frac{2}{x}\right) = \frac{3}{x}$ then the value of $x^2 + \frac{1}{x^2}$ is

(a) $2\frac{1}{9}$ **(b) $2\frac{4}{9}$**   (c) $3\frac{1}{9}$ (d) $3\frac{4}{9}$

Q97. The efficiencies of A, B and C are in the ratio 5 : 3 : 2 working together, they can complete a task in 21 hours. In how many hours will B alone complete 40% of that task?

(a) 28   (b) 24   (c) 21   (d) 35

Q98. A boat takes half time in moving a certain distance downstream than upstream. The ratio of the speed of the boat in still water and that of the current is?

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

Q99. Find the value of x? $\text{Log } x \sqrt{3} = \frac{1}{4}$

(a) 9   (b) 3   (c) 4   (d) 1

Q100. Which of the following statement is not correct?

(a) $\log_{10} 10 = 1$ **(b) log (2+3) = log (2×3)**
(c) $\log_{10} 1 = 0$ (d) log (1+2+3) = log1 + log2 + log3

ANSWERS ARE BOLD