

Sample Paper

4 Year (Foundation)

Duration: 2.5 Hrs

Maximum Marks: 230

For Students Presently in Class 8th (Stream: Foundation)

PAPER SCHEME:

- This paper contains **45 Objective Type Questions** divided into four sections: **Section - I, Section – II, Section - III and Section - IV**
- **Section I** contains **5 Multiple Choice Questions (1-5)** based on **Mental Aptitude**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.
- **Section II** contains **10 Multiple Choice Questions (6-15)** based on **Science**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.
- **Section III** contains **20 Multiple Choice Questions (16-35)** based on **Mathematics**. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE** is correct.
- **Section IV** contains **10 Numerical Value Type Questions (1-10)**. The answer to each of these questions ranges from 0 to 99.

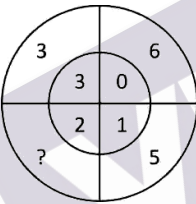
MARKING SCHEME:

- **Section I:** For each question, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
- **Section II & III:** For each question, **5 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.
- **Section IV:** For each question, **6 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.

SUGGESTIONS:

- Before starting the paper, spend 2-2.5 minutes to check whether all the pages are in order and report any issues to the invigilator immediately.
- Try to attempt the Sections in their respective order.
- Do not get stuck-up at a particular question for more than 2 to 2.5 minutes. Move on to a new question as there are 45 questions to solve.

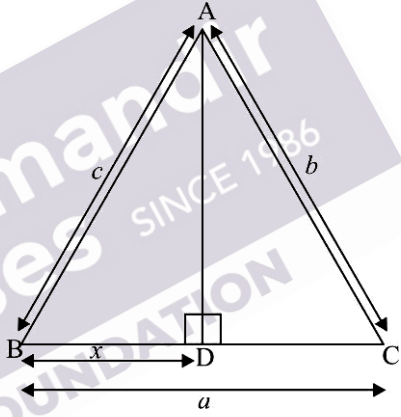
SECTION – I | MENTAL APTITUDE

1. In a certain code language, if the word "REASON" is coded as TGCQML, then "MANUAL" is coded as:
- (A) OCPWCN (B) OCPSYJ
(C) OCPSJY (D) OCPNCW
2. If "EXAMINATION" = 121 and "PAPER" = 25, then what is the value of "TREASURE" ?
- (A) 64 (B) 360
(C) 290 (D) 81
3. Prashant is seventeenth from the right end of the row and Vijay is fourteenth from the left end of the row. If Rajneesh is fourth to the right of Prashant and third to the left of Vijay, how many persons are there in the row?
- (A) 17 (B) 19 (C) 23 (D) 38
4. 
- (A) 6 (B) 4 (C) 8 (D) 10
5. Shiva travels 10 m towards West. He turns left and travels 15 m. Again, he turns to his left and walks 10 m further. Finally, he walks 13 m towards North and then stops. At what vertical distance is he from his house?
- (A) 13 m (B) 15 m
(C) 28 m (D) 2 m

SECTION – II | SCIENCE

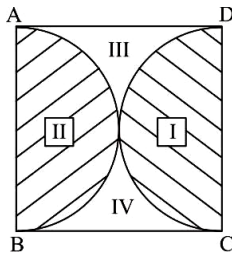
6. While measuring the depth of a certain ocean, sonar received a signal after 18 seconds after it was transmitted. If velocity of sound in ocean water is 580ms^{-1} , then the depth is :
- (A) 5210 m (B) 5 km 220 m (C) 5 km 210 m (D) 5 km 200 m
7. Friction reduces efficiency of machines due to :
- (A) Production of heat (B) Wearing out of moving parts
(C) Increase in energy consumption (D) All of these
8. Which of the following is **NOT** true?
- (A) A sharp knife can easily cut due to its small cutting surface.
(B) It is easier to walk in sand than on road.
(C) A battle tank can move easily on soft ground because its tracks have bigger surface.
(D) The pressure exerted by a needle is much more than the foot of an elephant.
9. A bee produces buzzing sound by flapping its wings 250 times per second. The time period of the periodic motion of its wings (in seconds) will be :
- (A) 0.004 (B) 0.04 (C) 0.4 (D) 4.0
10. Hottest zone of candle flame is :
- (A) Middle zone
(B) Innermost zone
(C) Outer zone
(D) Middle & outer zone both have same temperature
11. Which of the following is not a solid fuel ?
- (A) Paraffin (B) Coal (C) Tallow (D) Benzene
12. Out of the following, which one is/are a protected area?
- (A) Wildlife Sanctuary (B) National Park
(C) Biosphere Reserve (D) All of these
13. _____ variety of wheat caused green revolution in India.
- (A) Pollinated (B) Fertilised (C) Polluted (D) Hybridised
14. Micro-organism used for commercial production of wine and alcohol is :
- (A) Yeast (B) Lactobacillus
(C) Propionibacterium (D) Streptococci
15. Who discovered vaccine for small pox ?
- (A) Edward Jenner (B) George Palade (C) Robert Koch (D) W. Kuhne

SECTION – III | MATHEMATICS

16. A rational number between $\sqrt{2}$ and $\sqrt{3}$ is :
- (A) 1.5 (B) $\frac{\sqrt{2} + \sqrt{3}}{2}$ (C) $\sqrt{2} \times \sqrt{3}$ (D) 1.8
17. A number is increased by 10% and then it is decreased by 10%. The net increase or decrease percentage is:
- (A) 3% (B) 4% (C) 2% (D) 1%
18. For positive integers x and y , the LCM is 225 and HCF is 15. There:
- (A) Is exactly one such pair (B) Are exactly two such pairs
(C) Are exactly three such pairs (D) Are exactly four such pairs
19. If $x = \frac{1}{1 + \sqrt{2}}$, then the value of $x^2 + 2x + 3$ is:
- (A) 3 (B) 0 (C) 4 (D) 1
20. In $\triangle ABC$, segment $AD \perp BC$, if $BD = x$ units, then x is :
- (A) $x = \frac{c^2 + a^2 - b^2}{2a}$
(B) $x = \frac{a^2 + b^2 - c^2}{2c}$
(C) $x = \frac{b^2 + c^2 - a^2}{2b}$
(D) $x = \frac{b^2 + c^2 - a^2}{2abc}$
- 
21. The average marks scored by Ajay in certain number of tests is 84. He scored 100 marks in his last test. His average score of all these tests is 86, then the total number of tests he appeared is :
- (A) 8 (B) 7 (C) 9 (D) 10
22. If $a + b + c = 0$, then $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab}$ is :
- (A) 1 (B) 2 (C) 3 (D) 4
23. The value of $\sqrt{17 + 4\sqrt{13}} - \sqrt{17 - 4\sqrt{13}}$ is :
- (A) 2 (B) 3 (C) 4 (D) 5
24. 'A' can complete a work in 120 days, 'B' can complete it in 60 days, 'C' can complete it in 40 days, 'D' can complete it in 30 days. In how many days, A and B working together can complete the work ?
- (A) 40 (B) 30 (C) 20 (D) 10

Paragraph for Questions 25 - 26

$ABCD$ is a square of side length 14 cm. (Take $\pi = \frac{22}{7}$)



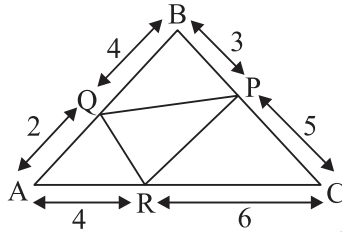
25. Find the ratio of $\frac{\text{ar}(IV) + \text{ar}(III)}{\text{ar}(I) + \text{ar}(II)}$.
- (A) $\frac{2}{11}$ (B) $\frac{4}{11}$ (C) $\frac{6}{11}$ (D) $\frac{3}{11}$
26. Find the ratio of $\frac{\text{ar}(II) + \text{ar}(I)}{\text{area of } ABCD}$.
- (A) $\frac{11}{14}$ (B) $\frac{4}{14}$ (C) $\frac{13}{14}$ (D) $\frac{1}{14}$
27. The units digit of $(257)^{406}$ is :
- (A) 7 (B) 9 (C) 3 (D) 1
28. The greatest number that can divide 545 and 726 by leaving remainders 5 and 6 respectively, is :
- (A) 90 (B) 180 (C) 45 (D) 60
29. If $a = 1 - 2x, b = 2x - 3$ and $c = 2$, then $a^3 + b^3 + c^3 =$ _____.
- (A) $3(1 - 2x)(2x - 3)$ (B) $6(1 - 2x)(2x - 3)$
 (C) $9(1 - 2x)(2x - 3)$ (D) $2(2x - 3)(1 - 2x)$
30. In $\triangle ACD$, $BE \parallel CD$ and $\angle A : \angle ABE : \angle D = 3 : 4 : 5$. Find $\angle A$.
- (A) 42° (B) 48°
 (C) 45° (D) None of these
-
31. Simplify: $78 - [25 \div 5 - 5 + 3(12 - 2 \times 6)]$
- (A) -102 (B) 78 (C) 0 (D) 58
32. If $N = \frac{\sqrt{15} + \sqrt{35} + \sqrt{21} + 5}{\sqrt{3} + 2\sqrt{5} + \sqrt{7}}$, then $(2N - \sqrt{3})^2 - 7$ is equal to :
- (A) 2 (B) 3 (C) 0 (D) 1
33. If $(3a^2 + 5ab + 7b^2) : (3b^2 + 5bc + 7c^2)$ is equal to $a : b$ (where a, b, c are in continued proportion)
- (A) $b : c$ (B) $a : c$ (C) $a : b$ (D) None of these
34. $\frac{1}{1 + x^{(b-a)} + x^{(c-a)}} + \frac{1}{1 + x^{(a-b)} + x^{(c-b)}} + \frac{1}{1 + x^{(b-c)} + x^{(a-c)}} =$ _____.
- (A) 0 (B) 1 (C) x^{a-b-c} (D) None of these

35. A man sells an article at a profit of 25%. If he had bought it in 20% less and sold it for Rs.10.50 less, he would have gained 30%. Then the cost price of the article is :
- (A) Rs.40 (B) Rs.30 (C) Rs.20 (D) Rs.50

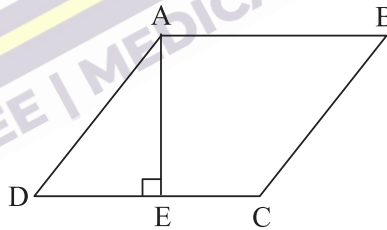
SECTION - IV [NUMERICAL VALUE TYPE QUESTION]

This Section contains 10 Integer-Type Questions. Each question has an integer answer between 0 and 99. Enter the correct Numerical Value.

1. Let a, b, c be positive real numbers such that $abc \neq 1$, $(ab)^2 = (bc)^4 = (ca)^x = abc$, then $10x$ is equal to _____.
2. If a and b are positive numbers and $a^b = b^a$ such that $b = 9a$, then the value of a^4 is _____.
3. In the given figure, $AQ = 2$ cm, $QB = 4$ cm, $BP = 3$ cm, $PC = 5$ cm, $CR = 6$ cm and $RA = 4$ cm. Then the area of triangle BQP (in cm^2) is _____.



4. If the square root of 1234321 is subtracted from the square of 51, then the smallest positive number that should be added to the resultant to make it a perfect square is _____.
5. Point E bisects side CD of parallelogram $ABCD$ and CF intersects DA produced at G such that $CF \parallel AE$, where F is a point on AB . The value of $AD \times GF - CF \times AG$ is:
6. If $9x^2 - 36x + 35 = (3x - a)(3x - b)$ where a, b are natural numbers such that $a > b$ and the value of $a^2 + b^2 - c^2 = 70$ ($c > 0$), then the value of $(a - b - c)$ is _____.
7. In the given figure, $ABCD$ is a rhombus, $DE = 3$ cm and $AE = 4$ cm. The perimeter of the rhombus (in cm) is _____.



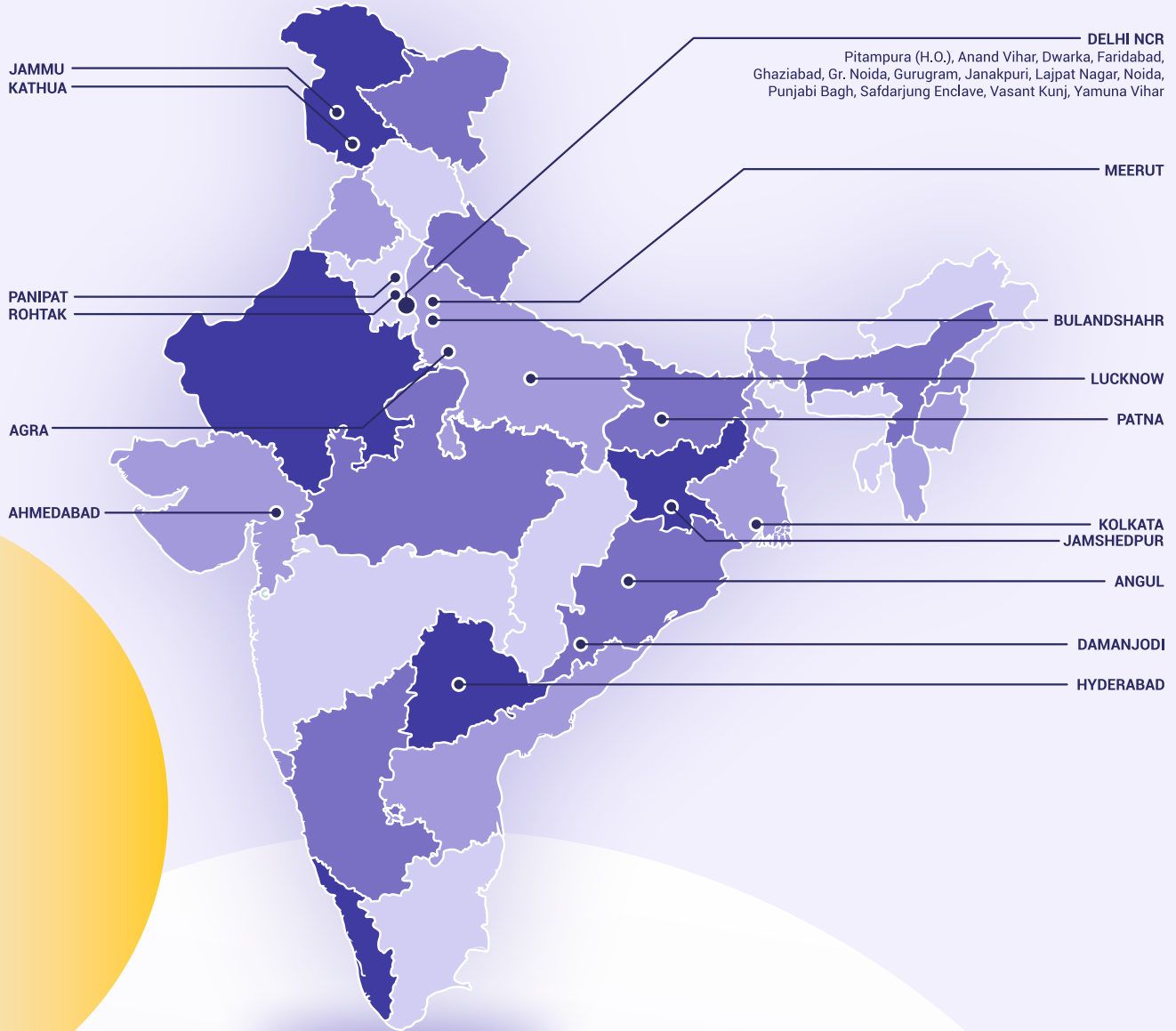
8. The least number of complete year (s) required for a sum of money put out at 40% p.a. compound interest compounded annually will be more than five times the sum, is _____.

9. The value of $\sqrt{\frac{8^{10} + 4^{10}}{8^4 + 4^{11}}}$ is _____.

10. In an isosceles triangle, $AB = AC$ and BA is produced to D , such that $AB = AD$, then $\angle BCD$ (in degrees) is _____.

End of Sample Paper | 4 Year Foundation

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