THOOTHUKUDI DISTRICT
FIRST MID TERM TEST – 2024

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Standard IX   Reg.No. :

MATHEMATICS

Time: 1.30 hrs.   **Part - I**   Marks: 50

I. Choose the correct answer: 4 x 1 = 4

1. Which of the following is correct?

   a) $\phi \subseteq \{a, b\}$ b) $\phi \in \{a, b\}$ c) $\{a\} \in \{a, b\}$ d) $a \subseteq \{a, b\}$

2. Let A = {ϕ} and B = P(A) then A $\cap$ B is

   a) $\{\phi, \{\phi\}\}$ b) $\{\phi\}$ c) ϕ d) $\{0\}$

3. When $\left(2\sqrt{5} - \sqrt{2}\right)^2$ is simplified we get

   a) $4\sqrt{5} + 2\sqrt{2}$ b) $22 - 4\sqrt{10}$ c) $8 - 4\sqrt{10}$ d) $2\sqrt{10} - 9$

4. If $\frac{1}{7} = 0.\overline{142857}$, then the value of $\frac{5}{7}$ is

   a) $0.\overline{142857}$ b) $0.\overline{714285}$ c) $0.\overline{571428}$ d) $0.\overline{714285}$

Part - II

II. Answer any five questions.   5 x 2 = 10

5. Write the set of letters of the following words in Roster form.

   a) ASSESSMENT   b) PRINCIPAL

6. If A = {a, {a,b}} , write all the subjects of A.

7. If n(A) = 36, n(B) = 10, n(A$\cup$B) = 10 and n(A') = 27, find n(U) and n(A $\cap$ B)

8. Convert the following decimal numbers in the form of $\frac{p}{q}$, where p and q are integers and q $\neq$ 0.

   i)   .35   ii)   2.176

9. Find the value of $(81)^{5/4}$

10. Simplify : $3\sqrt{75} + 5\sqrt{48} - \sqrt{243}$

11. Represent the following numbers in the scientific notation : 2000.57

Part - III

III. Answer any 4 questions.   4 x 5 = 20

12. Draw venn diagram and shade the region representing the following sets

    i)   A'   ii)   (A – B)'   iii)   (A$\cup$B)'

13. Verify the associative property of intersection of set for $A = \{-11, \sqrt{2}, \sqrt{5}, 7\}$,

    $B = \{\sqrt{3}, \sqrt{5}, 6, 13\}$ and $C = \{\sqrt{2}, \sqrt{3}, \sqrt{5}, 9\}$

14. In a class, all students take part in either music or drama or both. 25 students take part in music, 30 students take part in drama and 8 students take part in both music and drama. Find

   i)   The number of students who take part in only music

   ii) The number of students who take part in only drama

   iii) The total number of students in the class

15. If $U = \{4,7,8,10,11,12,15,16\}$, $A = \{7,8,11,12\}$ and $B = \{4,8,12,15\}$ then verify De Margan's laws for complementation.

16. Without Actual division, classify the decimal expansion of the following numbers as terminating or non-terminating & recurring.

   i) $\dfrac{13}{64}$ ii) $\dfrac{-71}{125}$ iii) $\dfrac{43}{375}$ iv) $\dfrac{31}{400}$

17. If $\sqrt{2} = 1.414$, $\sqrt{3} = 1.732$, $\sqrt{5} = 2.236$, $\sqrt{10} = 3.162$, then find the values of the following correct to 3 places of decimals.

   i) $\sqrt{40} - \sqrt{20}$ ii) $\sqrt{300} + \sqrt{90} - \sqrt{8}$

18. Find the value of a and b if $\dfrac{\sqrt{7} - 2}{\sqrt{7} + 2} = a\sqrt{7} + b$

Part - IV

IV. Answer all the questions.   2 x 8 = 16

19. a) Represent $\sqrt{9.3}$ on a number line.

(OR)

   b) Represent the following numbers on the number line.

   $6.\overline{4}$ upto 3 decimal places.

20. a) Construct the centroid of $\triangle PQR$ whose sides are PQ = 8 cm, QR = 6 cm, RP = 7 cm.

(OR)

   b) Draw an equilateral triangle of sides 6.5 cm and locate it orthocentre.

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