

GOVERNMENT HIGH SCHOOL

MANJANUR - UPM (DT)

STD: IX

TERM - II

SUB: MATHS

MODEL EXAM

MARKS: 60

TIME: 2 Hours

Section - AI Choose the correct answer.

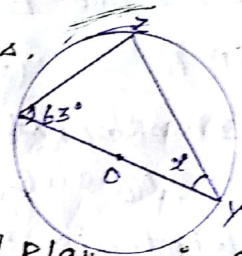
10x1=10

- For any three sets P, Q and R - $(Q \cap R)$ is
(1) $P - (Q \cup R)$ (2) $(P \cap Q) - R$ (3) $(P - Q) \cup (P - R)$ (4) $(P - Q) \cap (P - R)$
- If A and B are two non-empty sets, then $(A - B) \cup (A \cap B)$ is
(1) A (2) B (3) ϕ (4) U
- In simplest form, $\sqrt{640}$ is
(1) $8\sqrt{10}$ (2) $10\sqrt{8}$ (3) $2\sqrt{20}$ (4) $4\sqrt{5}$
- What is 5.92×10^{-3} written in decimal form?
(1) 0.000592 (2) 0.00592 (3) 0.0592 (4) 0.592
- Zeros of $(2 - 3x)$ is
(1) 3 (2) 2 (3) $\frac{2}{3}$ (4) $\frac{3}{2}$
- Degree of the constant polynomial is
(1) 3 (2) 2 (3) 3 (4) 4
- The GCD of a^k, a^{k+1}, a^{k+5} where, $k \in \mathbb{N}$
(1) a^k (2) a^{k+1} (3) a^{k+5} (4) 1
- If one angle of a cyclic quadrilateral is 75° , then the opposite angle is
(1) 100° (2) 105° (3) 85° (4) 90°
- Which one of the following is not a measure of Central tendency?
(1) Mean (2) Range (3) Median (4) Mode
- The median of the first 10 Whole numbers is
(1) 4 (2) 4.5 (3) 5 (4) 5.5

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Section - BAnswer any 9 of the following questions. $9 \times 2 = 18$

11. Verify the associative property of intersection of sets for $A = \{-11, \sqrt{2}, \sqrt{5}, 7\}$, $B = \{\sqrt{2}, \sqrt{5}, 6, 13\}$ and $C = \{\sqrt{2}, \sqrt{3}, \sqrt{5}, 9\}$.
12. Draw Venn diagram: $A \cup (B \cap C)$.
13. If A, B and C are overlapping sets, then Draw Venn diagram: $(A - B) \cap C$.
14. Write the following in the form of 4^n : 32
15. Express in scientific notation 9768854
16. Find the GCD of the following: $a^{m+1}, a^{m+2}, a^{m+3}$
17. Factorise: $x^2 + 14x - 15$
18. Prove that $(x-1)$ is a factor of $x^3 - 7x^2 + 13x - 7$
19. Find the value of x° in the following figures.



20. The following are scores obtained by 11 players in a cricket match 7, 21, 45, 12, 56, 35, 25, 0, 58, 66, 29. Find the median score.
21. In a rice mill, seven labourers are receiving the daily wages of ₹500, ₹600, ₹800, ₹800, ₹800 and ₹1000, find the modal wage.

Section - CAnswer all the questions:- $9 \times 3 = 27$

22. If $P = \{x: x \in \mathbb{W} \text{ and } 0 < x < 10\}$, $Q = \{x: x = 2n+1, n \in \mathbb{W} \text{ and } n < 5\}$ and $R = \{2, 3, 5, 7, 11, 13\}$, they verify $P - (Q \cap R) = (P - Q) \cup (P - R)$

(or)

If $U = \{x: -4 \leq x \leq 4, x \in \mathbb{Z}\}$, $A = \{x: -1 < x \leq 2, x \in \mathbb{Z}\}$ and $B = \{x: -2 \leq x \leq 3, x \in \mathbb{Z}\}$, then verify De Morgan's laws for complementation.

23. Verify $(A \cup B)' = A' \cap B'$ using Venn diagrams.

(or)

Verify $A - (B \cap C) = (A - B) \cup (A - C)$ using Venn diagrams.

24. In a group of 100 students, 85 students speak Tamil, 40 students speak English, 20 students French, 32 speak Tamil and English, 13 speak English and French and 10 speak Tamil and French. If each student knows at least any one of these languages, then

Find the number of students who speak all these three languages.

(or)

In a colony, 275 families buy Tamil newspaper, 150 families buy English newspaper, 45 families buy Hindi newspaper, 125 families buy Tamil and English newspapers, 17 families buy English and Hindi newspapers, 5 families buy Tamil and Hindi newspaper and 3 families buy all the three newspapers. If each family buy atleast one of these newspapers then find.

(i) Number of families buy only one newspaper

(ii) Number of families buy atleast two newspapers

(iii) Total number of families in the colony.

25. Arrange in ascending order: $\sqrt[3]{2}$, $\sqrt[2]{4}$, $\sqrt[4]{3}$

(or)

Simplify the following using addition and subtraction properties of surds: $5\sqrt[3]{40} + 2\sqrt[3]{625} - 3\sqrt[3]{320}$

26. Represent the following numbers in scientific notation:

$$(0.000001)'' \div (0.005)^3$$

(or)

$$\text{Simplify: } (2.75 \times 10^7) + (1.23 \times 10^8)$$

27. If the quotient obtained on dividing $8x^3 + 11x^2 + 34x + 106$ by $x - 3$ is $3x^2 + ax + b$, then find a , b and also the remainder

(or)

Find the value of m , if $(x - 2)$ is a factor of the polynomial $2x^3 - 6x^2 + mx + 4$.

28. Factorise each of the following polynomials using Synthetic division: $x^3 - 3x^2 - 10x + 24$

(or)

Factorise $x^3 - 5x^2 - 2x + 24$

29. The average mark of 25 students was found to be 78.4. Later on, it was found that score of 96 was misread as 69. Find the correct mean of the marks.

(or)

Calculate the median for the following data:

Height (cm)	160	150	152	161	156	154	155
No. of Students	12	8	4	4	3	3	7

30. The monthly salary of 10 employees in a factory are given below: ₹5000, ₹7000, ₹5000, ₹7000, ₹8000, ₹7000, ₹7000, ₹8000, ₹7000, ₹5000. Find the Mean, Median and Mode.

(or)

Find the mode of the following data:-

Marks	0-10	10-20	20-30	30-40	40-50
Number of Students	22	38	46	34	20

Section - D

Answer any one of the following question $1 \times 5 = 5$

31. (a) Construct the incentre of $\triangle ABC$ with $AB = 6\text{cm}$, $\angle B = 65^\circ$ and $AC = 7\text{cm}$. Also draw the incircle and measure its radius.

(or)

- (b) Construct the centroid of $\triangle PQR$ whose sides are $PQ = 8\text{cm}$, $QR = 6\text{cm}$, $RP = 7\text{cm}$.