

Mathematics Mock Test**Section A** I mark each

- Q1. State Euclid's division lemma.
- Q2. Find zeros of the polynomial $x^2 - 5x + 6$.
- Q3. Evaluate $\frac{3 \tan A + 4 \cot A}{3 \tan A - 4 \cot A}$ if $\cos A = \frac{3}{5}$
- Q4. Quadratic equation $x^2 + 7x + 10$ has _____ roots. (type)
- Q5. Find sum of first 20 positive integers.
- Q6. A die is thrown once. Find probability of getting a composite or prime number.
- Q7. The base radii of two right circular cones are in the ratio 3:5. Find the ratio of their volumes if their heights are in ratio 5:3
- Q8. State converse of Pythagoras theorem.
- Q9. Prove Parallelogram circumscribing a circle is a rhombus.
- Q10. Write formula for finding mean by step deviation method.

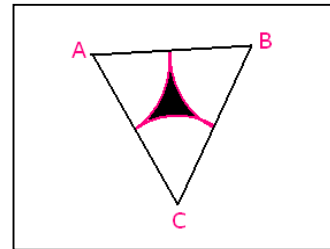
Section B 2 marks each

- Q11. Solve for x and y: $6x + 3y = 6xy$, $2x + 4y = 5xy$
- Q12. Evaluate $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 87^\circ \tan 88^\circ \tan 89^\circ$
- Q13. Find the co-ordinates of the point equidistant from three given points A (5, 1), B (-3, -7) and C (7, -1).
- Q14. A box contains 21 cards numbered 1 to 21. A card is drawn at random. Find probability that the number on the card is divisible by both 2 and 3.
Or
The Ace, king, queen and Jack of hearts is removed from a deck of 52 playing cards. One card is drawn from the remaining cards. Find probability of getting (a) a face card (b) a '5' of hearts
- Q15. Prove converse of mid-point theorem using basic proportionality theorem.

Section C 3 marks each

- Q16. Prove that $\sqrt{5}$ is not a rational number. Or
Using Euclid's algorithm, find the HCF of 28 and 1628 Hence find their LCM.
- Q17. Anubhav tells his daughter, "Seven years ago, I was seven times as old as you were then. Also three years from now, I shall be three times as old as you will be."
Represent this situation algebraically and graphically and find their present ages.
- Q18. If two zeros of the polynomial $x^4 - x^3 - 7x^2 + 5x + 10$ are -1 and 2, find the other zeros.

- Q19. Find the sum of all the two-digit positive integers which leave remainder 1 when divided by 5
- Q20. $\frac{1}{\sec x - \tan x} - \frac{1}{\cos x} = \frac{1}{\cos x} - \frac{1}{\sec x + \tan x}$ Or $\frac{\tan A}{1 - \cot A} + \frac{\cot A}{1 - \tan A} = 1 + \sec A \operatorname{cosec} A$
- Q21. For what value of x, the area of a quadrilateral formed by joining the points (4, 0), (x, 3), (0, 6) and (-4, -2) when taken in order will be 40 sq units?
- Q22. The two opposite vertices of a square are (-1, 2) and (3, 2). Find the co-ordinates of other two vertices.
- Q23. Construct a triangle ABC in which BC = 6cm, $\angle B = 75^\circ$ and AB = 5cm. Construct a Δ similar to given triangle having sides equal to $\frac{4}{3}$ of the sides of given triangle. Write steps of construction also.
- Q24. TP and TQ are tangents to a circle with centre O at P and Q respectively. PQ = 8 cm and radius of circle is 5 cm. Find TP and TQ
- Q25. ΔABC is an equilateral triangle of side 8cm and A, B, C are the centres of circular arcs, each of radius 4 cm. Find the area of shaded region, correct up to 2 decimal places. Given $\pi = 3.142$ and $\sqrt{3} = 1.732$



Section D 6 marks each

- Q26. 2 women and 5 men can together finish a piece of embroidery in 4 days, while 3 women and 6 men can finish it in 3 days. Find the time taken by 1 woman alone to finish the embroidery, and also the time taken by 1 man alone.
- Q27. A man sitting at a height of 20 m on a tall tree on a small island in the middle of a river observes two poles directly opposite each other on the two banks of the river and in line with the foot of the tree. If the angles of depression of the feet of the poles from a point at which the man is sitting on the tree on either side of the river are 60° and 30° respectively. Find the width of the river.
- Q28. Draw less than and more than Ogive and find median. Verify by calculation.

CI	1-10	11-20	21-30	31-40	41-50	51-60	61-70
Frequency	20	15	30	18	22	18	20

- Q29. A hemispherical tank full of water is emptied by a pipe at the rate of $3\frac{4}{7}$ litres per second. How much time will it take to empty half the tank, if the tank is 3 m in diameter?
- Q30. State and prove Pythagoras Theorem. Using it prove that $4(BL^2 + CM^2) = 5 BC^2$ if BL and CM are medians of a triangle ABC right angled at A.