Samagra Shiksha, Kerala
SUMMATIVE ASSESSMENT-TERM I 2025-26

# MATHEMATICS

**Class: X** **Time : $2\frac{1}{2}$ Hrs.**

**Total Score : 80**

**Instructions:**

- Use the first 15 minutes to read the questions and think about the answers.
- There are 26 questions, split into 4 parts A, B, C, D.
- Answer all questions; but in questions of the type "A or B", you need answer only one of those.
- You can answer the questions in any order, writing the correct question number.
- Answers must be explained, whenever necessary.
- No need to simplify irrationals like $\sqrt{2}, \sqrt{3}, \pi$ etc using approximations unless you are asked to do so.

## Section A

1. What is the next number of the perfect square number sequence 1, 4, 9, ... ?
(10, 16, 20, 25) (Score 1)

2. Read the two statements given below.

**Statement 1 :** If the sum of 2nd and 5th terms of an arithmetic sequence is 17 then the sum of 3rd and 4th terms is also 17.

**Statement 2 :** In an arithmetic sequence, if the sum of two positions is equal to the sum of other two positions, then the sum of terms at each pair is the same.

Choose the correct answer from those given below.

A) Statement 1 is true and statement 2 is false.
B) Statement 1 is false and statement 2 is true.
C) Both the statements are true, statement 2 is the correct reason of statement 1.
D) Both the statements are true, statement 2 is not the correct reason of statement 1.

(Score 1)

3. (A) Write the sequence of natural numbers where each term leaves remainder 4 on division by 6. Is this an arithmetic sequence ? Why ?

**OR**

(B) Write the sequence of remainders obtained by dividing the odd numbers by 10. Is this an arithmetic sequence ? Why ?

(Score 3)

4. 14, 23, 32, ... is an arithmetic sequence.
(i) Is the difference between any two terms of this arithmetic sequence be 108 ? Why?
(ii) Find the 15th term of this sequence.
(iii) What is the position of 230 in this sequence ? (Score 4)

5.

A. The $4^{th}$ term of an arithmetic sequence is 51 and the $6^{th}$ term is 45.

(i) What is the $5^{th}$ term ?

(ii) What number is to be added to the $5^{th}$ term to get its first term ?

(iii) Write the first three terms of this sequence.

**OR**

B. The sum of first 7 terms of an arithmetic sequence is 133 and the sum of first 14 terms is 511.

(i) What is the $4^{th}$ term ?

(ii) What is the $11^{th}$ term ?

(iii) Write the first three terms of this sequence.

(Score 4)

6. The $5^{th}$ term of an arithmetic sequence is 42 and its $8^{th}$ term is 62.

(i) Find the $2^{nd}$ term.

(ii) What is the $14^{th}$ term ?

(iii) Calculate the sum of first 18 terms.

(Score 5)

**Section B**

7. When each side of a square was reduced by 2 centimetres to make a smaller square, its area became 81 square centimetres.
What was the length of a side of the original square ?
(7, 9, 11, 13) (Score 1)

8. The algebraic form of an arithmetic sequence is $5n+2$. What is its first term?
(2, 5, 7, 10) (Score 1)

9. Prove that the arithmetic sequence 6, 10, 14, ... does not contain any perfect square.
(Score 3)

10. The product of two consecutive multiples of 4 is 672.

(i) Form a second degree equation based on the given statement.

(ii) What are the numbers ?

(Score 3)

11. The sum of the first $n$ terms of an arithmetic sequence is $3n^2+2n$.

(i) Write the first term.

(ii) What is the sum of first two terms?

(iii) Find the $n^{th}$ term of the sequence.

(Score 4)

12.

(A) A vegetable garden is in the shape of a rectangle. Its larger side is 8 metres longer than the smaller side. Area of this garden is 180 square metres.

(i) Form a second degree equation based on the given data.

(ii) Find the sides of this rectangle.

**OR**

(B) One of the perpendicular sides of a right triangle is 2 centimetres more than the other. The area of the right triangle is 24 square centimeters. Form a second degree equation. Find the lengths of the sides of the right triangle.

(Score 4)

13. Consider the sequence of all three digit numbers which are multiples of 7.

(i) Find the first and last terms of this sequence.

(ii) How many terms are there in this sequence ?

(iii) Find the sum of all terms of this sequence.

(Score 5)

14.

(A) (i) Calculate the sum of first 30 natural numbers.

(ii) Calculate the sum of first 30 natural numbers, which are multiples of 4.

(iii) Calculate the sum of first 30 terms of the sequence obtained by multiplying the natural numbers by 4 and them adding 1. Calculate the sum of first $n$ terms of this sequence.

**OR**

(B) (i) Write the algebraic form of sum of first $n$ terms of the arithmetic sequence 11, 13, 15, ...

(ii) How many terms of this sequence starting from the first, is to be added to get the sum as 600?

(Score 5)

**Section C**

15. A person is asked to say a number from the first 10 natural numbers.

(i) The probability for the number to be add is $\frac{1}{2}$.

(ii) The probability for the number to be a multiple of 3 is $\frac{2}{3}$.

(iii) The probability for the number to be a prime is $\frac{2}{5}$.

(iv) The probability for the number to be a perfect square is $\frac{1}{4}$.

A) (i) and (ii) are true.

B) (i) and (iii) are true.

C) (ii) and (iii) are true.

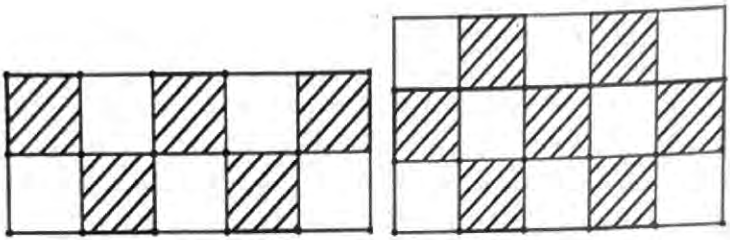
D) (iii) and (iv) are true.

(Score 1)

16. Consider all three digit numbers that can be written by using the digits 2, 5, 7 without repeating the digits. If one number is taken from this, what is the probability that the number is greater than 500.

$\left[\frac{1}{6}, \frac{2}{6}, \frac{4}{6}, \frac{5}{6}\right]$ (Score 1)

17.



Game Board 1 Game Board 2

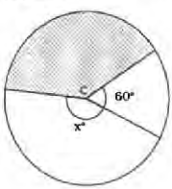
In the figure, there are two game boards, where the small squares are all equal in size. Playing by putting dots on each game board without looking into it. The game is won if the dot is placed in the shaded part.

(i) What is the probability to win, if playing in the first game board ?

(ii) Playing with which game board gives better chance to win ?

(Score 3)

18. In the figure, a circle with centre C is divided in to 3 sectors. A dot is placed in the circle, without looking into the circle.




(i) What is the probability that the dot is in the sector with central angle $60^0$.

(ii) The probability that the dot is placed in the sector with central angle $x^0$ is $\frac{4}{9}$. What is $x$ ?

(iii) What is the probability that the dot is in the shaded region?

(Score 4)

19.

(A) Every two digit number less than 30 are written in slips of paper, and all the slips are put in a box. If one slip is drawn,

(i) What is the probability that this number is a multiple of 5 ?

(ii) Write in decimal form, the probability that the sum of the digits being 5.

(iii) What is the probability that the sum of the digits being a perfect square ?

**OR**

(B) A box contains 10 black beads and 15 white beads. Another box contains 15 black beads and 25 white beads. If one bead is taken from each box, then

(i) What is number of possible pairs?

(ii) What is the probability of both being black?

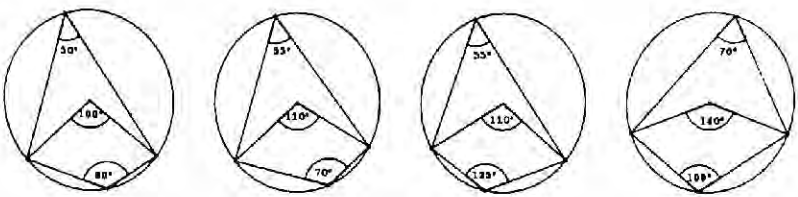
(iii) What is the probability of getting at least one white?

(iv) What is the probability of one being black and the other being white?

(Score 5)

## Section D

20. In each of the figures below, three angle measurements are given. In which figure, all the three angles are marked with the correct measurement?




A B C D

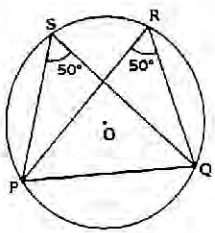
(Score 1)

21. Read the two statements given below.

**Statement 1**: In the figure O is the centre of the circle and PQ is a chord.

$\angle PRQ = 50^0$, $\angle PSQ = 50^0$

**Statement 2**: Angle in a semicircle is $90^0$.




Choose the correct answer from those given below.

A) Statement 1 is true and statement 2 is false.

B) Statement 1 is false and statement 2 is true.

C) Both statements are true and statement 2 is the reason of statement 1.

D) Both statements are true and statement 2 is not the reason of statement 1.

(Score 1)

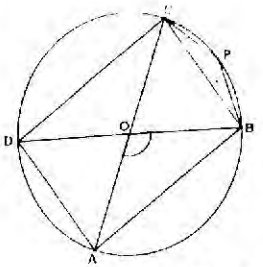
22. In the figure, A, B, C, D, P are the points on the circle with centre O.

$\angle AOB = 130^0$

(i) Find $\angle ADB$.

(ii) Find $\angle BDC$.

(iii) Find $\angle BPC$.




(Score 3)

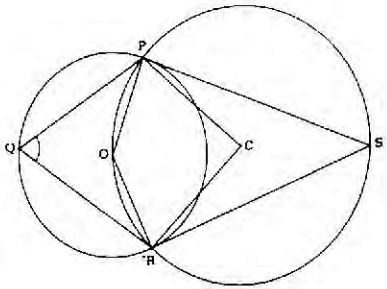
23.

(A) In the figure, centres of circles are C and O. Circles intersect at P and R.
$\angle PQR = 70^0$

(i) $\angle POR =$ .....

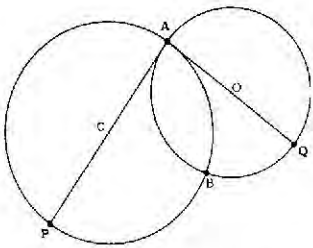
(ii) $\angle PSR =$ .....

(iii) $\angle PCR =$ .....




**OR**

(B) In the figure (C, O are the centres of the circles) Circles intersect at A and B.
AP and AQ are diameters of the circles.
Prove that P, B, Q are the points on a straight line.

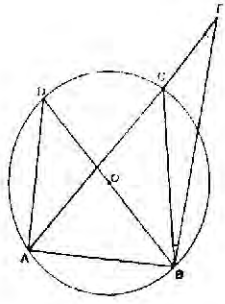



(Score 3)

24.

(A) In the figure O is the centre of the circle. A, B, C, D are points on the circle.

$\angle AEB = 30^0, \angle CBE = 20^0$




(i) $\angle BCE$ = .....
(ii) $\angle ADB$ = .....
(iii) $\angle DAB$ = .....
(iv) $\angle ABD$ = .....

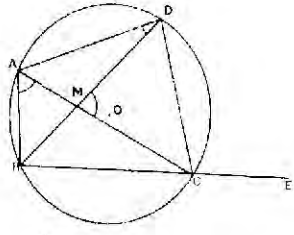
**OR**

(B) In the figure O, is the centre of the circle. A, B, C, D are points on the circle.

$\angle ADB = 20^0$

$\angle BAC = 50^0$

$\angle CMD = 70^0$

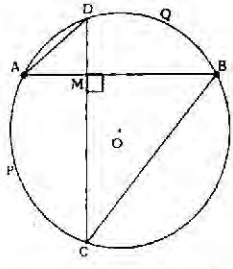



(i) $\angle BDC$ = .....
(ii) $\angle ACB$ = .....
(iii) $\angle ABC$ = .....
(iv) $\angle DCE$ = .....

(Score 4)

25. In the figure, O is the centre of the circle. The perpendicular chords AB and CD intersect at M. P and Q are two points on the circle.

$\angle ADM = 40^0$




(i) What is $\angle BCD$ ?
(ii) Prove that the arcs APC, BQD joined together make a semi circle.

(Score 5)

26. Draw a triangle with circumradius 4 centimetres and two of the angles $55^0$ and $62\frac{1}{2}^0$.

(Score 5)