

SHIVALIK PUBLIC SCHOOL (C)
SUMMATIVE ASSESSMENT - II (2015-2016)

MATHEMATICS
Class - X

Time allowed : 3 hours

Maximum Marks : 90

General Instructions :

- (i) All questions are compulsory.
- (ii) The question paper consists of 31 questions divided into four sections A, B, C and D. Section-A comprises of 4 questions of 1 mark each, Section-B comprises of 6 questions of 2 marks each, Section-C comprises of 10 questions of 3 marks each and Section-D comprises of 11 questions of 4 marks each.
- (iii) There is no overall choice.
- (iv) Use of calculator is not permitted.

SECTION-A

Question numbers 1 to 4 carry one mark each.

- 1 If one root of the equation $2x^2 - 10x + p = 0$ is 2, then find the value of p. 1
- 2 A pole 6 m high casts a shadow $2\sqrt{3}$ m long on the ground. What is the elevation of the source of light? 1
- 3 One card is drawn from a well shuffled deck of 52 playing cards. Find the probability that card is not a red queen. 1
- 4 Find the distance of the point (3, 27) from the point (5, 27). 1

SECTION-B

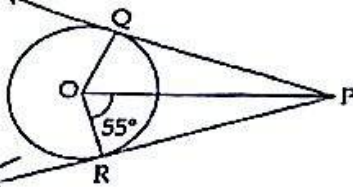
Question numbers 5 to 10 carry two marks each.

- 5 Find the value of k such that $\frac{5}{2}$ is a root of the quadratic equation $14x^2 - 27x + k = 0$. 2
- 6 Ram Prasad saved Rs.10 in the first week of a year and then increased his weekly savings by Rs.2.75. If in the nth week, his savings become Rs.59.50, find n. 2

7 PQ is a chord of a circle and R is a point on the minor arc. If PT is a tangent at point P such that $\angle QPT = 60^\circ$. Find $\angle PRQ$. 2

8 Draw a circle of radius 3.5 cm. From a point 6 cm away from its centre, Construct two tangents to the circle. 2

9 In the adjoining figure PQ and PR are tangents from P to a circle with centre O. If $\angle POR = 55^\circ$, find $\angle QPR$. 2



10 Three metallic solid cubes whose edges are 3 cm, 4 cm and 5 cm are melted and formed into a single cube. Find the diagonal of the cube so formed. 2

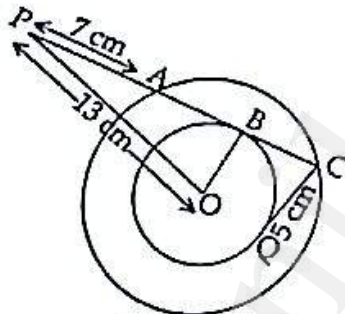
SECTION-C

Question numbers 11 to 20 carry 3 marks each.

11 The area of a right - angled triangle is 600 sq. cm. If the base of the triangle exceeds the altitude by 10 cm, find the dimensions of the triangle. 3

12 The 8th term of an AP is zero. Prove that its 38th term is triple of its 18th term. 3

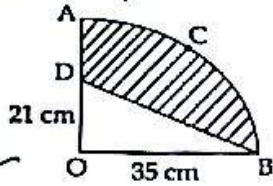
13 3



Two concentric circles with centre O are given. PAC is a secant and AC is the chord to the larger circle which touches the smaller circle at B. If length of tangent CQ is 5 cm, PA=7 cm and OP=13 cm, find the radius of the smaller circle.

14 The horizontal distance between two towers is 60 m. The angle of elevation of the top of the taller tower as seen from the top of the shorter one is 30° . If the height of the taller tower is 150 m, then find the height of the shorter tower. 3

- 15 Two fair dice are rolled simultaneously. What is the probability that the sum of the numbers obtained is a multiple of 3? 3
- 16 If the points A(0, 1), B(6, 3) and C(x, 5) are the vertices of a triangle, find the value of x such that area of $\Delta ABC=10$. 3
- 17 The coordinates of the vertices A, B and C of a parallelogram ABCD are (2, 21), (3, 4) and (22, 3) respectively. Find the coordinates of the fourth vertex D. 3
- 18 In the given figure, find the area of the shaded portion given that AOB is a quadrant of a circle with centre O and radius 35 cm and OD=21 cm. (Use $\pi = \frac{22}{7}$) 3

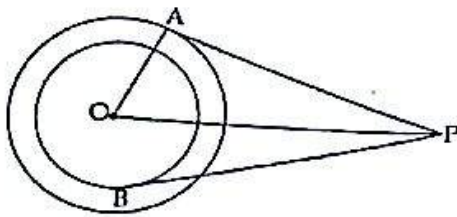


- 19 The cost of painting the total outside surface of a closed cylindrical oil tank at 60 paise per sq. m is Rs.237.60 and the height of the tank is 6 times the radius of the base of the tank. Find the radius and height of the tank. (Use $\pi = \frac{22}{7}$) 3
- 20 The area of a circular playground is 22176 m^2 . Find the cost of fencing this ground at the rate of Rs.50 per metre. 3

SECTION-D

Question numbers 21 to 31 carry 4 marks each.

- 21 Solve for x: $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$ 4
- 22 The angles of a triangle are in A.P. If the greatest angle is twice the least, find all the angles. 4
- 23 The hotel bill for a number of people for overnight stay is Rs. 4,800. If for the same amount there were 4 more people, the bill each person had to pay would have reduced by Rs. 200. Find the number of people staying overnight. 4
- 24 In the given figure, O is the centre of two concentric circles of radii 5 cm and 3 cm. From an external point P tangents PA and PB are drawn to these circles. If PA=12 cm, then find perimeter of quad PAOB. 4



- 25 ✓ Construct $\triangle DEF \sim \triangle ABC$ in which $AB=5.2$ cm $\angle B=45^\circ$ and $BC=6$ cm, using scale factor 1 : 2. 4
- 26 ✓ The angle of elevation of the top B of a tower AB from a point X on the ground is 60° . At a point Y, 40 m vertically above X, the angle of elevation of the top is 45° . Find the height of the tower AB and the distance XB. 4
- 27 ✓ A die is thrown twice. Find the probability that : 4
 (i) the number 4 fails to come up either time.
 (ii) the number 4 comes up exactly once.
- 28 ✓ Prove that the points A(0, 0), B(0, 2) and C(2, 0) are the vertices of an isosceles right triangle. Also, find its area. 4
- 29 ✓ A brooch is made with silver wire in the form of a circle with diameter 35 mm for the inauguration of a Social club in a school to keep environment clear in its neighborhood. The wire is also used in making 5 diameters which divide the circle into 10 equal sectors. Find 4
 (i) Total length of the silver wire required.
 (ii) The area of each sector of the brooch.
 (iii) How can you help to keep environment pollution free ?
- 30 ✓ A circular plot has a perimeter of 660 m. A plot in the shape of a square has its vertices on the boundary of the circular plot. Find the area of the square plot. (Use $\pi = \frac{22}{7}$) 4
- 1 ✓ Water flows through a cylindrical pipe, whose inner diameter is 7 cm, at the rate of 6 km/h in an empty cylindrical tank, the radius of whose base is 40 cm and height is 4.9 m. How long will it take to fill the whole tank ? 4

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