

65048/X/041/2012-13
SUMMATIVE ASSESSMENT – II
SUBJECT : MATHEMATICS

DATE : 14-03-13

ROLL NO. _____

Time : 3 Hours

M.M. : 90

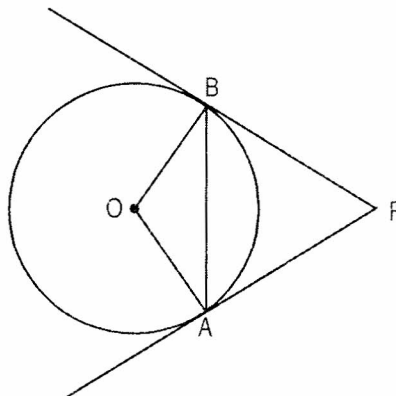
General Instructions :

- (i) All questions are compulsory.
- (ii) The questions paper consists of 34 questions divided into four sections A, B, C and D. Section-A comprises of 8 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 10 questions of 4 each.
- (iii) Questions numbers 1 to 8 in Section-A are multiple choice questions where you are required to select one correct option out of the given four.
- (iv) There is no overall choice.
- (v) Use of calculator is not permitted.

SECTION-A

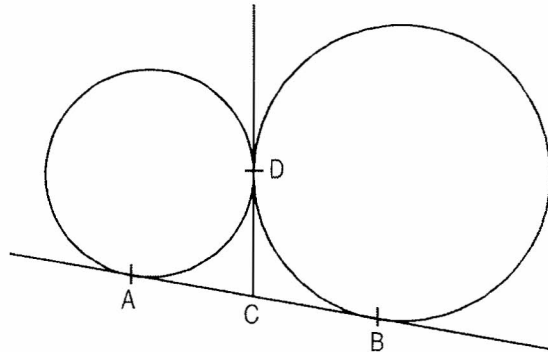
Question numbers 1 to 8 carry one mark each. For each question, four alternative choices have been provided of which only one is correct. You have to select the correct choice.

1. Value (s) of k for which quadratic equations $5x^2 + kx + k = 0$ has equal roots, is : 1
(a) 0 only (b) 5
(c) 20 only (d) 0, 20
2. In the figure PA and PB are tangents to a circle. If PA = AB, then $\angle AOB$ is equal to : 1



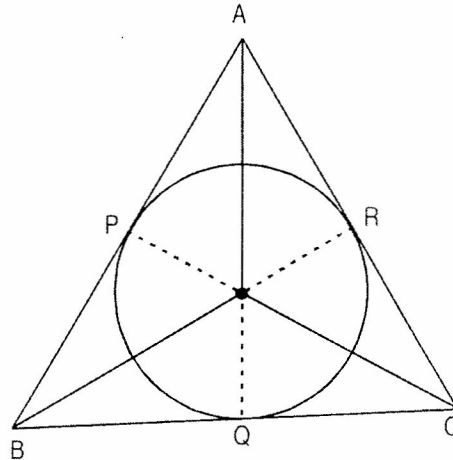
- (a) 60° (b) 30°
(c) 120° (d) 110°

3. AB and CD are common tangents to the circles which touch each other at D. If AB = 5 cm, then CD is equal to : 1



- (a) 5 cm (b) 2.5 cm
(c) 3 cm (d) 2 cm
4. If the angle of depression of a point P on the ground from the top of a tower 6m high is 30° , then the distance of the point from the foot of the tower is : 1
- (a) 6 m
(b) $2\sqrt{3}$ m
(c) $6\sqrt{3}$ m
(d) 12 m
5. If $p(E) = 0.05$, then $p(\text{not } E)$ is equal to : 1
- (a) -0.05 (b) 0.5
(c) 0.9 (d) 0.95
6. In tossing a die, the probability of getting an odd number or a number less than 4 is : 1
- (a) 1
(b) $\frac{1}{2}$
(c) $\frac{2}{3}$
(d) $\frac{3}{4}$

12. In the given figure $AP = 3$ cm, $RC = 2$ cm and $BQ = 4$ cm. Find the area of the $\triangle ABC$, if the radius of the in-circle is r cm 2

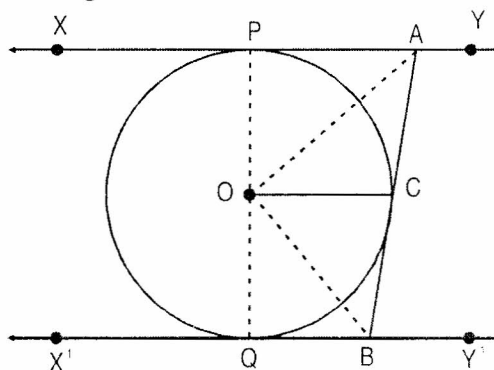


13. The king, queen and jack of clubs are removed from a pack of 52 cards and then the remaining pack is well shuffled. A card is selected from the remaining cards. Find the probability of getting a card 2
 (a) of heart; (b) a king
14. How many bags of grain can be stored in a cuboid grainary $12\text{ m} \times 6\text{ m} \times 5\text{ m}$. If each bag occupies a space of 0.48 m^3 ? 2

SECTION-C

Question numbers 15 to 24 carry 3 marks each.

15. How many terms of the A.P. $-15, -13, -11, \dots$ are needed to make the sum -55 . Explain the reason for double answer. 3
16. Comment on the nature of roots of quadratic equation $3x^2 + 7x - 1 = 0$. Find them if they are real. 3
17. XY and $X'Y'$ are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and $X'Y'$ at B . Prove that $\angle AOB = 90^\circ$ 3



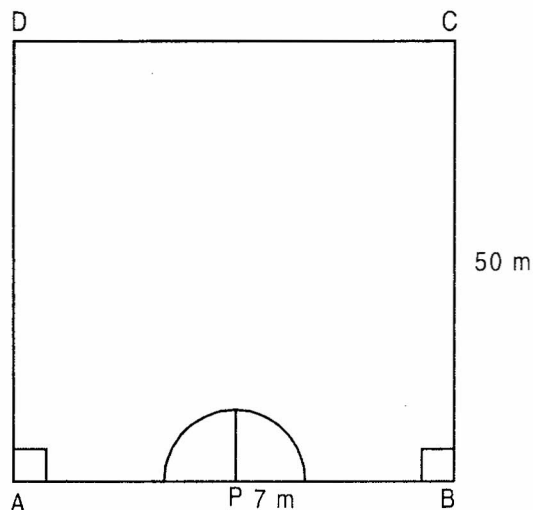
18. The angle of elevation of the top of the tower as seen from a point on the ground is ϕ such that $\tan \phi = \frac{3}{4}$. From another point, 240 m away from this point on the line joining this point to the foot of the tower, the angle of elevation of the top of the tower is such that $\tan \theta = \frac{5}{12}$. Find the height of the tower. 3
19. Find the area of quadrilateral if its vertices are (3, 0), (4, 5), (-1, 4) and (-2, -1) taken in order. 3
20. Find the values of m for which the points with coordinates (3, 5), (m, 6) and $\left(\frac{1}{2}, \frac{15}{2}\right)$ are collinear. 3
21. A 20 cm deep well with diameter 7 m is dug up and the earth from it is spread evenly to form a platform $14 \text{ m} \times 2 \text{ m}$. Determine the height of the platform. 3
22. The volume of a cylinder is 5544 cm^3 and its height is 16 cm. Find its radius and hence its curved surface area. 3
23. The diameter of a roller 120 cm long is 84 cm. If it takes 500 complete revolution to level a play ground, determine the cost of leveling it at the rate of 30 paise per square metre. 3
24. A solid sphere of radius 6 cm is melted into a hollow cylinder of uniform thickness. If the external radius of the base of the cylinder is 5 cm and its height is 32 cm, find the thickness of the hollow cylinder. 3

SECTION-D

Question numbers 25 to 34 carry 4 marks each.

25. Five years ago, a man's age was equal to the square of his son's age. Ten years hence, his age will be twice that of his son's age. Find the present age of the man. 4
26. A two digit number is such that the product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number. 4
27. The roots of the quadratic equation $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$ are equal. Prove that $\frac{a}{b} = \frac{c}{d}$. 4

28. Construct a ΔPQR where $QR = 7$ cm, $\angle Q = 45^\circ$, $\angle R = 30^\circ$. Construct another Δ similar to ΔPQR such that its sides are $\frac{3}{4}$ of corresponding sides of ΔPQR . 4
29. Draw two concentric circles of radii 3 cm and 6cm. From a point on the outer circle construct a pair of tangents to the inner circle. Measure their lengths. 4
30. From the top of a tower, 60 m high the angle of depression of the top and bottom of a vertical lamp-post are observed to be 30° and 60° respectively. Find 4
- (i) the horizontal distance between the tower and the lamp-post.
(ii) the height of the lamp-post.
31. Anita, Sita, Gita and Rita are four friends. What is the probability that (in a non-leap year)
- (i) all will have same birthday
(ii) their birthday falls in the month of October
(iii) their birthday falls on 10th day of the month
(iv) their birthday falls in January or February 4
32. Determine the ratio in which the line $x - 2y = 0$ divides the line segment joining the points (1, 5) and (5, 1). 4
33. In the given figure, a horse is tied to a peg P at middle of the side AB of a square shaped grass field of side 50 m by means of a 7 m long rope. Find 4
- (i) the area of the part in which the horse can graze.
(ii) the increase in the grass grazing area if the rope were 10.5 m long instead of 7 m
(Use $\pi = \frac{22}{7}$)



34. A road which is 7 m wide surrounds a circular park whose circumference is 352 m. Find the area of the road. $\left(\pi = \frac{22}{7}\right)$ 4