

Self Assessment Paper

Section 'A'

Question numbers 1 to 10 carry 1 mark each

1. For some integer m , every even integer is of the form :
- (a) m . (b) $m + 1$. (c) $2m$. (d) $2m + 1$. 1
2. Given that one of the zeroes of the cubic polynomial $ax^3 + bx^2 + cx + d$ is zero, the product of the other two zeroes is :

- (a) $-\frac{c}{a}$ (b) $\frac{c}{a}$ (c) 0 (d) $-\frac{b}{a}$ 1

OR

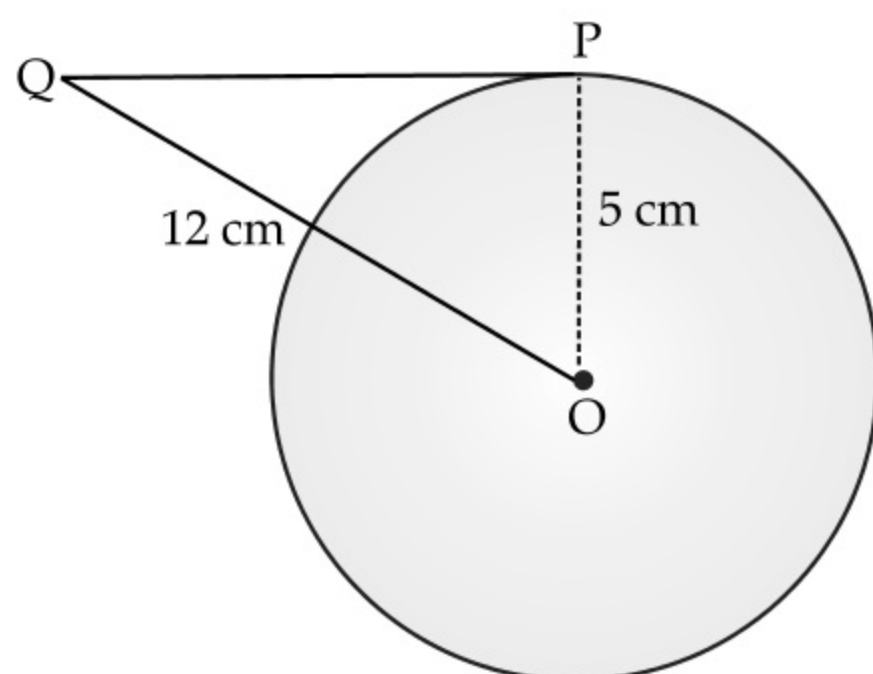
Which of the following equations has two distinct real roots?

- (a) $2x^2 - 3\sqrt{2}x + \frac{9}{4} = 0$ (b) $x^2 + x - 5 = 0$ (c) $x^2 + 3x + 2\sqrt{2} = 0$ (d) $5x^2 - 3x + 1 = 0$
3. The first four terms of an A.P., whose first term is -2 and the common difference is -2 , are :
- (a) $-2, 0, 2, 4$ (b) $-2, 4, -8, 16$ (c) $-2, -4, -6, -8$ (d) $-2, -4, -8, -16$ 1

4. If $P\left(\frac{a}{3}, 4\right)$ is the mid-point of the line segment joining the points $Q(-6, 5)$ and $R(-2, 3)$, then the value of a is :
- (a) -4 (b) -12 (c) 12 (d) -6 1

5. ABC and BDE are two equilateral triangles such that D is the mid-point of BC . Ratio of the areas of triangles ABC and BDE is :
- (a) $2 : 1$ (b) $1 : 2$ (c) $4 : 1$ (d) $1 : 4$ 1

6. A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that $OQ = 12$ cm. Length PQ is :
- (a) 12 cm (b) 13 cm (c) 8.5 cm (d) $\sqrt{119}$ cm.



7. $\sin 2A = 2 \sin A$ is true when $A =$
 (a) 0° (b) 30°
 (c) 45° (d) 60° 1
8. If the perimeter of a circle is equal to that of a square, then the ratio of their areas is :
 (a) $22 : 7$ (b) $14 : 11$
 (c) $7 : 22$ (d) $11 : 14$ 1

OR

- AI** If two solid hemispheres of same base radius ' r ' are joined together along their bases, then curved surface area of this new solid is :
 (a) $4\pi r^2$ (b) $6\pi r^2$
 (c) $3\pi r^2$ (d) $8\pi r^2$ 1

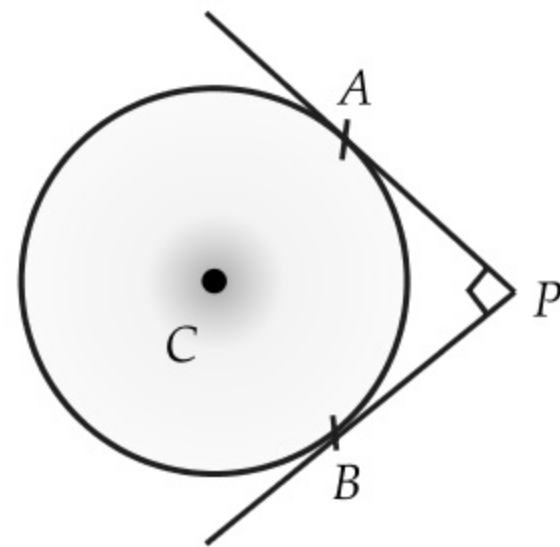
9. In the formula $\bar{x} = a + h \frac{\sum f_i u_i}{\sum f_i}$, for finding the mean of grouped frequency distribution, $u_i =$

- (a) $\frac{x_i + a}{h}$ (b) $h(x_i - a)$
 (c) $\frac{x_i - a}{h}$ (d) $\frac{a - x_i}{h}$ 1

10. The probability of getting a bad egg in a lot of 400 is 0.035. The number of bad eggs in the lot is :
 (a) 7 (b) 14
 (c) 21 (d) 28 1

Question numbers 11 to 20 carry 1 mark each

11. Find the smallest positive rational number by which $\frac{1}{7}$ should be multiplied so that its decimal expansion terminates after 2 places of decimal. 1
12. Calculate the zeroes of the polynomial $p(x) = 4x^2 - 12x + 9$. 1
13. In the A.P. 2, x , 26, then find the value of x . 1
14. Find the value of a , for which point $P \left(\frac{a}{3}, 2 \right)$ is the midpoint of the line segment joining the points $Q(-5, 4)$ and $R(-1, 0)$. 1
15. Are two triangles having corresponding sides equal are similar. 1
16. In fig., PA and PB are two tangents drawn from an external point P to a circle with centre C and radius 4 cm. If $PA \perp PB$, then find the length of each tangent. 1



- AI** 17. In a triangle ABC , write $\cos \left(\frac{B+C}{2} \right)$ in terms of angle A . 1

18. Area of a sector of angle p (in degrees) of a circle with radius R is :

- (a) $\frac{p}{180} \times 2\pi R$ (b) $\frac{p}{180} \times 2\pi R^2$
 (c) $\frac{p}{360} \times 2\pi R$ (d) $\frac{p}{720} \times 2\pi R^2$ 1

OR

Find the volume (in cm^3) of the largest right circular cone that can be cut off from a cube of edge 4.2 cm. 1

19. Find the median of the data, using an empirical relation when it is given that Mode = 12.4 and Mean = 10.5. 1

20. A letter of English alphabet is chosen at random. Determine the probability that the chosen letter is a consonant. 1

Section 'B'

Question numbers 21 to 26 carry 2 marks each

21. Find all the zeroes of $f(x) = x^2 - 2x$. 2

OR

Find whether the following pair of linear equations is consistent or inconsistent :

$$3x + 2y = 8$$

and

$$6x - 4y = 9$$

22. Find the values of k for which the equation $x^2 + 5kx + 16 = 0$ has real and equal roots. 2

23. Is 184 a term of the sequence 3, 7, 11, ? 2

24. Find a relation between x and y such that the point $P(x, y)$ is equidistant from the points $A(-5, 3)$ and $B(7, 2)$. 2

25. Express the trigonometric ratio of $\sec A$ and $\tan A$ in terms of $\sin A$. 2

26. Find the value of λ , if the mode of the following data is 20 :
15, 20, 25, 18, 13, 15, 25, 15, 18, 17, 20, 25, 20, λ , 18. 2

OR

A bag contains 6 red and 5 blue balls. Find the probability that the ball drawn is not red.

Section 'C'

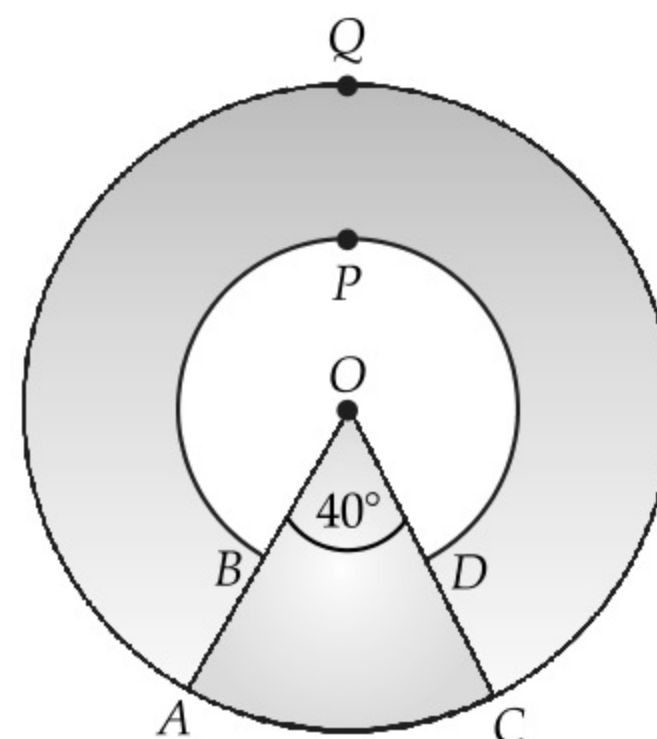
Question numbers 27 to 34 carry 3 marks each

27. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting :
(i) a red face card, (ii) a spade,
(iii) either a king or a black cards. 3

28. The table shows the daily expenditure on grocery of 25 households in a locality. Find the modal daily expenditure on grocery by a suitable method.

Daily Expenditure (in ₹)	100 – 150	150 – 200	200 – 250	250 – 300	300 – 350
No of households	4	5	12	2	2

29. In the given figure, find the area of the shaded region, enclosed between two concentric circles of radii 7 cm and 14 cm where $\angle AOC = 40^\circ$. 3
(Use $\pi = \frac{22}{7}$)



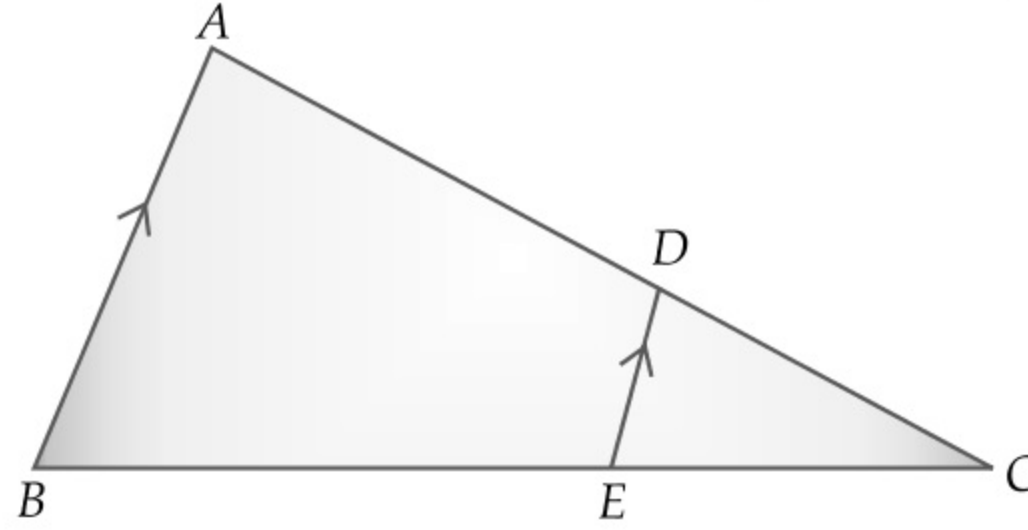
OR

The sum of the radius of base and height of a solid right circular cylinder is 37 cm. If the total surface area of the solid cylinder is 1628 sq. cm, find the volume of the cylinder. [Use $\pi = \frac{22}{7}$]

30. If $\tan 2A = \cot(A - 18^\circ)$, where $2A$ is an acute angle, find the value of A . 3
31. The radii of two concentric circles are 13 cm and 8 cm. AB is a diameter of the bigger circle and BD is a tangent to the smaller circle touching it at D and intersecting the larger circle at P on producing. Find the length of AP . 3

OR

In given figure, D is a point on AC such that $AD = 2CD$, also $DE \parallel AB$.



Find : $\frac{\text{ar}(\Delta DCE)}{\text{ar}(\Delta ACB)}$

32. Find the value of p , if the points $A(2, 3)$, $B(4, p)$ and $C(6, -3)$ are collinear. 3
- [AI]** 33. If m^{th} term of A.P. is $\frac{1}{n}$ and n^{th} term is $\frac{1}{m}$, find the sum of first mn terms. 3

OR

Solve for x :

$$2x^2 + 6\sqrt{3}x - 60 = 0$$

34. Find the greatest number of six digits exactly divisible by 18, 24 and 36. 3

Section 'D'

Question numbers 35 to 40 carry 4 marks each

35. A motor boat can travel 30 km upstream and 28 km downstream in 7 hours. It can travel 21 km upstream and return in 5 hours. Find the speed of the boat in still water and the speed of the stream. 4

OR

If (-5) is a root of the quadratic equation $2x^2 + px + 15 = 0$ and the quadratic equation $p(x^2 + x) + k = 0$ has equal roots, then find the values of p and k .

36. A man repays a loan of ₹ 3250 by paying ₹ 20 in the first month and then increases the payment by ₹ 15 every month. How long will it take him to clear the loan ? 4

- [AI]** 37. Draw a ΔABC with sides 6 cm, 8 cm and 9 cm and then construct a triangle similar to ΔABC whose sides are $\left(\frac{3}{5}\right)$ of the corresponding sides of ΔABC . 4

38. From the top of tower, 100 m high, a man observes two cars on the opposite sides of the tower with the angles of depression 30° & 45° respectively. Find the distance between the cars. (Use $\sqrt{3} = 1.73$) 4

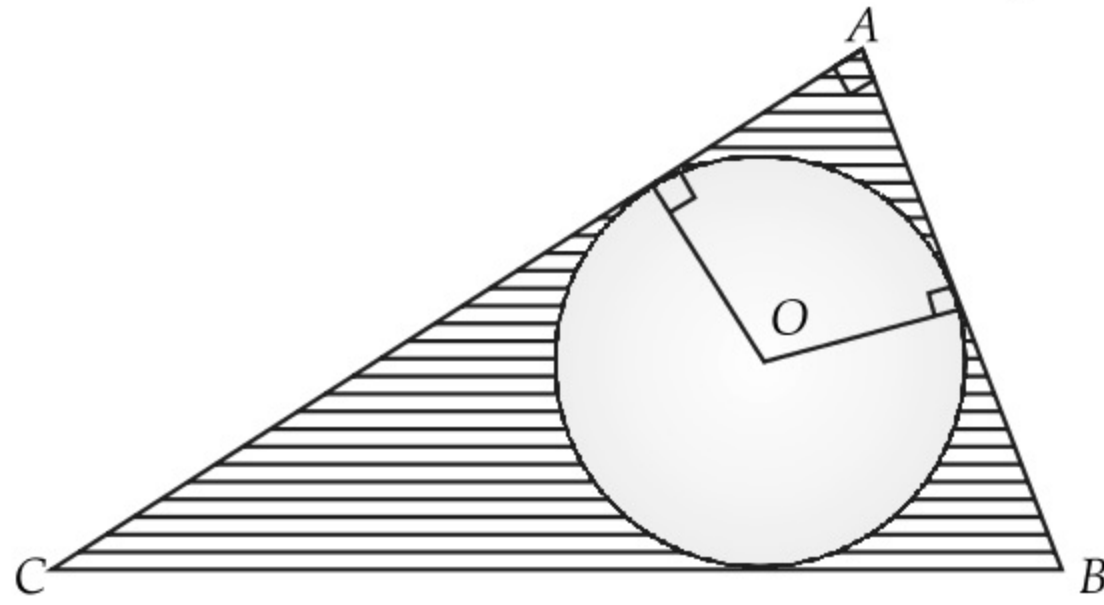
OR

The angle of elevation of a cloud from a point 120 m above a lake is 30° and the angle of depression of its reflection in the lake is 60° . Find the height of the cloud. 4

39. Draw more than ogive for the following distribution. Find the median from the curve.

Classes	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	10	18	40	20	12

40. In the figure, ABC is a right angled triangle right angled at $\angle A$. Find the area of the shaded region, if $AB = 6$ cm, $BC = 10$ cm and O is the centre of the incircle of the triangle ABC . 4



OR

From a rectangular block of wood, having dimensions 15 cm \times 10 cm \times 3.5 cm, a pen stand is made by making four conical depressions. The radius of each one of the depression is 0.5 cm and the depth 2.1 cm. Find the volume of wood left in the pen stand.