

Self Assessment Paper

Section 'A'

Question numbers 1 to 10 carry 1 mark each

- The product of a non-zero rational and an irrational number is :

(a) always irrational.	(b) always rational.	
(c) rational or irrational.	(d) one.	1
- The number of polynomials having zeroes as -2 and 5 is :

(a) 1	(b) 2	
(c) 3	(d) more than 3	1

OR

Which constant must be added and subtracted to solve the quadratic equation $9x^2 + \frac{3}{4}x - \sqrt{2} = 0$ by the method of completing the square?

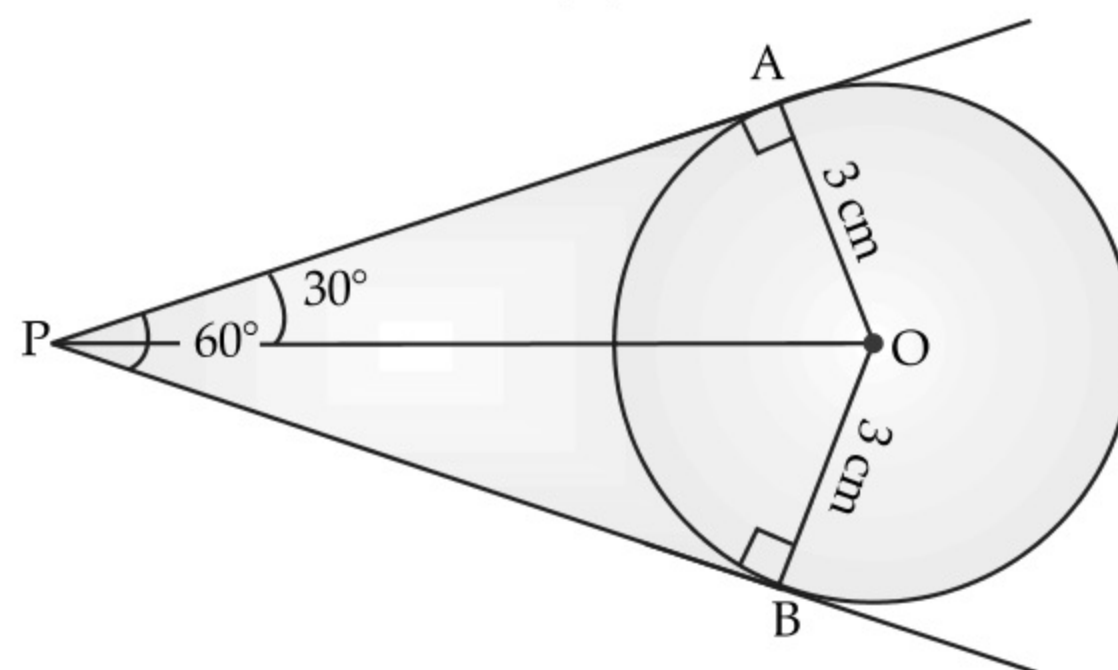
- | | | |
|-------------------|--------------------|--|
| (a) $\frac{1}{8}$ | (b) $\frac{1}{64}$ | |
| (c) $\frac{1}{4}$ | (d) $\frac{9}{64}$ | |
- The common difference of the A.P. : $\frac{1}{P}, \frac{1-p}{P}, \frac{1-2p}{P}, \dots$ is :

(a) p	(b) $-p$	
(c) -1	(d) 1	1
 - The area of a triangle with vertices $A(3, 0)$, $B(7, 0)$ and $C(8, 4)$ is :

(a) 14	(b) 28	
(c) 8	(d) 6	1
 - If in two triangles DEF and PQR , $\angle D = \angle Q$ and $\angle R = \angle E$, then which of the following is not true?

(a) $\frac{EF}{PR} = \frac{DF}{PQ}$	(b) $\frac{DE}{PQ} = \frac{FE}{RP}$	
(c) $\frac{DE}{QR} = \frac{DF}{PQ}$	(d) $\frac{EF}{RP} = \frac{DE}{QR}$	1
 - If two tangents inclined at an angle 60° are drawn to a circle of radius 3 cm, then the length of each tangent is equal to :

(a) $\frac{3}{2}\sqrt{3}$ cm	(b) 6 cm	
(c) 3 cm	(d) $3\sqrt{3}$ cm	1



7. $9 \sec^2 A - 9 \tan^2 A =$
 (a) 1 (b) 9
 (c) 8 (d) 0 1
8. If the perimeter and the area of a circle are numerically equal, then the radius of the circle is :
 (a) 2 units (b) π units
 (c) 4 units (d) 7 units 1

OR

- AI** Volumes of two spheres are in the ratio 64 : 27. The ratio of their surface areas is :
 (a) 3 : 4 (b) 4 : 3
 (c) 9 : 16 (d) 16 : 9
9. Consider the following frequency distribution :

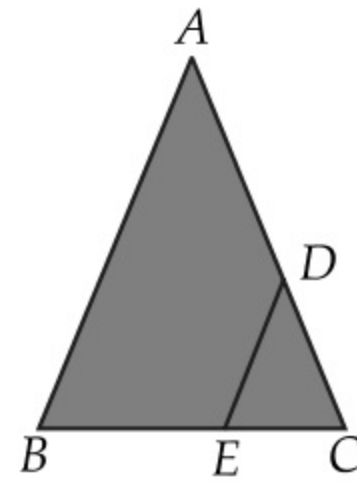
Class	0-5	6-11	12-17	18-23	24-29
Frequency	13	10	15	8	11

the upper limit of the median class is :

- (a) 7 (b) 17.5
 (c) 18 (d) 18.5 1
10. Two different coins are tossed simultaneously. The probability of getting at least one head is :
 (a) $\frac{1}{4}$ (b) $\frac{1}{8}$
 (c) $\frac{3}{4}$ (d) $\frac{7}{8}$ 1

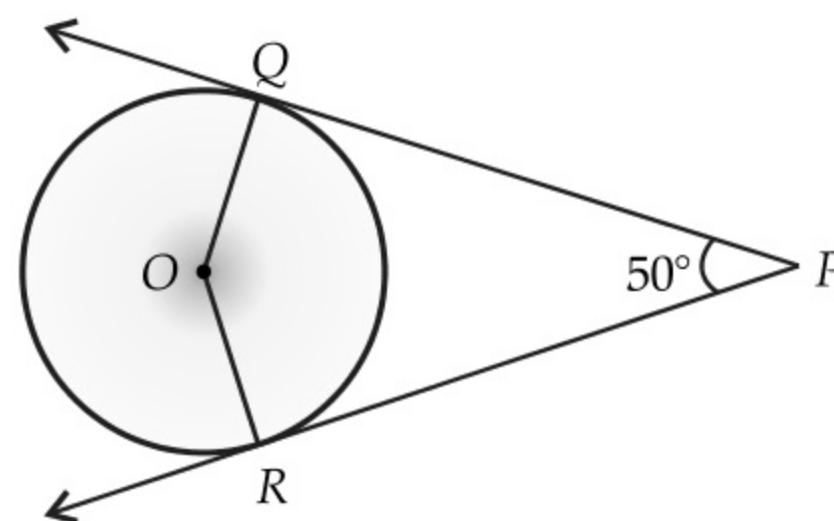
Question numbers 11 to 20 carry 1 mark each

11. Write whether rational number $\frac{7}{75}$ will have terminating decimal expansion or a non-terminating decimal. 1
12. If zeroes of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3 , then find the value of k . 1
13. In an A.P., if the common difference $(d) = -4$, and the seventh term (a_7) is 4, then find the first term. 1
14. If the centre and radius of circle is $(3, 4)$ and 7 units respectively, then what is the position of the point $A(5, 8)$ with respect to circle? 1
- 15.



In the figure of ΔABC , the points D and E are on the sides CA , CB respectively such that $DE \parallel AB$, $AD = 2x$, $DC = x + 3$, $BE = 2x - 1$ and $CE = x$. Then, find x . 1

16. In the given figure, PQ and PR are tangents to the circle with centre O such that $\angle QPR = 50^\circ$, then find $\angle OQR$. 1



17. Evaluate : $\frac{1 + \tan^2 A}{1 + \cot^2 A}$ 1

18. What is the area of the largest square that can be inscribed in a circle of radius 12 cm. ? 1

OR

What is the volume of a right circular cylinder of base radius 7 cm and height 10 cm ? $\left(\text{Use } \pi = \frac{22}{7} \right)$

19. If the median of a series exceeds the mean by 3, find by what number the mode exceeds its mean ? 1
 20. A number is selected at random from 1 to 30. Find the probability that it is a prime number. 1

Section 'B'

Question numbers 21 to 26 carry 2 marks each

21. If m and n are the zeroes of the polynomial $3x^2 + 11x - 4$, find the value of $\frac{m}{n} + \frac{n}{m}$. 2

OR

Find whether the lines represented by $2x + y = 3$ and $4x + 2y = 6$ are parallel, coincident or intersecting.

22. Determine the positive value of ' k ' for which the equation $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ will both have real and equal roots. 2
 23. In a certain A.P. 32^{th} term is twice the 12^{th} term. Prove that 70^{th} term is twice the 31^{st} term. 2
 24. Find the ratio in which the point $(-3, k)$ divides the line segment joining the points $(-5, -4)$ and $(-2, 3)$. Also find the value of k . 2
 25. Write the value of $\cot^2 \theta - \frac{1}{\sin^2 \theta}$. 2

26. Find the mean of the following distribution :

Class interval	0 - 6	6 - 12	12 - 18	18 - 24	24 - 30
Frequency	5	4	1	6	4

2

OR

Two dice are rolled simultaneously. Find the probability that the sum of numbers appearing is 10.

Section 'C'

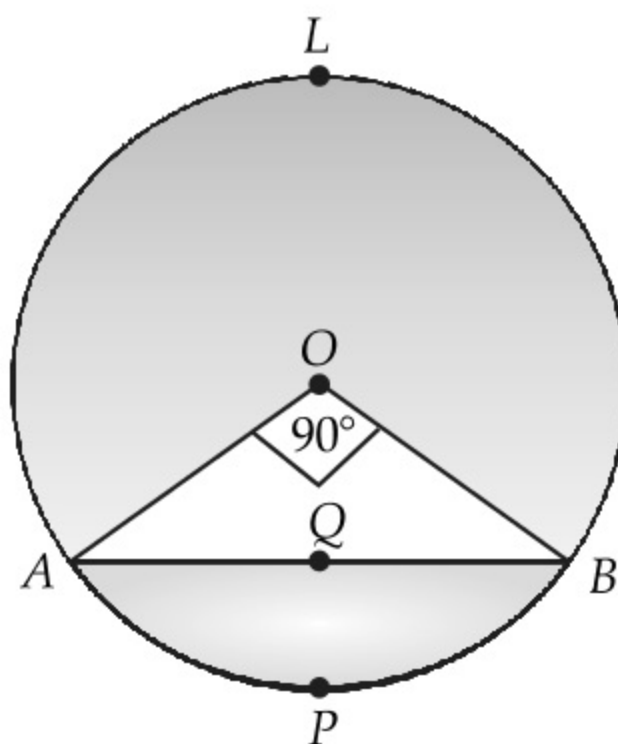
Question numbers 27 to 34 carry 3 marks each

27. Three coins are tossed simultaneously once. Find the probability of getting :
 (i) atleast one tail, (ii) no tail. 3
 28. By changing the following frequency distribution 'to less than type' distribution, draw its ogive. 3

Classes	0 - 15	15 - 30	30 - 45	45 - 60	60 - 75
Frequency	6	8	10	6	4

3

29. In the given figure, a chord AB of the circle with centre O and radius 10 cm, that subtends a right angle at the centre of the circle. Find the area of the minor segment $AQBP$. Hence find the area of major segment $ALBQA$. (Use $\pi = 3.14$)



OR

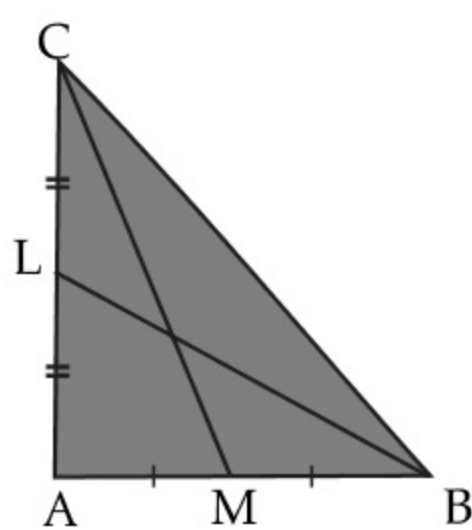
The rain water from $22 \text{ m} \times 20 \text{ m}$ roof drains into cylindrical vessel of diameter 2 m and height 3.5 m . If the rain water collected from the roof fills $\left(\frac{4}{5}\right)$ of cylindrical vessel then find the rainfall in cm.

30. Prove that $\frac{\cos^3 \theta + \sin^3 \theta}{\cos \theta + \sin \theta} + \frac{\cos^3 \theta - \sin^3 \theta}{\cos \theta - \sin \theta} = 2$. 3

31. ABC is a triangle. A circle touches sides AB and AC produced and side BC at X, Y and Z respectively. Show that $AX = \frac{1}{2}$ perimeter of ΔABC . 3

OR

AI In the given figure, BL and CM are medians of ΔABC , right angled at A . Prove that $4(BL^2 + CM^2) = 5BC^2$.



32. If $(5, 2), (-3, 4)$ and (x, y) are collinear, show that $x + 4y - 13 = 0$. 3

33. In an A.P. if sum of its first n terms is $3n^2 + 5n$ and its k^{th} term is 164 , find the value of k . 3

OR

The sum of ages (in years) of a son and his father is 35 years and product of their ages is 150 years, find their ages.

34. 144 cartons of Coke cans and 90 cartons of Pepsi cans are to be stacked in a canteen. If each stack is of the same height and if it contain equal cartons of the same drink, what would be the greatest number of cartons each stock would have? 3

Section 'D'

Question numbers 35 to 40 carry 4 marks each

35. If 2 is subtracted from the numerator and 1 is added to the denominator, a fraction becomes $\frac{1}{2}$, but when 4 is added to the numerator and 3 is subtracted from the denominator, it becomes

$\frac{3}{2}$. Find the fraction. 4

OR

Find the values of k for which the equation $(3k + 1)x^2 + 2(k + 1)x + 1$ has equal roots. Also find the roots.

36. If the ratio of the 11th term of an A.P. to its 18th term is 2 : 3, find the ratio of the sum of the first five term to the sum of its first 10 terms. 4

AI 37. Construct a right triangle whose hypotenuse and one side measures 10 cm and 8 cm respectively.

Then construct another triangle whose sides are $\left(\frac{4}{5}\right)$ times the corresponding sides of this triangle. 4

38. 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

OR

Two points A and B are on the same side of a tower and in the same straight line with its base. The angle of depression of these points from the top of the tower are 60° and 45° respectively. If the height of the tower is 15 m, then find the distance between these points.

39. Following distribution shows the marks obtained by a class of 100 students :

Marks	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Frequency	10	15	30	32	8	5

Draw a 'more than' ogive for the above data 4

40. Four equal circles are described at the four corners of a square so that each touches two of the others.

The shaded area enclosed between the circles is $\frac{24}{7} \text{ cm}^2$. Find the radius of each circle. 4

OR

A solid cylinder of diameter 12 cm and height 15 cm is melted and recast into toys in the shape of a cone of radius 3 cm and height 9 cm. Find the number of toys so formed.