

Sample Paper 2 (Unsolved)

(Basic Level)

Time: 3 hrs.

Max. Marks: 80

General Instructions

Same as Sample Paper 1

Section-A

1. $n^2 - 1$ is divisible by 8, if n is:

- a. an integer
- b. a natural number
- c. an odd integer
- d. an even integer

2. To divide a line segment AB in the ratio 5 : 6, draw a ray AX such that $\angle BAX$ is an acute angle, then draw a ray BY parallel to AX and the points A_1, A_2, A_3, \dots and B_1, B_2, B_3, \dots are located at equal distances on ray AX and BY, respectively. Then the points joined are:

- a. A_5 and B_6
- b. A_6 and B_5
- c. A_4 and B_5
- d. A_5 and B_4

Or

A teacher says the student, construct a tangent at point A on the circle and after that join point A to the centre of circle. The angle made at the point of contact is:

- a. 60°
- b. 30°
- c. 90°
- d. None of these

3. The equations $3x - 5y = 7$ and $9x - 15y = 21$ have:
- a unique solution
 - no solution
 - infinitely many solutions
 - None of the above

Or

The sum of the digits of a two digit number is 9. If 27 is added to the number, its digits reverse. The number is:

- 25
 - 72
 - 63
 - 36
4. It is given that $\Delta ABC \sim \Delta PQR$, with $\frac{BC}{QR} = \frac{1}{4}$. Then,

$\frac{\text{ar}(\text{PRQ})}{\text{ar}(\text{BCA})}$ is equal to:

- 16
 - 4
 - $\frac{1}{4}$
 - $\frac{1}{16}$
5. Area of a sector of angle p (in degrees) of a circle with radius (R) is:

- $\frac{p}{180} \times 2\pi R$
- $\frac{p}{180} \times \pi R^2$
- $\frac{p}{360} \times 2\pi R$
- $\frac{p}{720} \times 2\pi R^2$

6. If the point $P(k - 1, 2)$ is equidistant from the points $A(3, k)$ and $B(k, 5)$, the value of k is/are

7. The roots of the quadratic equation $4x^2 + 2x - 3 = 0$ has the nature as

Or

If the product of two consecutive positive integers is 306 and we need to find the integers, then the situation can be represented as

8. The common point of a tangent and the circle is called point of
9. The surface area of a sphere whose volume is 4851 cubic metres is

Or

During conversion of a solid from one shape to another, the volume of new shape will

10. In the formula $\bar{x} = a + h \left(\frac{\sum f_i u_i}{\sum f_i} \right)$, for finding the mean of grouped frequency distribution, $u_i = \dots\dots\dots$

11. A little boy is flying a kite. The string of kite makes an angle of 30° with the ground. If the length of the kite is 21m, then the length of the string is 35 m. (T/F)

12. Graph of a quadratic polynomial is an ellipse. (T/F)

Or

If $x + 2$ is a factor of $x^3 - 2ax^2 + 16$, then value of a is 4.

[T/F]

13. If $\sin 3A = \cos (A - 26^\circ)$ where $3A$ is an acute angle, the value of A is 59° . (T/F)

Or

The value of the expression $\operatorname{cosec} (75^\circ + \theta) - \sec (15^\circ - \theta) - \tan (55^\circ + \theta) + \cot (35^\circ - \theta)$ is $3/2$. [T/F]

14. The maximum volume of a cone that can be carved out of a solid hemisphere of radius r is $\frac{1}{2}\pi r^2$. (T/F)

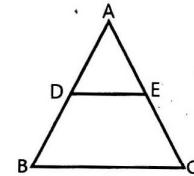
15. If sum of the first n terms of an AP is given by $S_n = 3n^2 + 4$, then n th term is $2n - 1$. (T/F)

16. In an AP, if the common difference (d) = -4 and the seventh term (a_7) is 4, then find the first term.

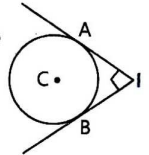
17. Is the triangle with sides 25 cm, 5 cm and 24 cm a right-angle? Give reason for your answer.

Or

In figure, $DE \parallel BC$, $AD = 1$ cm and $BD = 2$ cm. What is the ratio of the ar (ΔABC) to the ar (ΔADE)?



18. In the adjoining figure, 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.



19. If $\sin x + \cos y = 1$, $x = 30^\circ$ and y is an acute angle, find the value of y .
20. If the mode of the data 3, 5, 8, 9, 8, 12, 7, 12 and x is 8, find the value of x .

Section-B

21. Find the HCF of 1260 and 7344 using Euclid's algorithm.
22. The mid point of the line segment joining $A(2a, 4)$ and $B(-2, 3b)$ is $(1, 2a + 1)$. Find the value of a and b .

Or

Find the lengths of the medians AD and BE of ΔABC whose vertices are $A(7, -3)$, $B(5, 3)$ and $C(3, -1)$.

23. Find the value of p , for which one root of the quadratic equation $px^2 - 14x + 8 = 0$ is 6 times the other.
24. An integer is chosen at random between 1 and 100. Find the probability that it is:
(i) divisible by 8, (ii) not divisible by 8.

Or

A card is drawn at random from a well-shuffled pack of 52 cards. Find the probability of getting:

- (i) a red king, (ii) a queen or jack.
25. The angle of depression of car parked on the road from the top of a 150 m high tower is 30° . Find the distance of the car from the tower.
26. Is the following statement true or false? Justify your answer. If the zeroes of a quadratic polynomial $ax^2 + bx + c$ are both negative, then a, b and c all have same sign.

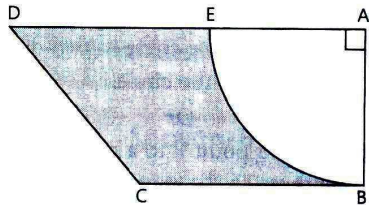
Section-C

27. By using Euclid's algorithm, find the largest number which divides 650 and 1170.
28. Prove that $\cot \theta \tan (90^\circ - \theta) - \sec (90^\circ - \theta) \operatorname{cosec} \theta + \sqrt{3} \tan 12^\circ \tan 60^\circ \tan 78^\circ = 2$.

Or

Prove that $\frac{1}{\operatorname{cosec} \theta - \cot \theta} = \operatorname{cosec} \theta + \cot \theta$.

29. Solve for x and y : $px + qy = p - q$; $qx - py = p + q$.
30. In the adjoining figure, ABCD is a trapezium of area 24.5 sq.cm. In it, $AD \parallel BC$, $\angle DAB = 90^\circ$, $AD = 10$ cm and $BC = 4$ cm. If ABE is a quadrant of a circle, find the area of the shaded region. (Take $\pi = \frac{22}{7}$)



Or

On a square cardboard sheet of area 784 cm^2 , four congruent circular plates of maximum size are placed such that each circular plate touches the other two plates and each side of the square sheet is tangent to two circular plates. Find the area of the square sheet not covered by the circular plates.

31. The sum of the first 7 terms of an AP is 182. If its 4th and 17th terms are in the ratio 1 : 5, find the AP.

32. A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\frac{2}{3}$. Find the number of blue balls in the jar.

Or

A number is selected at random from the numbers 3, 5, 5, 7, 7, 7, 9, 9, 9. Find the probability that the selected number is their average.

33. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

34. Solve the following equation by using factorisation method:

$$9x^2 - 6b^2x - (a^4 - b^4) = 0.$$

Section-D

35. The houses of a row are numbers consecutively from 1 to 49. Show that there is a value of x such that the sum of numbers of the houses preceding the house numbered x is equal to the sum of the number of houses following it. Find this value of x .
36. Two water taps together can fill a tank in $1\frac{7}{8}$ hrs. The tap with longer diameter takes 2 hrs less than the tap with smaller one to fill the tank separately. Find the time in which each tap can fill the tank separately.

Or

A boat goes 30 km upstream and 44 km downstream in 10 hrs. In 13 hrs, it can go 40 km upstream and 55 km downstream. Determine the speed of the stream and that of the boat in still water.

37. If the medians of the following frequency distribution is 32.5. Find the values of f_1 and f_2 .

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Total
Frequency	f_1	5	9	12	f_2	3	2	40

Or

The table shows the daily expenditure on food of 25 households in a locality. Find the mean daily expenditure on food.

Daily expenditure (in ₹)	100-150	150-200	200-250	250-300	300-350
Number of households	4	5	12	2	2

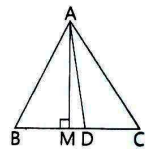
38. In figure, AD is a median of a $\triangle ABC$ and $AM \perp BC$.

Prove that:

(i) $AC^2 = AD^2 + BC \cdot DM + \left(\frac{BC}{2}\right)^2$

(ii) $AB^2 = AD^2 - BC \cdot DM + \left(\frac{BC}{2}\right)^2$

(iii) $AC^2 + AB^2 = 2AD^2 + \frac{1}{2}BC^2$



39. The angle of elevation of an aeroplane from a point on the ground is 60° . After a flight of 30 seconds, the angle of elevation changes to 30° . If the aeroplane is flying at a constant height of $3600\sqrt{3}$ m, find the speed of the plane in km/h.

40. A container, opened from the top and made up of a metal sheet, is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends as 8 cm and 20 cm, respectively. Find the cost of the milk which can completely fill the container, at the rate of ₹ 20 per litre.

Answer Key

Sample Paper-2

1. (c) 2. (a) OR (c) 3. (c) OR (d) 4. (a) 5. (d) 6. 5 and 1 7. real and distinct OR $x^2 + x - 306 = 0$
 8. contact 9. 1386 m^2 OR remain unaltered 10. $\frac{x_i - a}{h}$ 11. False 12. False OR False 13. False OR False
 14. False 15. True 16. 28 17. OR $\frac{9}{1}$ 18. 4 cm 19. $y = 60^\circ$ 20. 8 21. 36 22. 2 and 2 OR AD = 5 units and BE = 5 units
 23. $p = 3$ 24. (i) $\frac{3}{25}$ (ii) $\frac{22}{25}$ OR (i) $\frac{1}{26}$ (ii) $\frac{2}{13}$ 25. $150\sqrt{3}$ m 27. 130 29. $x = 1$ and $y = -1$ 30. 14.875 cm^2
 OR 168 cm^2 31. 2, 10, 18 32. 8 OR $\frac{3}{10}$ 34. $\frac{b^2 - a^2}{3}$ and $\frac{a^2 + b^2}{3}$ 35. $x = 35$ 36. 5 hrs and 3 hrs
 OR 8 km/h and 3 km/h 37. $f_1 = 3$ and $f_2 = 6$ OR 211 39. 864 km/h 40. ₹ 209