

Sample Papers

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on the front of book

Sample Paper 1 (Unsolved)

Time: 3 hrs.

(Basic Level)

Max. Marks: 80

General Instructions

- All questions are compulsory.
- The question paper consists of 40 questions divided into four sections A, B, C and D.
- Section A contains 20 questions of 1 mark each. Section B contains 6 questions of 2 marks each. Section C contains 8 questions of 3 marks each. Section D contains 6 questions of 4 marks each.
- There is no overall choice. However, an internal choice has been provided in questions. You have to attempt only one of the alternatives in all such questions.
- Use of calculators is not permitted.

MATHEMATICS

Section-A

- The area of a quadrant is calculated by:
 - $\frac{\pi r^2}{4}$
 - $\frac{\pi r^2}{2}$
 - πr^2
 - None of these
- Construction of a cumulative frequency table is useful in determining the:
 - mean
 - mode
 - median
 - All of these

Or

Consider the data:

Class	Frequency
65–85	4
85–105	5
105–125	13
125–145	20
145–165	14
165–185	7
185–205	4

The difference of the upper limit of the median class and the lower limit of the modal class is:

- 0
 - 19
 - 20
 - 38
- The shape of a gilli, in the gilli-danda game is a combination of:
 - two cylinders
 - one cone and one cylinder
 - Two cones and one cylinder
 - Two cylinders and one cone

- A ladder 10 m long reaches a window 8 m above the ground. The distance of the foot of the ladder from the base of the wall is:

- 2 m
- 6 m
- 18 m
- None of these

Or

It is given that $\triangle ABC \sim \triangle DFE$, $\angle A = 30^\circ$, $\angle C = 50^\circ$, $AB = 5$ cm, $AC = 8$ cm and $DF = 7.5$ cm. Then, which of the following is true?

- $DE = 12$ cm, $\angle F = 50^\circ$
- $DE = 12$ cm, $\angle F = 100^\circ$
- $EF = 12$ cm, $\angle D = 100^\circ$
- $EF = 12$ cm, $\angle D = 30^\circ$

- The HCF of 20, 50 and 80 is:

- 20
- 50
- 10
- 80

Or

For some integer m , every even integer is of the form:

- m
- $2m$
- $m + 1$
- $2m + 1$

- is the value of the middle variable when the variables are arranged in ascending or descending order.
- The value of $\sin \theta$ or $\cos \theta$ never exceeds
- If the length of the shadow of a tower is $\sqrt{3}$ times its height, the angle of elevation of the sun is
- The length of tangent drawn to a circle with radius 3 cm from a point 5 cm from the centre of the circle is

10. 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)

11. If the areas of three adjacent faces of cuboid are x , y , z respectively, then the volume of the cuboid is

12. If $\triangle ABC \sim \triangle PQR$, $AB = 5.5$ cm, $PQ = 10.5$ cm and perimeter of $\triangle ABC = 66$ cm, then the perimeter of $\triangle PQR$ is

Or

The area of an equilateral triangle described on one side of the square is equal to the area of the equilateral triangle described on one of its diagonal.

13. The value of θ in $2\sin^2\theta - \cos^2\theta = 2$ is

14. The angled subtends by joining points $A(3, 0)$ and $B(0, -2)$ to the origin point is

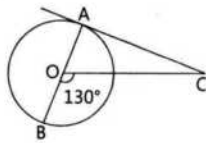
Or

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

15. The pair of equations $x + 2y + 5 = 0$ and $-3x - 6y + 1 = 0$ has solution.

16. Two coins are tossed simultaneously. Find the probability of getting exactly one head.

17. In given figure, AOB is a diameter of a circle with centre O and AC is a tangent to the circle at A . If $\angle BOC = 130^\circ$, then find $\angle ACO$.

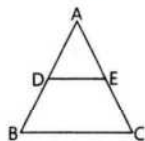


18. Given, a triangle with side $AB = 8$ cm. To get a line segment $AB' = \frac{3}{4}$ of AB , at what ratio the line segment AB should be divided?

19. Given $\triangle ABC \sim \triangle PQR$, if $\frac{AB}{PQ} = \frac{1}{3}$, then find $\frac{\text{ar}(\triangle ABC)}{\text{ar}(\triangle PQR)}$.

Or

In the given figure, if $DE \parallel BC$, $AE = 8$ cm, $EC = 2$ cm, $EC = 2$ cm and $BC = 6$ cm, then find DE .



20. For what values of k , the roots of the equation $x^2 + 4x + k = 0$ are equal?

Section-B

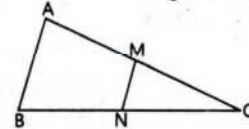
21. A die is thrown once. Find the probability of getting prime number.

22. If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$; $0^\circ < A + B \leq 90^\circ$, $A > B$, then find A and B .

23. In a rectangle $ABCD$, E is middle point of AD . If $AD = 40$ m and $AB = 48$ m, then find EB .

Or

In the given figure, $MN \parallel AB$, $BC = 7.5$ cm, $AM = 4$ cm and $MC = 2$ cm. Find the length of BN .



24. Find the largest number which divides 320 and 740 leaving remainder 5 in each case.

25. A line intersects the Y-axis and X-axis at the points P and Q respectively. If $(2, -5)$ is the mid-point of PQ , then find the coordinates of P and Q .

26. Find two consecutive positive integers, sum of whose squares is 365.

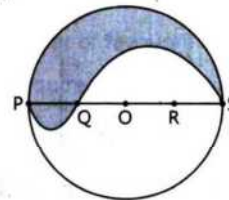
Or

Find the nature of the roots of the quadratic equation $\frac{2}{x^2} - \frac{5}{x} + 2 = 0$ and hence solve it.

Section-C

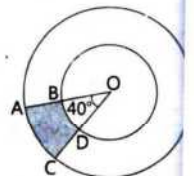
27. A letter of English alphabet is chosen at random. Determine the probability that the chosen letter is a consonant.

28. $PQRS$ is a diameter of a circle of radius 6 cm. The equal lengths PQ , QR and RS are drawn on PQ and QS as diameters, as shown in figure. Find the perimeter of the shaded region.



Or

Find the area of the shaded region in the given figure, if radii of the two concentric circles with centre O are 7 cm and 14 cm respectively and $\angle AOC = 40^\circ$. (Use $\pi = \frac{22}{7}$)



29. Prove that $(\sec \theta - \tan \theta)^2 = \frac{1 - \sin \theta}{1 + \sin \theta}$.

30. Prove that $\sqrt{3}$ is an irrational number. Hence prove that $\sqrt{3} - 5$ is also an irrational number.

Or

Prove that $\frac{1}{\sqrt{2}}$ is an irrational number.

31. The area of a triangle is 5 sq. units. Two of its vertices are (2, 1) and (3, -2). If the third vertex is $(\frac{7}{2}, y)$, find the value of y .

32. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 4x + 3$, find the value of $(\alpha^4\beta^2 + \alpha^2\beta^4)$.

Or

(i) If α and β are the zeroes of $x^2 - 2x - 1$, form a quadratic polynomial whose zeroes are $2\alpha - 1$, $2\beta - 1$.

(ii) If α and β are the zeroes of $x^2 - x - 2$, form a quadratic polynomial whose zeroes are $2\alpha + 1$, $2\beta + 1$.

33. How many multiples of 4 lie between 10 and 250?
34. Draw a circle of radius 6 cm. From a point 10 cm away from its centre, construct the pair of tangents to the circle and measure their lengths.

Section-D

35. From each end of a solid metal cylinder, metal was scooped out in hemispherical form of same diameter. The height of the cylinder is 10 cm and its base is of radius 4.2 cm. The rest of the cylinder is melted and converted into a cylindrical wire of 1.4 cm thickness. Find the length of the wire.

(Use $\pi = \frac{22}{7}$)

36. The following table gives production yield in kg per hectare of wheat of 100 farms of a village:

Production yield (kg/hectare)	Number of Farms
40-45	4
45-50	6
50-55	16
55-60	20
60-65	30
65-70	24

Change the distribution to a 'more than type' distribution, and draw its ogive.

Or

The following distribution gives the daily income of 50 workers of a factory.

Daily income (in ₹)	200-220	220-240	240-260	260-280	280-300
Number of workers	12	14	8	6	10

Convert the distribution above to a 'less than type' cumulative frequency distribution and draw its ogive.

37. From the top of a hill, the angles of depression of two consecutive kilometre stones due east are found to be 30° and 45° . Find the height of the hill.
38. The first term of an AP of 20 terms is 2 and its last term is 59. Find its 6th term from the end.

Or

Sum of first 14 terms of an AP is 1505 and its first term is 10. Find its 25th term.

39. Solve the following system of equations graphically
 $x - 2y = 5$ and $3x - 6y = 15$.
40. The tangent at any point of a circle is perpendicular to the radius through the point of contact, prove it.

Answer Key

Sample Paper-1

1. (a) 2. (c) OR (c) 3. (c) 4. (c) OR (b) 5. (b) OR (c) 6. Median 7. 1 8. 30° 9. 4 cm
10. False OR False 11. \sqrt{xyz} 12. 126 cm OR half 13. 90° 14. 90° OR 5 and 1 15. no 16. $\frac{1}{2}$
17. $\angle ACO = 40^\circ$ 18. 3 : 1 19. $\frac{1}{9}$ OR 4.8 cm 20. $k = 4$ 21. $\frac{1}{2}$ 22. $\angle A = 45^\circ$ and $\angle B = 15^\circ$
23. 52 m OR 5 cm 24. 105 25. (0, -10) and (4, 0) 26. 13 and 14 OR $\frac{1}{2}$ and 2 27. $\frac{21}{26}$ 28. 12π cm
OR $\frac{154}{3}$ cm² 31. $\frac{13}{2}$ OR $\frac{-27}{2}$ 32. 90 OR (i) $x^2 - 2x - 7$ (ii) $x^2 - 4x - 5$ 33. $n = 60$ 35. 158.4 cm
37. 1.365 km 38. 44 OR 370