

I have used the following blueprint to prepare this paper

Chapter Name	Marks	Chapter Name	Marks
Number System	6	Areas of Parallelograms and triangles	7
Polynomials	6	Circles	10
Lines and Angles	10	Surface Areas and Volumes	14
Triangles	6	Statistics	10
Quadrilaterals	11		

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MCQ - 1 mark each

- On rationalizing the denominator $\frac{1}{n + \sqrt{n+1}}$ where $n = 5$ becomes
(a) $\frac{5 - \sqrt{6}}{19}$ (b) $5 + \sqrt{6}$ (c) $\frac{1}{5 + \sqrt{6}}$ (d) $\frac{1}{5 - \sqrt{6}}$
- Which of the following is a factor of $(x + y)^3 - (x^3 + y^3)$
(a) $3xy$ (b) $x - y$ (c) $x^2 + y^2 - xy$ (d) $x^2 + y^2 + xy$
- If one angle of a triangle is equal to the sum of the other two angles, then the triangle is
(A) an isosceles triangle (B) an obtuse triangle (C) an equilateral triangle (D) a right triangle
- If $\Delta ABC \cong \Delta PQR$ and ΔABC is not congruent to ΔRPQ , then which of the following is not true: (A) $BC = PQ$ (B) $AC = PR$ (C) $QR = BC$ (D) $AB = PQ$
- If $AB = 12$ cm, $BC = 16$ cm and AB is perpendicular to BC , then the radius of the circle passing through the points A , B and C is : (A) 6 cm (B) 8 cm (C) 10 cm (D) 12 cm
- In a cylinder, if radius is doubled and height is halved, the volume will be
(A) same (B) doubled (C) halved (D) four times
- The length of the longest pole that can be put in a room of dimensions $(10 \text{ m} \times 10 \text{ m} \times 5 \text{ m})$ is
(A) 15 m (B) 16 m (C) 10 m (D) 12 m
- In a frequency distribution, the mid value of a class is 10 and the width of the class is 8. The lower limit of the class is: (A) 6 (B) 7 (C) 8 (D) 12

MCQ - 2 marks each

- If angles A , B , C and D of the quadrilateral $ABCD$, taken in order, are in the ratio $3:7:6:4$, then $ABCD$ is a (A) rhombus (B) parallelogram (C) trapezium (D) kite

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10. ABCD is a quadrilateral whose diagonal AC divides it into two parts, equal in area, then ABCD (A) is a rectangle (B) is always a rhombus (C) is a parallelogram (D) need not be any of (A), (B) or (C)
11. The radius of a sphere is increased by 10%. The volume will be increased by ____% approx (A) 33.1 (B) 34.1 (C) 32.1 (d) 35.1
12. If the mean of the observations: $x, x + 3, x + 5, x + 7, x + 10$ is 9, the mean of the last three observations is (A) $11\frac{1}{2}$ (B) $11\frac{1}{3}$ (C) $12\frac{1}{3}$ (D) $13\frac{1}{3}$

Answer with reasoning- 2 marks each

13. Let x be rational and y be irrational. Is xy necessarily irrational? Justify your answer with an example.
14. A binomial can have atmost two terms. State true/ false and justify your answer.
15. Two lines l and m are perpendicular to the same line n . Are l and m perpendicular to each other? Give reason for your answer.
16. In triangles ABC and DEF, $\angle A = \angle D, \angle B = \angle E$ and $AB = EF$. Will the two triangles be congruent? Give reasons for your answer.
17. Diagonals AC and BD of a quadrilateral ABCD intersect each other at O such that $OA : OC = 3 : 2$. Is ABCD a parallelogram? Why or why not?
18. ABC and BDE are two equilateral triangles such that D is the mid-point of BC. Then $4 \text{ ar (BDE) = ar (ABC)}$.
19. Through three collinear points a circle can be drawn.

3 marks each

20. Represent $\sqrt{29}$ on number line. Prove your construction.
21. Factorise by using factor theorem. $6x^2 + 7x - 3$
22. A triangle ABC is right angled at A. L is a point on BC such that $AL \perp BC$. Prove that $\angle BAL = \angle ACB$
23. In $\triangle ADB, \angle ADB = 90^\circ$ and $\angle ABD = 2\angle BAD$. Show that hypotenuse $AB = 2 BD$
24. P is the mid-point of side BC of a parallelogram ABCD such that $\angle BAP = \angle DAP$. Prove that $AD = 2CD$.

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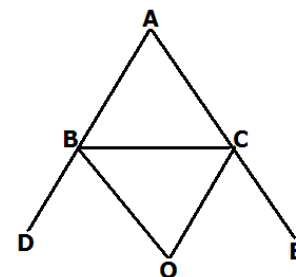
25. If two equal chords of a circle intersect, prove that the parts of one chord are separately equal to the parts of the other chord.
26. A cylindrical tube opened at both the ends is made of iron sheet which is 2 cm thick. If the outer diameter is 16 cm and its length is 100 cm, find how many cubic centimeters of iron has been used in making the tube ?
27. A semi-circular sheet of metal of diameter 28cm is bent to form an open conical cup. Find the capacity of the cup.
28. Prepare a continuous grouped frequency distribution from the following data

mid value	5	15	25	35	45
frequency	4	8	13	12	6

29. Prove that parallelograms on same base and between same parallel lines are equal in area.

4 marks each

30. In fig BO and CO are bisectors of angles DBC and ECB respectively. Prove $\angle BOC = 90^\circ - \angle A/2$
31. Prove quadrilateral formed by joining midpoints of sides of A rhombus is a rectangle.
32. AB is diameter of a circle with centre O. C is a point in the exterior of circle. AC intersects circle at D and BC intersects it at E. DE is equal to radius of circle Prove angle ACB = 60° .
33. Find cost of painting a square pipe of inner and outer sides 7cm and 8cm and length 7m at Rs. 5 per square cm.
34. Draw histogram for the following data.



C.I.	0 – 10	10 – 30	30 – 60	60 – 100	100 – 120
Frequency	7	10	12	12	8

Design of the Question Paper

Type	Marks per Question	No. of Questions	Total Marks
MCQ	1	8	8
MCQ	2	4	8
Short Answer Type 1	2	7	14
Short Answer Type 2	3	10	30
Long Answer Type	4	5	20
Total		34	80

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