

Time: 3hrs.

M.M. 80

General Instructions:

1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.

Section-A

1. Decimal representation of a rational number cannot be
 - a) terminating
 - b) non-terminating
 - c) non-terminating repeating
 - d) non-terminating non-repeating
2. $2\sqrt{3} + \sqrt{3}$ is equal to
 - a) $2\sqrt{6}$
 - b) 6
 - c) $3\sqrt{3}$
 - d) $4\sqrt{6}$
3. Degree of zero polynomial is
 - a) 0
 - b) 1
 - c) any natural number
 - d) not defined
4. If y co-ordinate of a point is zero, then this point always lies
 - a) Quadrant I
 - b) Quadrant II
 - c) on x - axis
 - d) on y - axis
5. The perpendicular distance of the point (3, 4) from the y - axis is
 - a) 3
 - b) 4
 - c) 5
 - d) 7
6. If $x = 3, y = 4$ in a solution of the equation $x - 5y = k$, then value of k is
 - a) 17
 - b) 7
 - c) 10
 - d) -17
7. The point of the form (a, a) always lies on
 - a) x-axis
 - b) y-axis
 - c) on the line $y = x$
 - d) on the line $y = -x$
8. Euclid's fifth postulate is about
 - a) Right angle
 - b) circles
 - c) parallel lines
 - d) triangles
9. Only one line can pass through a single point
 - a) True
 - b) False

B-1

10. Angles of a triangle are in the ratio 2: 4: 3 . The smallest angle of the triangle is

- a) 60° b) 40° c) 80° d) 20°

11. 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) a right angled triangle d) an equilateral triangle

12. Which of the following is not a criterion for congruence of triangles?

- a) SAS b) ASA c) SSA d) SSS

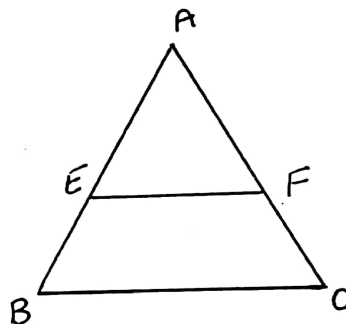
13. In $\triangle PQR$, $\angle R = \angle P$ and $QR = 4\text{cm}$ and $PR = 5\text{cm}$,

then the length of PQ is

- a) 4cm
b) 5cm
c) 2 cm
d) 2.5 cm

14. In figure, the line segment joining the mid-points of two sides of a triangle is parallel to the third side, ($EF \parallel BC$), then

- a) $EF = 2 BC$
b) $EF = \frac{1}{3} BC$
c) $EF = \frac{1}{2} BC$
d) $BC = 4 EF$

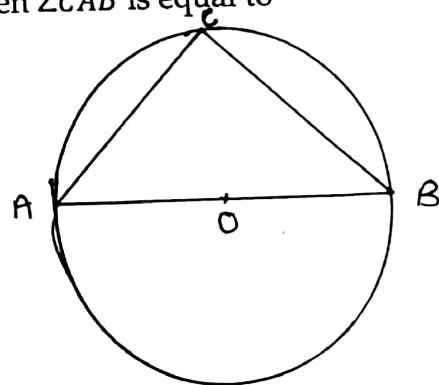


15. Diagonals of a parallelogram ABCD intersect at O. If $\angle BOC = 90^\circ$ and $\angle BDC = 50^\circ$ then $\angle OAB$ is

- a) 90° b) 50° c) 40° d) 10°

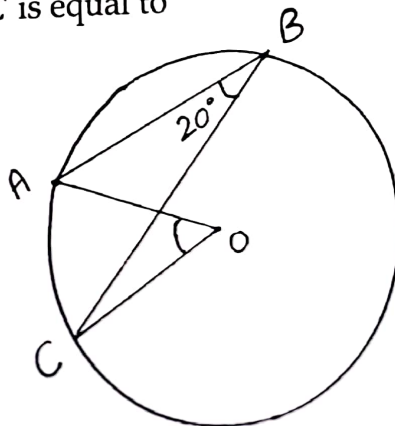
16. In figure, If AOB is a diameter of the circle and $AC = BC$, then $\angle CAB$ is equal to

- a) 30°
b) 60°
c) 90°
d) 45°



17. In figure, if $\angle ABC = 20^\circ$, then $\angle AOC$ is equal to

- a) 20°
b) 40°
c) 60°
d) 10°



B-2

18. The area of an equilateral triangle with side $2a$ is

- a) $\frac{\sqrt{3}}{4} a^2$ b) $\sqrt{3} a^2$ c) $\frac{\sqrt{3}}{2} a^2$ d) $\frac{3}{4} a^2$

Direction: In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R).

- a) Both A and R are true and Reason (R) is correct explanation of A
b) Both A and R are true but Reason (R) is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true

19. Assertion (A) : The total surface area of a cone whose radius is $\frac{r}{2}$ and slant height $2l$ is

$$\pi r \left(l + \frac{r}{4} \right)$$

Reason (R) : Total surface area of a cone is $\pi r (r + l)$

20. Assertion (A) : In a cone, if radius is 21cm and $h = 10$ cm, then its curved surface area is 1320 cm^2

Reason (R): Curved surface area of cone is $\pi r l$

Section - B

21. Represent $\sqrt{5}$ on the number line using compass and ruler.

22. In figure, if $AC = BD$, then prove that $AB = CD$. Give reason.



23. Find area of a triangle whose sides are 8cm, 11cm and 13cm.

24. Factorize $8a^3 + b^3 + 12a^2b + 6ab^2$

OR

Factorize $25a^2 - 35a + 12$

25. a) In a frequency distribution, the mid-point of a class is 23 and the width of the class is 4, then find the upper limit of the class.

a) Find class mark and width of the class interval (18 - 26)

Section - C

i. Express $0.3 + 0.\bar{4} + 0.5\bar{6}$ in the form of $\frac{p}{q}$ where p and q are integers and $q \neq 0$

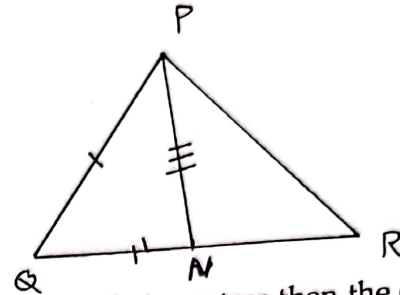
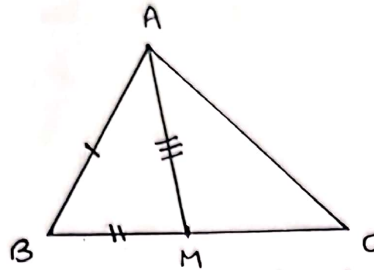
ii. The perimeter of an isosceles triangle is 32cm. The ratio of the equal sides to its base is 3:2. Find the area of the triangle.

Find three solutions for the equation $8x + 6y = 24$

B - 3

29. Two sides AB, BC and median AM of the one triangle ABC are respectively equal to sides PQ, QR and median PN of $\triangle PQR$. Show that

- $\triangle ABM \cong \triangle PQN$
- $\triangle ABC \cong \triangle PQR$



30. Prove that if chords of congruent circles subtend equal angles at their centres then the chords are equal.

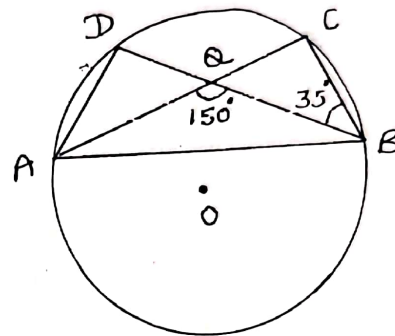
OR

In the given figure, O is the centre of the circle

And chord AC and BD intersect at Q.

Such that $\angle AQB = 150^\circ$, $\angle QBC = 35^\circ$

Find the value of $\angle ADB$



31. The diameter of the moon is approximately one fourth of the diameter of the earth. What fraction of the volume of the earth is the volume of the moon?

Section - D

32. a) Find the values of a and b if

$$\frac{6 + \sqrt{5}}{6 - \sqrt{5}} = a + b\sqrt{5}$$

b) Simplify $\{9(64^{1/3} + 125^{1/3})^3\}^{1/4}$

33. If the diagonals of a parallelogram are equal then show that it is rectangle.

OR

ABC is a triangle right angled at C. A line through the mid-point M of hypotenuse AB and parallel to BC intersect AC at D. Show that

a) D is the mid-point of AC

b) $MD \perp AC$

c) $CM = MA = \frac{1}{2} AB$

B. 4

34. Evaluate by using suitable identity :

a) $(x + 2y)^3$ b) Expand $(3a + 7b - c)^2$

35. The following table gives the distribution of students of two sections according to the marks obtained by them.

Section - A		Section - B	
Marks	Frequency	Marks	Frequency
0 - 10	3	0 - 10	5
10 - 20	9	10 - 20	19
20 - 30	17	20 - 30	15
30 - 40	12	30 - 40	10
40 - 50	9	40 - 50	1

Represent the marks of the students of both the sections on the same graph by two frequency polygons.

Section - E

Case Study:

36. A school canteen decides to distribute decorative ice-cream cones during a school function. Each cone is made up of a cardboard in the shape of a right circular cone with radius 3cm and height 4cm. The cone is open at the top and covered from the outside to make it attractive.

Based on the above information answer the following questions:

- Find the slant height of the cone.
- Find the curved surface area of one cone
- If cost of covering material of Rs. 0.05/cm², Find the cost to cover one cone.

OR

Find the volume of one cone. $\left(\text{use } \pi = \frac{22}{7} \right)$

8-5

Q 37.

Ankur and Ranjan start a new business together. The amount invested by both partners together is given by the polynomial $p(x) = 4x^2 + 12x + 5$, which is the product of their individual shares.
Based on the above information, answer the following questions.



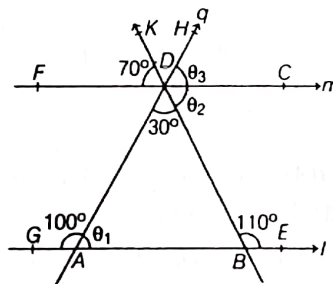
- i) Write the coefficient of x^2 in the given polynomial.
- ii) Write the type of the above polynomial.
- iii) What is the total amount invested by both if $x = 100$

OR

Factorise the given polynomial $p(x) = 4x^2 + 12x + 5$

Q 38.

In game period, the teacher of Meerut Public School decided to play the puzzle game. For this game, firstly the teacher draw a geometrical figure on the ground, which is shown as below.



While drawing this figure, the teacher have no scale for measuring this length, but they know the side which is opposite to the smallest angle, is smaller and the side which is opposite to the largest angle, is larger.

In this game, the teacher invite the two students Vicky and Vishal and said them that Vicky stands on point A and Vishal stands on point B, respectively (assume that both have same space of walking). Then, answer the following questions, which are based on above data.

- i) Write the measure of $\angle ABD$
- ii) Write the measure of $\angle \theta_1$
- iii) What is the value of $\angle \theta_2$

OR

Find the value of $\angle \theta_3$

B-6