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Date:09-03-2026

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Summative Assessment -II

Class: IX

Subject: - MATHEMATICS

Full marks: 80

Time: 180 Min.

General Instructions:

This Question Paper contains 38 questions. All questions are compulsory.

The Question Paper is divided into FIVE Sections – A, B, C, D, and E.

Section A comprises 20 questions of 1 mark each.

Section B comprises 5 questions of 2 marks each. Internal choice is provided in 2 questions.

Section C comprises 6 questions of 3 marks each. Internal choice is provided in 2 questions.

Section D comprises 4 questions of 5 marks each. Internal choice is provided in 2 questions.

Section E comprises 3 case study based questions of 4 marks each, with sub-parts of 1, 1, and 2 marks.

Internal choice is provided in the 2-mark sub-part of each case study.

Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ wherever required, unless stated otherwise.

Use of calculators is NOT allowed.

SECTION:A (1X20=20)

1.The decimal expansion of the number $\sqrt{2}$ is

- (a)a finite decimal (b)1.141421 (c)Non terminating recurring (d)Non terminating non recurring

2.The representation of $1.\bar{3}$ in the form $\frac{p}{q}$ is

- (a) $\frac{4}{3}$ (b) $\frac{5}{3}$ (c) $\frac{5}{4}$ (d)None

3. $\sqrt{10} \times \sqrt{15} =$

- (a) $5\sqrt{6}$ (b) $6\sqrt{5}$ (c) $\sqrt{30}$ (d) $\sqrt{25}$

4. $\sqrt{3}$ is a polynomial of degree

- (a)2 (b)0 (c)1 (d) $\frac{1}{2}$

5.The remainder when $f(x) = x^3 + ax^2 + 6x + a$ is divided $(x + a)$ is

- (a)-5a (b)5a (c)10a (d)0

6.If $x^3 + 6x^2 + 4x + k$ is exactly divisible by $(x + 2)$, then k=

- (a)-6 (b)-7 (c)-8 (d)-10

7.Zero of the polynomial $f(x) = 3x + 7$ is

- (a) $\frac{7}{3}$ (b) $\frac{-3}{7}$ (c) $\frac{7}{3}$ (d)-7

8. The abscissa and ordinate of the origin are

- (a)(0,0) (b)(1,0) (c)(0,1) (d)(1,1)

9. The measure of the angle between the coordinate axis is

- (a)0° (b)90° (c)180° (d)360°

10. If (4,19) is a solution of the equation $y = ax + 3$, then a =

- (a)3 (b)4 (c)5 (d)6

11. The equation $x - 2 = 0$ on number line is represented by

- (a)a line (b)a point (c)infinitely (d)two lines

12. The measure of an angle which exceeds its complement by 30° is

- (a)150° (b)120° (c)60° (d)80°

13. The measure of angle which twice its supplement is

- (a)60° (b)120° (c)110° (d)130°

14. If all the three angles of a triangle are equal, then each one of them is equal to

- (a)90° (b)45° (c)60° (d)90°

15. If two acute angles of right triangle equal, then each acute is equal to

- (a)30° (b)45° (c)60° (d)90°

16. The diagonals are equal in a

- (a)parallelogram (b)rhombus (c)rectangle (d)trapezium

17. The greatest chord of a circle is called its

- (a)radius (b)Secant (c)diameter (d)None

18. Angle formed in minor segment of a circle

- (a)Either acute or obtuse (b)Reflex angle (c)180° (d)None

DIRECTIONS: In the question number **19** and **20**, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**. Choose the correct option out of the following:

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true but Reason (R) is false.

(D) Assertion (A) is false but Reason (R) is true.

19. **Assertion (A):** If a right circular cylinder just enclosed a sphere, then surface area of the sphere, then surface area of the sphere is equal to curved surface area of the cylinder.

Reason (R): The volume of the largest sphere that can be intersected in a cube of edge a is $\frac{\pi a^3}{6}$

20. **Assertion (A):** The area of an isosceles triangle with base a and each equal side b is given by

$$\text{Area} = \frac{a}{4} \sqrt{4b^2 - a^2}$$

Reason (R): The area of a triangle with semi perimeter (S) and sides a, b, c is given by

$$\text{Area} = \sqrt{S(S-a)(S-b)(S-c)}$$

SECTION: B (2X5=10)

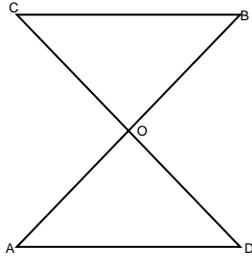
21. Find six rational number between 3 & 4.

22. Find the zeroes of the polynomial $p(x) = 3x - 2$

23. Find the value of k, if $x=2, y=1$ is solution of the equation $2x + 3y = k$

24. Prove that if two lines intersect each other, then vertically opposite angles are equal.

25. If $OA=OB$ & $OD=OC$. Show that (i) $\Delta AOD \cong \Delta BOC$ (ii) $AD \parallel BC$

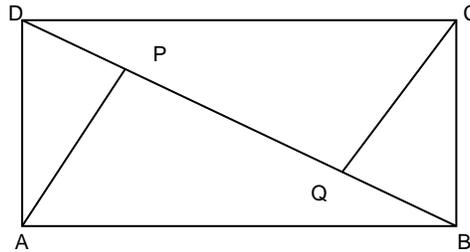


SECTION:C (3X6=18)

26. Prove that Angles opposite to equal sides of an isosceles triangles are equal.

27. ABCD is a parallelogram and AP & CQ are perpendiculars from the vertices A and C on Diagonal BD. Show that

(i) $\Delta APB \cong \Delta CQD$ (ii) $AP=CQ$



28. Prove that equal chords of a circle subtend equal angles at the centre.

29. Find the area of a triangle, two sides of which are 8cm and 11 cm and the perimeter is 32 cm.

30. Diameter of the base of a cone is 10.5cm and its slant height is 10 cm. Find its curved surface area.

31. The height of cone is 15 cm. if its volume is 1570 cm^3 , Find the radius of the base. (Use $\pi = 3.14$)

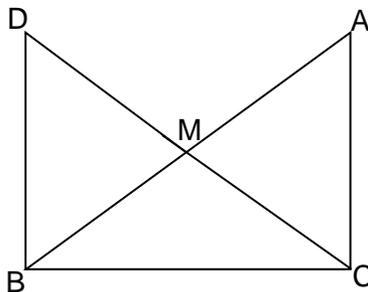
SECTION:D (5X4=20)

32. What length of tarpaulin 3m wide will be required to make conical tent of height 8m and base radius 6m? Assume that the extra length of material that will be required for stitching margins and wastage is approximately 20 cm. (Use $\pi = 3.14$)

33. Verify that $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$

34. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle

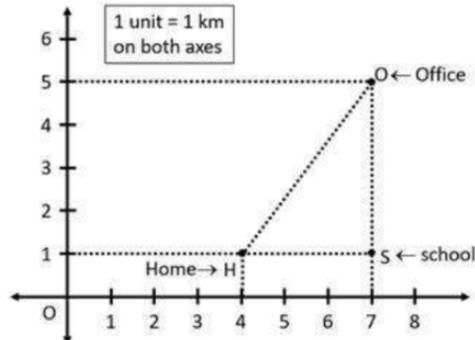
35. In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to point B. Show that: (i) $\Delta AMC \cong \Delta BMD$ (ii) $\angle DBC$ is a right angle. (iii) $\Delta DBC \cong \Delta ACB$ (iv) $CM = \frac{1}{2}AB$.



SECTION: E (3X4=12)

36.

Saumya has to reach her office every day at 10:00 am. On the way to her office, she drops her son at school. Now, the location of Saumya's house, her son's school and her office are represented by the map below. Using the details given, answer the following questions.

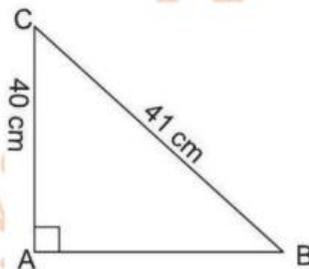


- (i) Find the coordinates of Saumya's home.
- (ii) Find the coordinates of Saumya's office.
- (iii) Find the distance between Saumya's home and her son's school.

37. Anil went to buy some vegetables, he bought 'x' kgs. of tomato and 'y' kgs. of potato. The total cost of vegetables comes out to be of Rs. 200. Now if the cost of 1 kg of tomato is Rs. 50 and 1 kg of potato is Rs. 20, then answer the following questions.

- (i) What of the equations represent the total cost?
- (ii) The graph of $5x + 2y = 20$ cuts x-axis at What the point.
- (ii) If Anil bought 'x' kgs of tomato and 2.5 kgs. of potato, then find the value of 'x'

38. Mr. Silvestar is a property dealer. He bought a triangle shaped field such that the biggest measures 41 cm. The measurement of sides of the field is as shown in the figure.



On the basis of the above information, solve the following questions:

- (i) What is the length of AB in ΔABC ?
- (ii) What is the area of ΔABC ?
- (iii) What is the perimeter of ΔABC ?
