Bhavan's Tripura Vidyamandir

3rd Periodic Assessment: (2024-2025)

Class:- 9 **Subject:- Mathematics**

Time:- 2 Hours Total :- 50 Marks

Name of the student : Roll: Section:

General Instruction:

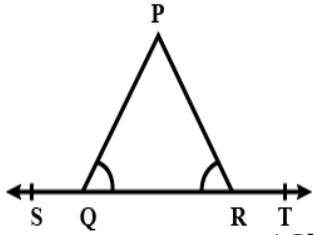
- **Section A** contains 10 questions (1 to 10) each carries 1 mark
- **Section B** contains 5 questions (11 to 15) each carries 2 marks
- **Section C** contains 4 questions (16 to 19) each carries 3 marks
- **Section D** contains 2 questions (20 to 21) each carries 5 marks
- **Section E** contains 2 case-study (22 to 23) each carries 4 marks

SECTION A

1. If we add two irrational numbers, the resulting number
   a) is always an irrational number b) is always a rational number
   c) may be a rational or an irrational number d) always an integer
2. The degree of the polynomial $3x^3 - x^4 + 5x + 3$ is
   a) –4 b) 3 c) 1 d) 4
3. Which of the following needs a proof?
   a) Theorem b) Axiom c) Definition d) Postulate
4. The curved surface area of a right circular cone of slant height 10 cm and base radius 7 cm is
   a) 120 cm^2 b) 220 cm^2 c) 240 cm^2 d) 140 cm^2
5. Let 'm' be the midpoint and 'l' the upper-class limit of a class in a continuous frequencydistribution. The lower-class limit of the class is
   a) 2m + l b) 2m – l c) m − l d) m – 2l
6. Which of the following expression is a polynomial in one variable?
   a) $x + \frac{2}{x} + 3$ b) $x^{10} + y^5 + 5$
   c) $\sqrt{2}x^2 - \sqrt{3}x + 6$ d) $3\sqrt{x} + \frac{2}{\sqrt{x}} + 5$
7. The point (other than origin) for which abscissa is equal to the ordinate will lie in the quadrant
   a) I only b) I or II c) I or III d) II or IV
8. 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 angled triangle
   c) an equilateral triangle d) a right-angled triangle
9. Equal _____ of the congruent circles subtend equal angles at the centers.
   a) Segments b) Radii c) sectors d) Chords
10. The curved surface area of a cone is
    a) $\frac{1}{3}\pi r^2 h$ b) πrh c) 2πrh d) πrl

SECTION B

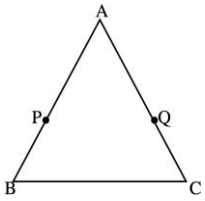
11. Find the total surface area of a cone, if its slant height is 21 cm and the diameter of its base is 24cm.
12. Factorise $6x^2 + 17x + 5$
13. In given figure, $\angle PQR = \angle PRQ$, then prove that $\angle PQS = \angle PRT$.



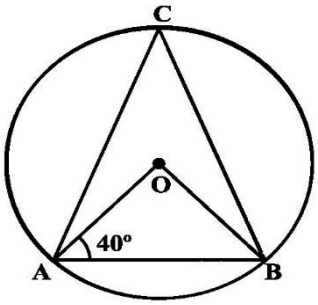
14. If the diagonals of a parallelogram are equal, then show that it is a rectangle.
15. Rationalise the denominator $\frac{\sqrt{3}+1}{\sqrt{3}-1}$.

SECTION C

16. In the given figure, if AB = AC and AP = AQ. Can you say that BP = CQ? Which axioms are you using for this?

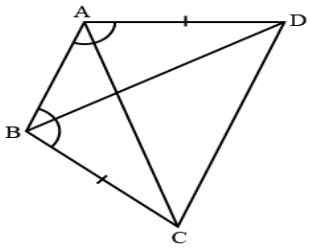


17. In the given figure, if ∠OAB = 40°, then find ∠ACB.



18. In the given figure, ABCD is a quadrilateral in which AD = BC and ∠ DAB = ∠ CBA. Prove that

i) Δ ABD ≅ Δ BAC ii) BD = AC iii) ∠ ABD = ∠ BAC



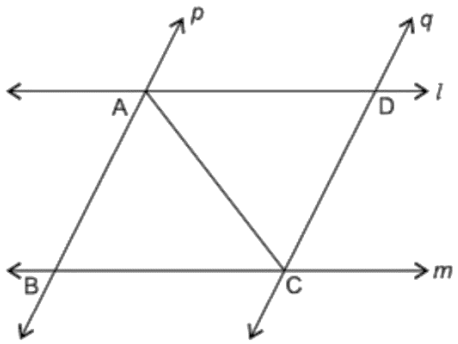
19. Write the answer of each of the following questions:
    i) What is the name of horizontal and the vertical lines drawn to determine the position of any point in the Cartesian plane?
    ii) What is the name of each part of the plane formed by these two lines?
    iii) Write the name of the point where these two lines intersect.

SECTION D

20. ABCD is a rectangle and P, Q, R and S are mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.
21. i) A heap of wheat is in the form of a cone whose diameter is 10.5 m and height are 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required?
    ii) Twenty-seven solid iron spheres, each of radius '*r*' are melted to form a sphere. Find the radius of the new sphere.

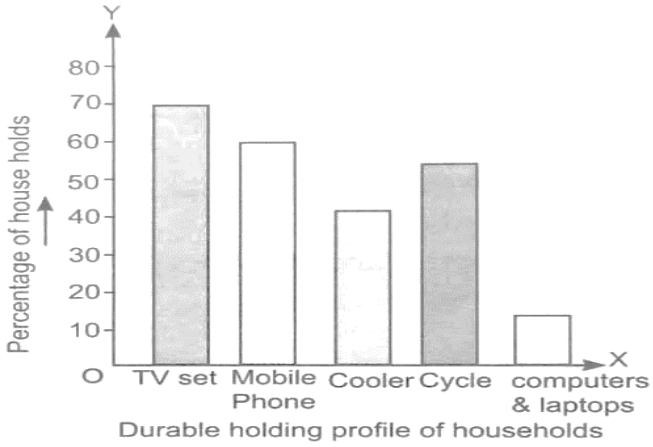
SECTION E

22. A farmer has a field ABCD formed by two pair of parallel roads as shown below in which l ‖ m and p ‖ q. His four cows suffering from BSE. Thus, he tied them at four corners of the field ABCD. (BSE stands for a disease called Bovine Spongin Encephalopathy. "Bovine" means that the disease affects cows, "spongiform" refers to the way the brain from a sick cow looks spongy under a microscope, and "encephalopathy" indicates that it is a disease of the brain. This disease is commonly called "mad cow disease.") Base on the above information answers the following questions.



i) If $\angle BAC = 30°$, find $\angle ACD$.
ii) Explain why $\angle ABC + \angle BCD = 180°$?
iii) If we join BD such that BD meet AC at O and $\angle BOC = 30°$, then what is the measure of $\angle AOD$? Given reason for your answer.

23. Living conditions of slum dwellers is considerably low due to low income and inadequate education. Moreover, poor physical environment with unsanitary excreta disposal method is common place in slum areas. But on the other hand, there are some interesting findings of report on housing stock, amenities and assets in slums". Based on the house listing and housing census, television seems to be the hottest durable for the slum dwellers, computers and laptops too have made inroads into slums. On the basis of above information given answer following questions.



i) Which durable holds the maximum percentage in slum areas?
ii) Which durable holds the minimum percentage in slum areas?
iii) What percentage of households have a durable cycle?