SUMMATIVE ASSESSMENT-I(2015-16)

MATHEMATICS

DAV, Bihar (Patna)

Class – IX

Time : 3 hours **Maximum Marks:90**

General Instructions:

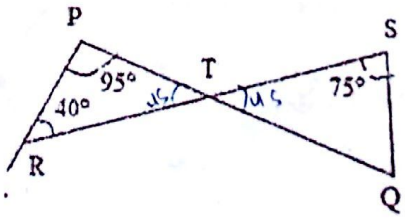
1. All questions are compulsory.
2. The question paper consists of 31 questions divided into four sections A,B,C and D. Section-A comprises of 4 questions of 1 mark each; Section-B comprises of 6 questions of 2 marks each; Section-C comprises of 10 questions of 3 marks each and Section-D comprises of 11 questions of 4 marks each.
3. There is no overall choice in this question paper.
4. Use of calculator is not permitted.

SECTION –A

1. Find the value of $\frac{2^\circ+7^\circ}{5^\circ}$ [1]
2. Is the given expression $\sqrt{2}\ x + x^3 + 3x^2$ a polymonial? [1]
3. Write the distance of point S(-3,6) from y-axis. [1]
4. If sides of a triangle are 16 cm, 22 cm and 26 cm then find its semi perimeter. [1]

SECTION –B

5. Evaluate: $\left(\frac{32}{243}\right)^{\frac{-4}{5}}$ [2]
6. Find the value of a if (x-1) is a factor of $2x^2 + ax + \sqrt{2}$. [2]
7. In the given figure line segment PQ and RS intersect each other at a point T, such that $\angle PRT = 40^\circ$, $\angle RPT = 95^\circ$ and $\angle TSQ = 75^\circ$ find $\angle SQT$. [2]



8. State any two of Euclid's five postulates. [2]
9. ABC is an isosceles triangle with AB = AC. Draw AP⊥ BC. Show that $\angle B = \angle C$. [2]
10. Find the coordinates of the vertices of a rectangle which is placed in III quadrant, in the Cartesian plane with length'p' units on the x-axis and breadth 'q' units on the y-axis. [2]

SECTION –C

11. Simplify : $8^{\frac{2}{3}} - \sqrt{9} \times 10^0 + \left(\frac{1}{144}\right)^{\frac{-1}{2}}$ [3]
12. Simplify : $\frac{3}{5-\sqrt{3}} + \frac{2}{5+\sqrt{3}}$ [3]
13. Whether $x^3 - 3x^2 + 4$ is divisible by (x-2) or not? [3]
14. In a garden $(105)^3$ kg of flowers are grown. Then find this value by using suitable identities. [3]
15. Represent $\sqrt{9.3}$ on the number line. [3]

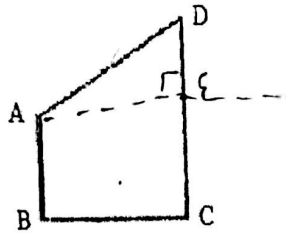
16. Prove that the sum of the angles of a triangle is 180° . [3]

17. In right triangle ABC, ∠C = 90°. M is 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 [3]

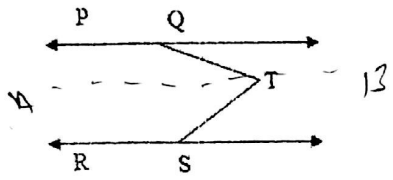
(i) Δ AMC ≅ Δ BMD

(ii) ∠DBC = ∠ACB

18. In the figure, AB and CD are respectively the smallest and the longest sides of a quadrilateral ABCD. Show that ∠A> ∠C. [3]



19. In the figure given below, PQ||RS and T is any point as shown in the figure then show that ∠PQT + ∠QTS + ∠RST = 360°. [3]



20. The angles of a triangle are $(x - 40)°$, $(x - 20)°$ and $(\frac{x}{2} - 10)°$ .Find the value of x and then the angles of the triangle. [3]

SECTION –D

21. If $x = 9 - 4\sqrt{5}$, find the value of $x^2 + \frac{1}{x^2}$ [4]

22. Simplify : $\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}} + \frac{3}{\sqrt{6}+\sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}$ [4]

23. Factorise : $(x^2 - 3x)^2 - 8(x^2 - 3x) - 20$.

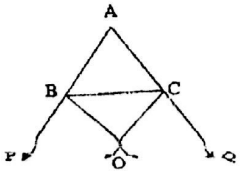
24. Using long division method show that the polynomial $p(x) = x^3 + 1$ is divisible by $q(x) = x + 1$. Verify your result using factor theorem. [4]

25. If a + b = 12 and ab=27, find the value of $a^3 + b^3$. [4]

26. Express in the form of $\frac{p}{q}$: [4]

$0.\overline{38} + 1.2\overline{7}$

27. Two sides AB and AC of a Δ ABC (as shown in figure) are produced to P and Q respectively. The bisectors of ∠PBC and ∠QCB intersect each other at O. Prove that $\angle BOC = 90° - \frac{1}{2}\angle A$. [4]



28. Show that in a right triangle the hypotenuse is the longest side. [4]

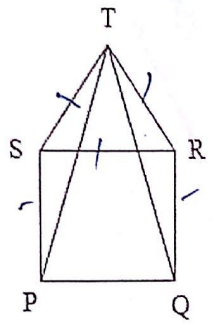
29. Plot the points A(-3, -3), B(3, -3), C(3,3), D(-3,3) in the cartesian plane. Also find the length of line segment AB. [4]

30. In the given figure, PQRS is a square and SRT is an equilateral triangle. Prove that : [4]

(i) $\angle PST = \angle QRT$

(ii) $PT = QT$

(iii) $\angle QTR = 15°$



31. The polynomial $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$, When divided by x-4 leave the same remainder in each case. Then find the value of a. [4]

****