Summative Assessment – I (2014-15)

Sample paper
Class-IX
MATHEMATICS

TIME: 3 Hrs **Maximum Marks: 90**

General Instructions:

(i) All questions are compulsory.
(ii) 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.
(iii) Use of calculator is not permitted.

SECTION – A

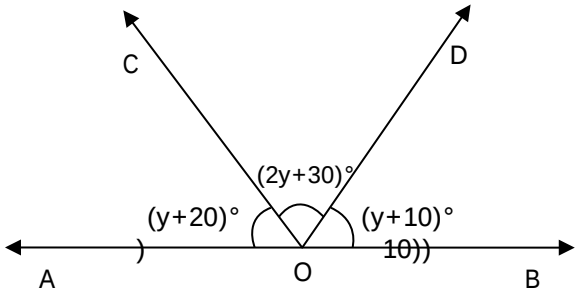
Question numbers 1 to 4 carry one mark each.

1. Find the value of p if x= $\frac{\sqrt{7}}{5}$ and $\frac{5}{x} = p\sqrt{7}$?
2. If x^{99} +99 is divided by x+1 , then find remainder ?
3. Simplify: $[(2)^0 + (-3)^0 + (-14)^0]^2$
4. If an angle is 14° more than its complement, then find its measure.

SECTION – B

Question numbers 5 to 10 carry two marks each.

5. Find four rational numbers between $\frac{1}{6}$ and $\frac{3}{7}$.
6. Using suitable identity: $(2x-3)^3 + (y-2z)^3 + 8(z-x)^3$
7. In the given figure, if AOB is a straight line ,find ∠AOC,∠BOD and ∠BOC

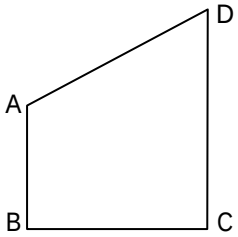


8. CE and BF are perpendiculars to AB and AC respectively in Δ ABC such that BE = CF. Prove that $\angle B = \angle C$.
9. Sides of a triangle are in ratio 12: 17: 25 and its perimeter is 540 cm. Find its area.
10. A point lies on x–axis at a distance of 7units from y–axis .What are its coordinates? What will be the coordinate of a point if it lies on y–axis at a distance of 7 units from x–axis in negative direction?

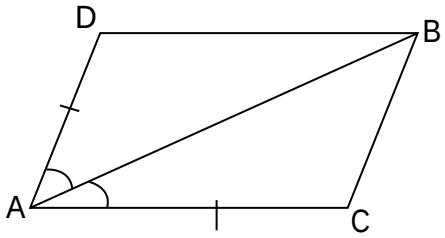
SECTION–C

Question number 11 to 20 carry three marks each.

11. Factorize $8a^3 + b^3 - 12ba^2 + 6ab^2$
12. Represent $\sqrt{9.6}$ on the real number line
13. Check whether f(x) = $4x^3 + 4x^2 - x - 1$ *is a multiple of* $2x + 1$
14. Prove that if two lines intersect each other, then the vertically opposite angles are equal.
15. Express $98.3\overline{76}$ in the form of $\frac{p}{q}$, where p, q are integers and $q \neq 0$
16. AB and CD are respectively the smallest and longest sides of a quadrilateral ABCD. Is drawn perpendicular to CD and Show that $\angle A > \angle C$ and $\angle B > \angle D$.



17. In the given figure, ACBD is a quadrilateral with AC=AD and AB bisects $\angle A$ .show that $\Delta ABC \cong \Delta ABD$ .What can you say about BC and BD?



18. Find the rational numbers 'p' and 'q':

$$\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = p + q\sqrt{5}$$

19. Plot the points M(4,3) ;N(4,0);O(0,0);P(0,3) and join them in order. Name the figure so formed. Also, find the perimeter of figure obtain
20. Explain Euclid's Fifth Postulate? On its basis explain the existence of parallel lines.

SECTION–D

Question numbers 21 to 31 carry four marks each.

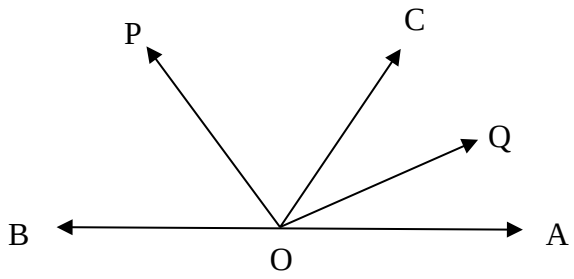
21. Factorize: $a^3 - b^3 + 1 + 3ab$

22. The polynomial $p(x)=ax^3- 3x^2 + 4$ and $g(x) = 2x^3 -5x + a$ when divided by (x–2) and (x–3) leave the remainders p and q respectively. If p - 2q = 4 ,find the value of a.

23. Simplify:– $\frac{3}{\sqrt{3}+\sqrt{2}} - \frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} + \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}$

24. ABC is a right angled triangle with AB=AC. Bisector of ∠A meets BC at D. Prove that BC = 2 AD

25. In the given figure , OP bisects ∠BOC and OQ bisects ∠AOC . Show that ∠POQ = 90°.

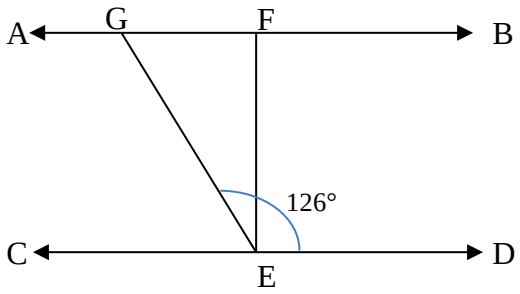


26. Prove that angles opposite to equal sides in a triangle are equal.

27. The bisectors of ∠B and ∠C of Δ ABC intersect each other at the point O . Prove that

$$\angle BOC = 90^\circ + \frac{1}{2}\angle A$$

28. The given figure if AB || CD , if EF is drawn perpendicular to CD and ∠GED =126°, find ∠AGE , ∠GEF and ∠FGE.



29. i) If $x^2 + \frac{1}{x^2} = 51, find\ x + \frac{1}{x}$

ii) Without actually calculating the cubes find the value of $(0.4)^3–(0.2)^3+(0.6)^3$

30 The students of a school staged a rally for cleanliness campaign. They walked through the lanes in two groups. One group walked through the lanes AB,BC and CA, while the other group through AC,CD and DA. Then They cleaned the area enclosed within their lanes. If AB = 9 m ,AC = 15m , CD= 18 m and ∠ B =90°, find which group cleaned more area and by how much? Find the total area cleaned and which value is depicted by the students ?

31 Without actual division prove that $8x^4–2x^3+5x^2+7x–2$ is exactly divisible by $x^2–2x+3$.