Class 9   Time : 3 hrs.

Summative Assessment I in MATHEMATICS   M. Marks : 90

General Instructions:
i)   All questions are compulsory.
ii)   The question paper consists of 31 questions divided into four sections A, B, C & 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 & Section – D comprises of 11 questions of 4 marks each.

Section – A   [1x4 = 4 marks]

1. Find two irrational numbers between $0.\overline{72}$ and $0.\overline{83}$.

2. Find the value of $a^3 + 2a + 7$ at $a = -1$.

3. Write the co-ordinates of a point
    i)   above x-axis & lying on y-axis at a distance of 5 units.
    ii)   with ordinate -2 & abscissa 3.

4. Lines PQ & RS intersect each other
    at point O. If $\angle POR : \angle ROQ = 5:7$,
    then find $\angle QOS$ & $\angle POS$.
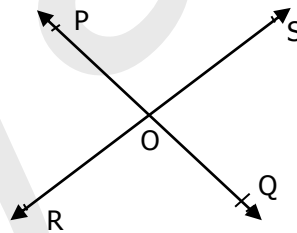
Section – B   [2x6 = 12 marks]

5. Simplify :
    i) $2^{2/3} \times 2^{-5/3}$ ii) $64^{2/3}$

6. AD & BC are equal perpendiculars to
    a line segment AB. Show that CD bisects AB.
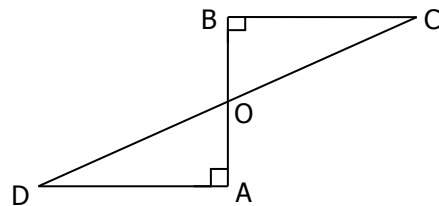
7. Check whether the polynomial $q(t) = 4t^3 + 4t^2 - t - 1$ is a multiple of $2t + 1$.

8. Evaluate 93 x 95 without actual multiplication.

9. Find the value of k for which the polynomial $a^4 - a^3 - 11a^2 - a + k$ is divisible by $a + 3$.

10. In the fig, if AC=BD,
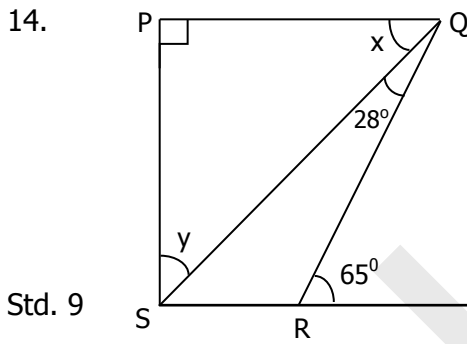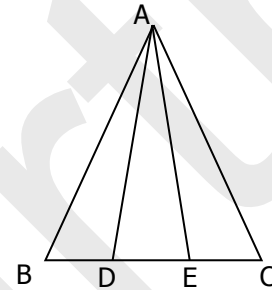   then prove that AB=CD.
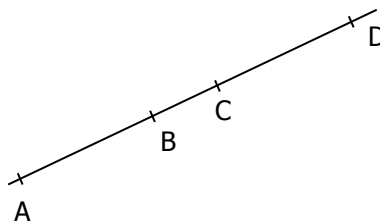
Section – C   [3x10 = 30 marks]

11. Prove that the sum of the angles of a triangle is 180^0.

12. Rationalise the denominator of

i) $\dfrac{6}{\sqrt{5}-\sqrt{2}}$
    ii) $\dfrac{31}{7+3\sqrt{2}}$

13. In an isosceles triangle ABC with AB=AC, D & E are points on BC such that BE=CD. Show that AD=AE.

14.

In the fig, if PQ $\perp$ PS, PQ||SR, $\angle$SQR = 28^0 & $\angle$QRT = 65^0, find the values of x & y.

15. A triangle and a parallelogram have the same base & same area. If the sides of the triangle are 26 cm, 28 cm & 30 cm and the parallelogram stands on the base 28 cm, find the height of the parallelogram.

16. Find the product using identities

i) $[(a+3)(a-3)]^2$
    ii) (3p–2q) (3p–2q) (3p–2q)

17. Show that the angles of an equilateral triangle are 60^0 each.

18. Express $0.2\overline{45}$ in the form of $\dfrac{p}{q}$, where p & q are integers and q $\neq$ 0.

19. Factorise :

i) $64a^3 - 27b^3$
    (ii) $125p^3 + 8q^3 + r^3 - 30pqr$.

20. Plot the points A(1,3), B(1,-1), C(6,-1) & D(6,3) on the Cartesian plane. Join them in order & name the figure so formed.

## Section – D   [4x11 = 44 marks]

21. State whether the following statements are true or false. Give reason.
    i) Every natural number is a whole number.
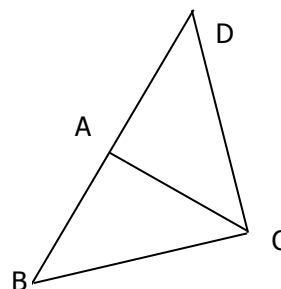   ii) Every irrational number is a real number.
    iii) Every whole number is a rational number.

iv) Every integer is a whole number.

22. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.

23. Using factor theorem, factorise $m^3 - 2m^2 - 5m + 6$.

24. Express $\sqrt{4.3}$ on the number line.

25. Using remainder theorem, find the remainder when $4a^4 - 3a^3 - 2a^2 + a - 7$ is divided by $a+1$ and verify it by long division method.

26. In the fig, AB||CD, CD||EF.
Also EA⊥AB. If $\angle BEF = 55^0$,
find the values of p, q & r.
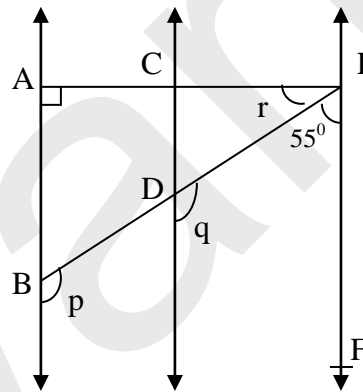
27. Verify that $a^3 + b^3 + c^3 - 3abc = \dfrac{1}{2}(a+b+c)[(a–b)^2+(b–c)^2+(c–a)^2]$.

28. PQ & RS are respectively the smallest & largest sides of a quadrilateral PQRS. Show that
   i) $\angle P > \angle R$ ii) $\angle Q > \angle S$

29. The sides AB & AC of ΔABC are produced to points E & D respectively. If bisectors BO & CO of $\angle CBE$ & $\angle BCD$ respectively meet at point O, then prove that $\angle BOC = 90^0 - \dfrac{1}{2}\angle BAC$.

30. A rhombus field has grass for 20 cows to graze. If each side of the rhombus is 52 m & longer diagonal is 96 m, how much area of the grass field will each cow be getting?
Why is greenary important for the environment?

31. ΔABC is isosceles in which AB=AC.
Side BA is produced to D such that AD=AB.
Show that $\angle BCD$ is a right angle.

-x-x-x-x-x-x-x-