SUMMATIVE ASSESSMENT-1 (CLASS-IX) 9/2014

SUBJECT : MATHEMATICS

(Set-B)

Time : 3 Hrs. **M.M.: 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.***
4. ***Use of calculator is not permitted.***

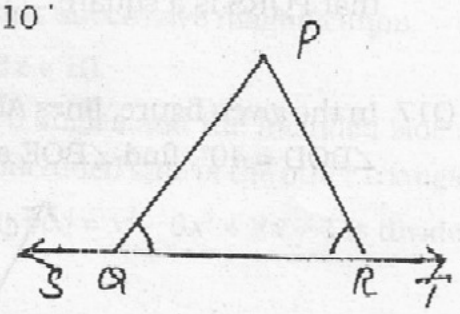
SECTION-A

Q1. Find the zero of the polynomial $p(y) = 3y - 11$.

Q2. Find an irrational number between $\frac{1}{10}$ and $\frac{3}{10}$.

Q3. Write the abscissa of (–2, 5).

Q4. In the given figure, $\angle PQR = \angle PRQ$, then prove that $\angle PQS = \angle PRT$.



SECTION-B

Q5. Evaluate using suitable identity: $(101)^2$.

Q6. (a) Write the coordinates of a point lying on Y-axis at a distance of 7 units from the origin, above it.

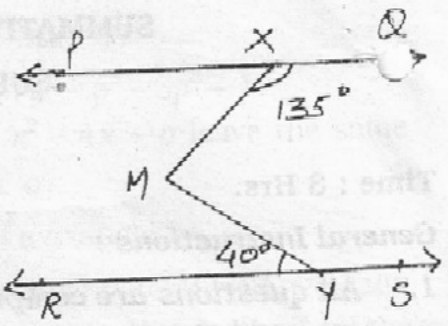
(b) In which quadrant will the point (–3, –6) lie?

Q7. Insert four rational numbers between $\frac{-6}{5}$ and $\frac{2}{15}$.

Q8. Prove that two distinct lines cannot have more than one point in common.

Q9. Find the area of a triangular garden whose sides are 13m, 14m and 15m.

Q10. In the given figure, if PQ ∥ RS, ∠MXQ = 135° and ∠MYR = 40°, find ∠XMY.



SECTION-C

Q11. Represent $\sqrt{7.8}$ on the real number line.

Q12. Factorize using identity :

$$125p^3 + 64q^3 + 300p^2q + 240pq^2$$

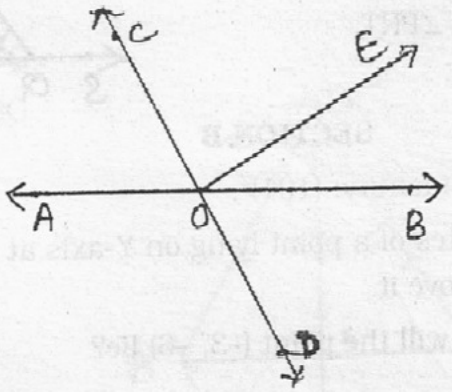
Q13. Express $0.2\overline{37}$ in the form $\frac{p}{q}$.

Q14. Factorise : $\frac{1}{27}x^3 + y^3 + 125z^3 - 5xyz$.

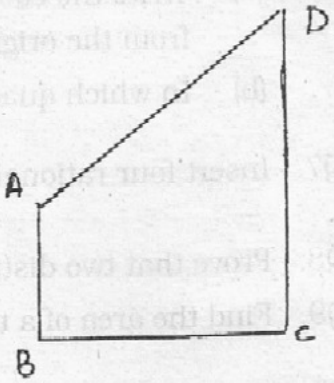
Q15. The sides of a triangle are in the ratio 3:4:5 and its perimeter is 144cm. Find its area.

Q16. Plot the points P(2,0), Q(6,0) and S(2,4). Find the coordinates of point R such that PQRS is a square.

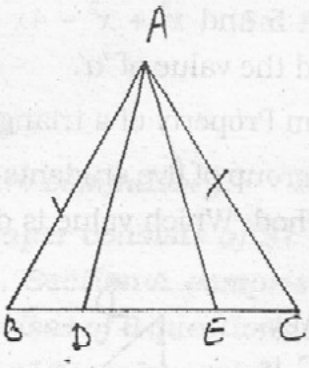
Q17. In the given figure, lines AB and CD intersect at O. If ∠AOC + ∠BOE = 70° and ∠BOD = 40°, find ∠BOE and reflex ∠COE.



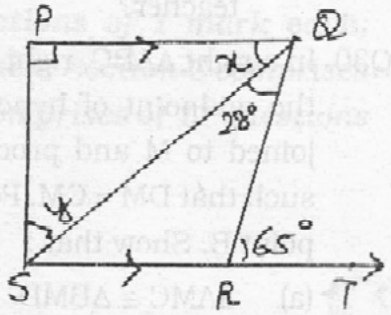
Q18. AB and CD are respectively the smallest and longest sides of a quadrilateral ABCD in the given figure. Show that ∠A > ∠C.



Q19. In an isosceles ΔABC with AB = AC, D and E are points on BC such that BE = CD in the given figure. Show that AD = AE.



Q20. In the given figure, if $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28°$ and $\angle QRT = 65°$, then find the values of x and y.



SECTION-D

Q21. (a) Simplify $\left(\frac{64}{125}\right)^{-2/3} \times \frac{\sqrt[3]{8}}{\sqrt{25}} \times 5^0$.

(b) Visualise 8.15 on the number line, using successive magnification.

Q22. Factorise using factor theorem : $x^3 - 6x^2 + 3x + 10$.

Q23. Prove that two triangles are congruent if two angles and the included side of one triangle are equal to two angles and the included side of the other triangle.

Q24. (a) Find the quotient and remainder when $p(x) = x^3 - 6x^2 + 2x - 4$ is divided by $g(x) = x - 1$.

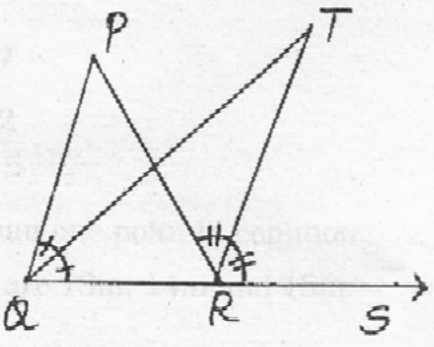
(b) Is $g(x)$ a factor of $p(x)$?

Q25. Rationalise the denominator and find the values of 'a' and 'b' :

$$\frac{3+\sqrt{7}}{3-\sqrt{7}} = a + b\sqrt{7}$$

Q26. In the given figure, the side QR of ΔPQR is produced to point S. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T, then prove that

$\angle QTR = \frac{1}{2} \angle QPR$.



Q27. (a) Find k, if $(x-4)$ is a factor of $p(x) = 5x^3 - 7x^2 - kx - 28$.

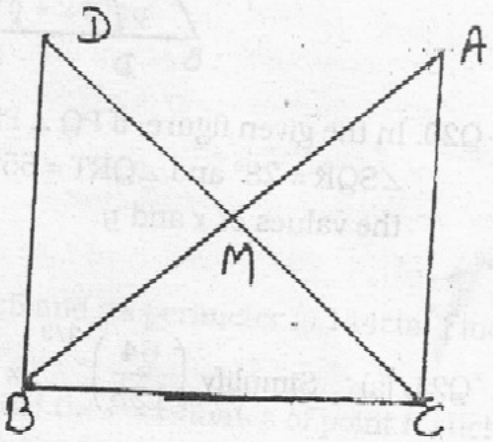
(b) Write the coefficient of p^5 in the polynomial $7p^6 - p^5 - 3p^3 + 1$.

Q28. If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 4x + a$ leave the same remainder when divided by $x-2$, find the value of 'a'.

Q29. (a) State and prove the "Angle Sum Property of a triangle."

(b) A teacher gave an activity to a group of five students to prove Angle Sum Property by paper cutting method. Which value is depicted here by the teacher?

Q30. In a right ΔABC, right angled at C, M is the midpoint of hypotenuse AB. C is joined to M and produced to point D such that DM = CM. Point D is joined to point B. Show that :



(a) $\Delta AMC \cong \Delta BMD$

(b) $\angle DBC$ is a right angle

(c) $\Delta DBC \cong \Delta ACB$

(d) $CM = \frac{1}{2} AB$.

Q31. In the given figure, AB is a line segment. P and Q are points on opposite sides of AB such that each of them is equidistant from the points A and B. Show that :

(a) $\Delta PAQ \cong \Delta PBQ$

(b) $\Delta PAC \cong \Delta PBC$

(c) $PC \perp AB$