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PRACTICE PAPER FOR SUMMATIVE ASSESSMENT – I

2014-2015

STD:- IX

Sub:- Mathematics **Time:- 3 Hours** **Marks:- 90**

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General Instructions:

- All questions are compulsory.
- The question paper consists of 31 questions divided into 4 sections A,B,C,D.
  i) Section A comprises 4 questions of 1 mark each
  ii) Section B comprises 6 questions of 2 marks each
  iii) Section C comprises 10 questions of 3 marks each
  iv) Section D comprises 11 questions of 4 marks each
- Internal choice has been provided in some questions, you have to attempt only one of the alternatives in all such questions.

SECTION – A

Q.1) Which of the following numbers is irrational?

a) $\sqrt{\frac{4}{9}}$ b) $\frac{\sqrt{12}}{\sqrt{3}}$

c) $\sqrt{8}$ d) $\sqrt{81}$

Q.2) Which of the following expressions is a polynomial?

a) $x+\frac{1}{x}$ b) $\sqrt{x}+x+x^2$ c) $\sqrt{2}x+x^3+3x^2$ d) $x^2+x^{-2}+2$

Q.3) If AB = x+3, BC = 2x and AC = $4x-5$, if B lie on AC , then value of x is

a) 8 b) 5 c) 2 d) 3

Q. 4) The semi perimeter of an equilateral triangle of side $2a$ is

a) $\frac{3a}{2}$ b) $\frac{a}{2}$

c) $\frac{2a}{3}$ d) $3a$

SECTION - B

Q.5) Find three rational numbers between -2 and -3.

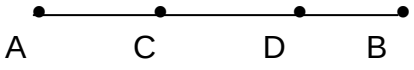
Q.6) Find the remainder when $x^3 – ax^2 + 6x – a$ is divided by x – a.

Q.7) Determine whether (x – 2) is a factor of the polynomial?

$3x^4 + 4x^3 – 10x^2 – 5x - 28$

Q.8) Factorise: x^2 -24x -180

Q.9) In the given figure, if AD=BC. Prove that AC=BD



OR

Does Euclid's fifth postulate imply the existence of parallel lines? Explain.

Q.10) State the quadrants and axis on which the following points lie:

(i) (-3,2) (ii) (5,4) (iii) (-4,-2) (iv) (0,-3)

SECTION - C

Q.11) If a = $9 - 4\sqrt{5}$, find the value of $a^2 + \frac{1}{a^2}$

OR

Rationalise the denominator: $\frac{2\sqrt{6} - \sqrt{5}}{3\sqrt{5} - 2\sqrt{6}}$

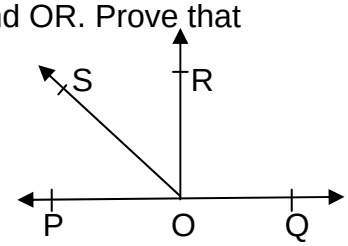
Q.12) Express $32.12\overline{35}$ in the form of $\frac{p}{q}$.

Q.13) Factorise the polynomial: $8x^3 - (2x - y)^3$.

Q.14) Give possible expressions for the length and breadth of the rectangle, in which area is given. Area: $35y^2 + 13y - 12$

Q.15) In the given figure POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that

$\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$

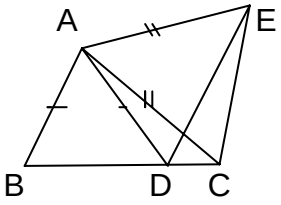


Q.16) It is given that $\angle XYZ = 64^\circ$ and XY produced to a point P. Draw a figure from the given information. If ray YQ bisects $\angle ZYP$, find $\angle XYQ$ and reflex $\angle QYP$

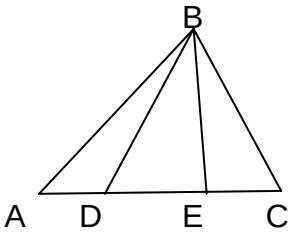
OR

If two parallel lines are intersected by a transversal, then prove that the Bisectors of any two alternate angles are parallel.

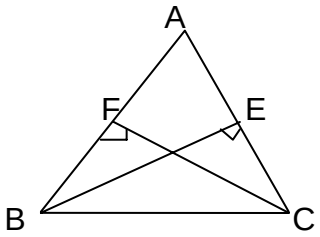
Q.17) In the given figure, AC=AE, AB=AD and $\angle BAD = \angle EAC$ .Show that BC=DE



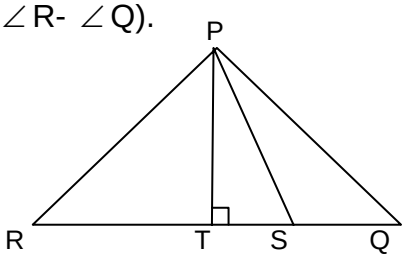
Q.18) It is given that AB=BC and AD=EC. Prove that : $\Delta ABE \cong \Delta CBD$



Q.19) BE and CF are two equal altitudes of a Δ ABC. Using RHS congruence rule, prove that the triangle ABC is an isosceles triangle



Q.20) In the following figure, $\angle R > \angle Q$, PS is the bisector of $\angle QPR$ and $PT \perp RQ$. Show that $\angle TPS = \frac{1}{2}(\angle R - \angle Q)$.



SECTION - D

Q.21) Find a and b, if $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

Q.22) Simplify : $\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+2} + \frac{1}{2+\sqrt{5}}$

Q.23) Verify : $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x-y)^2 + (y-z)^2 + (z-x)^2]$

OR

Factorise : $x^3 + 2x^2 - 5x - 6$

Q.24) If x + y + z = 1, xy + yz + zx = -1 and xyz = -1, find the value of $x^3 + y^3 + z^3$

Q.25) Find m and n if (x+2) and (x+1) are factors of $x^3 + 3x^2 - 2mx + n$

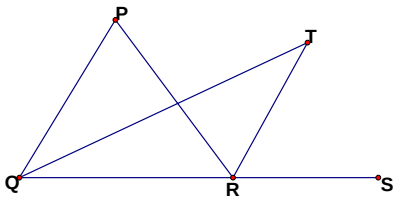
Q.26) Plot the points A(4,0) , B(4,4) , C(-3,0). Join AB and AC, Find the area of Δ ABC.

Q.27) Prove that two triangles are congruent if two angles and included side of one triangle are equal to two angles and included side of other triangle.

OR

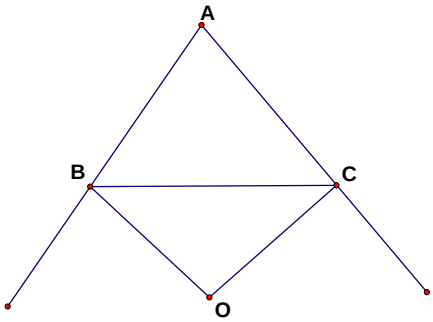
Prove that the angles opposite to equal sides of an isosceles triangle are equal.

Q.28) In given figure the side QR of Δ PQR is produce to point S .If the bisector of $\angle PQR \; and \; \angle PRS$ meet at point T . Then prove that $\angle QTR = \frac{1}{2}\angle QPR$.

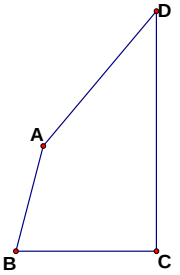


Q.29) In the given figure, bisectors of the exterior angles B and C formed by producing sides AB and AC of Δ ABC intersect each other at the point O.

Prove that: ∠BOC =$90^0 - \frac{1}{2}\angle A$



Q.30) AB and CD are respectively the smallest and longest sides of quadrilateral ABCD. Show that: $\angle A > \angle C \quad and \quad \angle B > \angle D$.



Q.31) A rhombus shaped field has green grass for 18 cows to graze. If each side of the rhombus is 30m and its longer diagonal is 48m, how much area of grass field will each cow be getting?