IX-F
31
17-Sept-2012

Class: IX
First Term Examination 2012-2013
Subject: Maths
Set A1

Time Allowed: 3 – 3 ½ Hours **Max Marks: 90**

General Instructions :
Section A carries questions of 1 mark each.
Section B carries questions of 2 marks each.
Section C carries questions of 3 marks each.
Section D carries questions of 4 marks each.

Section – A

Q.1. The decimal expansion of the number $\sqrt{3}$ is

(a) a finite decimal (b) 1.41421

(c) non- terminating non recurring (d) non terminating repeating

$3(x^2-3a)$

Q.2. Possible dimensions of a cuboid whose volume is $3x^2 - 27$ are :

(a) 3, x^2, -27x (b) 3, x – 3, x + 3 (c) 3, x^2, 27x (d) 3, 3, 3

Q.3. One of the factors of $4x^2 + 9y^2 + 4z^2 - 12xy + 12yz - 8zx$ is :

(a) (2x – 3y + 2z) (b) (2x + 3y – 2z) $-2x$

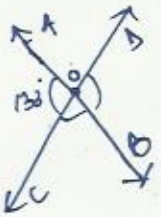
(c) (-2x + 3y + 2z) (d) (2x + 3y + 2z)

Q.4. The value of k for which x – 1` is a factor of $4x^3 + 3x^2 - 4x + k$ is

(a) 3 (b) 1 (c) -2 (d) -3

Q.5. If lines AB and CD intersect each other at O and $\angle AOC + \angle BOD = 266°$, then $\angle BOC$ is

(a) 266° (b) 133° (c) 47° (d) 94°



266/2 = 133

180 − 133 = 047

Q.6. In ΔABC, AB = AC and $\angle B = 50°$ then $\angle C$ is equal to

(a) 40° (b) 50° (c) 80° (d) 130°

Q.7. The side of an equilateral triangle whose area is $4\sqrt{3}$ cm^2 is

(a) 4 cm (b) $\frac{4}{\sqrt{3}}$ cm (c) $\frac{\sqrt{3}}{4}$ cm (d) 3 cm

Q.8. The area of a right triangle whose perpendicular sides are 5 cm and 4 cm is

(a) 10 sq.cm (b) 3 sq.cm (c) $\sqrt{41}$ sq. cm (d) none of these

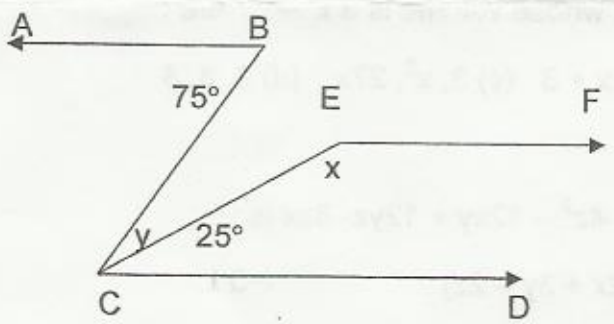
Section – B

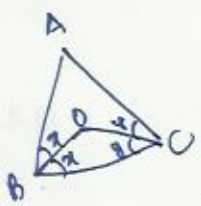
Q.9. Find the value of $(256)^{0.16} \times (256)^{0.09}$

Q.10. Using identity, find 102×97

Q.11. Factorise: $a^3 + 27$

Q.12. In the given figure AB$\parallel CD \parallel EF$ find the values of x and y, if $\angle ABC = 75°$ and $\angle ECD = 25°$





Q.13. In Δ ABC, BO and CO are bisectors of $\angle B$ and $\angle C$. If OC> OB then prove that AC > AB.

Q.14. (a) In which quadrant (-2, 5) lie?

(b) In which quadrant(s) abscissa of a point is positive?

Section - C

Q.15. Express $0.4\overline{7}$ in the form of p/q, where p and q are integers and $q \neq o$.

Q.16. If $x = 1 - \sqrt{2}$ find $(x - \frac{1}{x})^3$

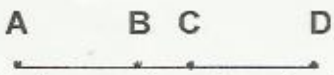
Q.17. Factorise : $\sqrt{3}\,x^2 + 10x + 8\sqrt{3}$

Q.18. (a) Write the coefficient of x^2 in the expansion of $(x - y)^3$.

(b) Give an example of cubic binomial in one variable

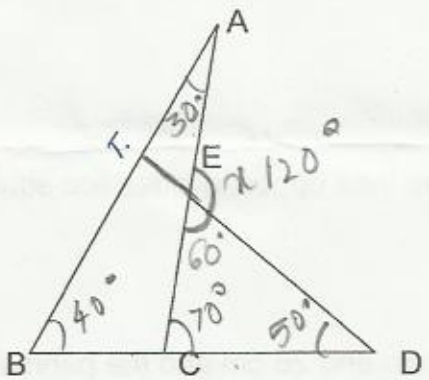
(c) Find the remainder when $x^{101} - 1$ is divided by $x - 1$.

Q.19. In the given figure, if AC = BD, Prove that AB = CD.



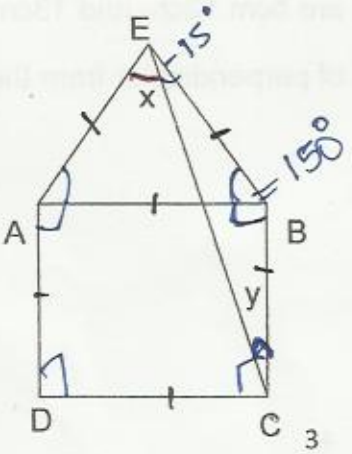
Q.20. Prove that sum of angles of a triangle is 180°.

Q.21. Find ∠AED in the given Figure, given that ∠A=30°, ∠B=40°, and ∠D=50°,



Q.22 An equilateral triangle EAB surmounts the square ABCD.

Find the value of x and y

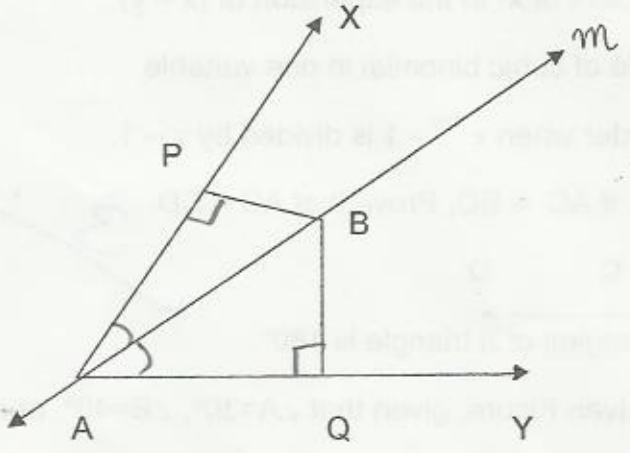


Q23. Line m is the bisector of ∠XAY and B is any point on m. BQ and BP are perpendiculars from B to the arms of ∠A.

Show that

(a) $\Delta APB \cong \Delta AQB$.

(b) BP = BQ



OR

If in a Δ ABC, the altitudes from the vertices B and C to their opposite sides are equal prove that ABC is isosceles.

Q24 Find the area of triangle if two of its sides are 28 cm and 26 cm and the perimeter is 84 cm.

OR

The lengths of the sides of a triangle are 5cm, 12cm and 13cm. Find its area using Heron's formula. Also find the length of perpendicular from the opposite vertex to the side of length 13cm.

Section - D

Q.25. $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$, find a and b.

Q.26. Represent $\sqrt{5.6}$ on the number line.

Q.27. Factorise : $x^3 - x^2 - 14x + 24$

Q.28. Without actually calculating the cubes, find the value of

(a) $(a - 2b)^3 + (2b - 3c)^3 + (3c - a)^3$

(b) Find the zero of the polynomial p(x)=2x-1

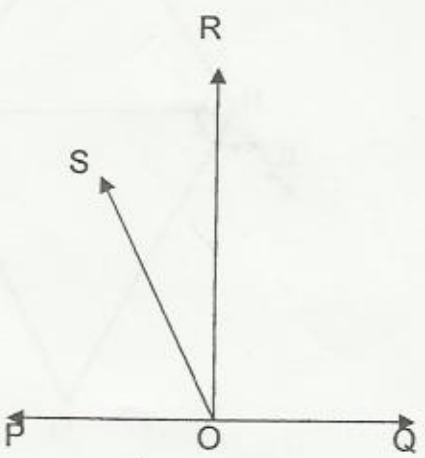
Q.29. If the polynomials $(3x^3 + ax^2 + 3x + 5)$ and $(4x^3 + x^2 - 2x + a)$ leave the same remainder when divided by $(x - 2)$, find the value of a.

OR

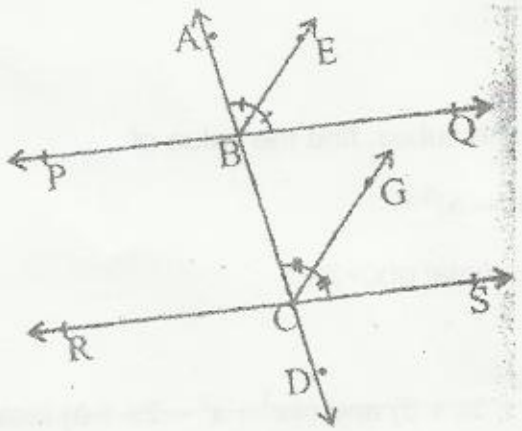
Find the values of a and b so that the polynomial $x^3 - ax^2 - 13x + b$ has $(x - 1)$ and $(x + 3)$ as factors.

Q.30 POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that

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

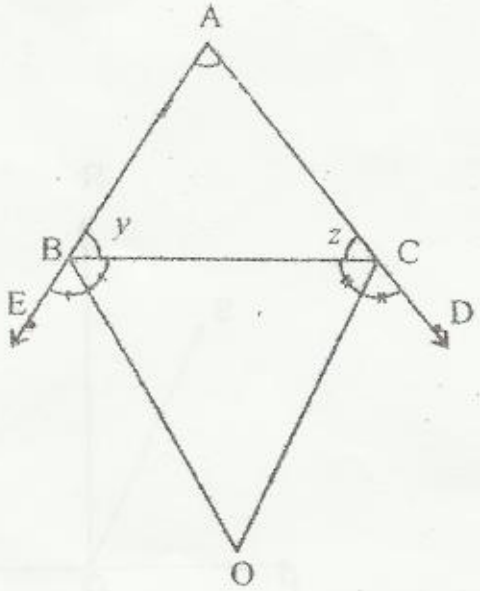


.31 If a transversal AD intersects two lines PQ and RS such that the bisectors of a pair of angles ABQ and BCS are parallel, then prove that the two lines are parallel.

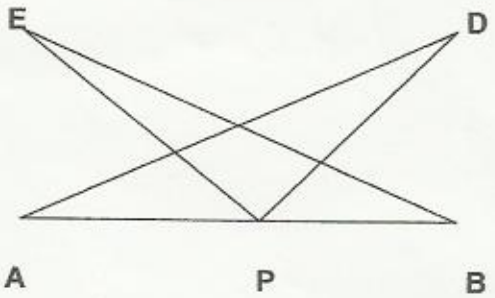


OR

In the given figure, the sides AB and AC of ΔABC are produced to points E and D respectively. If bisectors BO and CO of ∠ CBE and ∠BCD respectively meet at point O, then prove that ∠BOC = 90° – ½ ∠BAC.



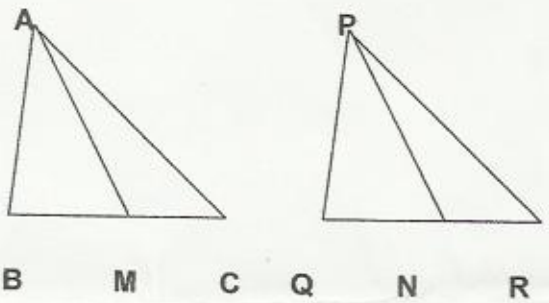
Q. 32. AB is a line segment and P is its mid point. D and E are points on same side of AB such that $\angle BAD = \angle ABE$ and $\angle EPA = \angle DPB$ show that AD = BE.



Q. 33. Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of ΔPQR.

Show that

1) $\Delta ABM \cong \Delta PQN$
2) $\Delta ABC \cong \Delta PQR$



Q.34. ABCD is a rectangle where coordinates of A are (-2,3), B are (4, 3) C are (4, -4). Plot these points on the graph paper and complete the rectangle and the coordinates of vertex D.