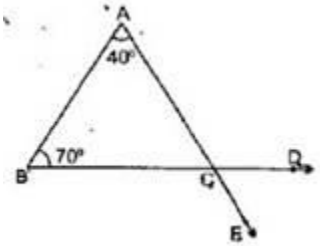
Section A

Question numbers 1 to 4 carry one mark each.

Q.1 Find the value of $(81)^{0.16} \times (81)^{0.09}$.

Q.2 Using suitable identity, find (2+3x)(2−3x).

Q.3 In the figure, If $\angle A = 40^\circ$ and $\angle A = 70^\circ$, then fine $\angle BCE$.



Q.4 In which quadrants the points P(2,-3) and Q(-3,2) lie?

Section B

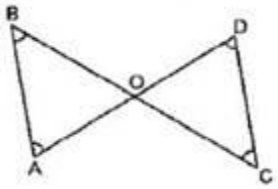
Question numbers 5 to 10 carry two mark each.

Q.5 Find the value of $\sqrt{\frac{2+\sqrt{3}}{2-\sqrt{3}}}$, if $\sqrt{3} = 1.73$

Q.6 Using remainder theorem, find the remainder when $x^4 - 3x^4 + 2x^2 - 4$ is divided by x+2.

Q.7 In given figure PR = QS, then show that PQ = RS. Name the mathematician whose postulate/axiom is used for the same.

Q.8 In the give figure, $\angle B < \angle A$ and $\angle C < \angle D$, show that AD<BC.



Q.9 Find the perimeter of an isosceles right angled triangle having an area of $5000\ m^2$. $(\text{Use}\sqrt{2} = 1.41)$

Q.10 On which axes the following points lie?
(0,4), (− 5,0), (5,0) and (0, −3)

Section C

Question numbers 11 to 20 carry three mark each.

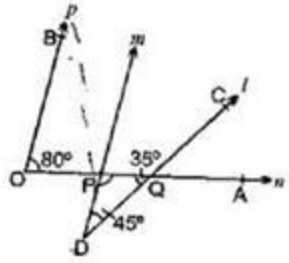
Q.11 Find the values of a and b. if $\frac{3+\sqrt{2}}{3-\sqrt{2}} = a + b\sqrt{2}$

Q.12 Represent $\left(1+\sqrt{9.5}\right)$ on the number line.

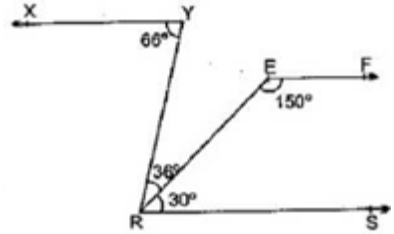
Q.13 Expand $\left(x-\frac{1}{2}y+\frac{1}{3}z\right)^2$

Q.14 Factorise $4x^2+y^2+25z^2+4xy-10yz-20zx$ and hence find its value when x = -1, y = 2 and z = -3.

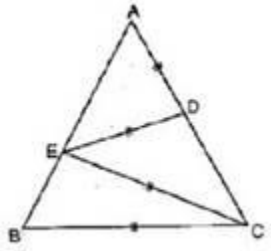
Q.15 In the figure, $\angle PDQ = 45°$, $\angle PQD = 35°$ and $\angle BOP = 80°$. Prove that p||m.



Q.16 In the given figure, show that XY||EF.



Q.17 In the given figure, AB=AC. D is a point on AC and E on AB such that AD=ED=EC=BC. Prove that $\angle A : \angle B = 1:3$.



Q.18 In figure, if l| |m, $\angle 3 = (x+30)^\circ$ and $\angle 6 = (2x+15)^\circ$, find $\angle 1$ and $\angle 8$.

Q.19 Find the area of a triangle whose perimeter is 180 cm and two of its sides are 80 cm and 18 cm. Calculate the altitude of triangle corresponding to its shortest side.

Q.20 Plot two points P(0,-4) and Q(0,4) on the graph paper. Now, plot R and S such that ΔPQR and ΔPQS are isosceles triangles.

Section D

Question numbers 21 to 31 carry four mark each.

Q.21 If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $y = \frac{\sqrt{2}+1}{\sqrt{2}-1}$, find the value of $x^2 + y^2 + xy$.

Q.22 Prove that : $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5.$

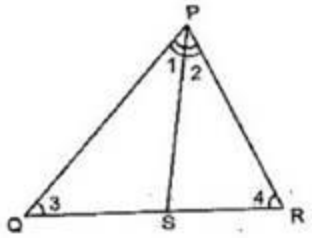
Q.23 Find the value of 'a', if x + a is a factor of the polynomial p(x) = x3 + ax2 − 2x + a + 4.

Q.24 If (x+1) and (x+2) are the factors of $x^3 + ax^2 + 2x + a + 4$.

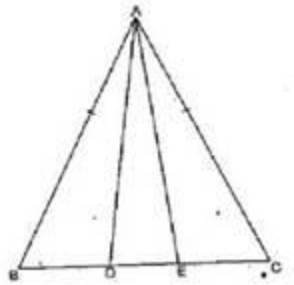
Q.25 Divide the polynomial $x^3 + 3x^2 + 3ax + \beta$, then find a and β.

Q.26 If x + y + z = 1, xy + yz + zx = -1 and xyz = -1, find the value of $x^3+y^3+z^3$.

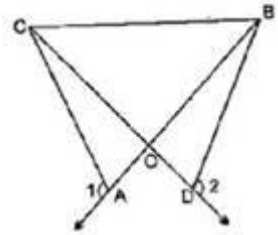
Q.27 A farmer has two adjacent farms PQS and PSR as shown in the figure. He decides to give one farm for hospital. What value is he exhibiting by doing so? If PQ>PR and PS is bisector of $\angle P$, show that $\angle PSQ > \angle PSR$.



Q.28 In an isosceles triangle ABC with AB = AC, D and E are two points on BC such that BE = CD. Show that AD = AE.



Q.29 In figure, OA = OD and $\angle 1 = \angle 2$. Prove that AOCB is and isosceles triangle.



Q.30 Prove that the angles opposite to equal sides of a triangle are equal.

Q.31 In the figure, X and Y are the points on equal sides AB and AC of a ΔABC such that AX = AY. Prove that XC = YB.