Section D

Questions numbers 21 to 31 carry 4 marks each:

Q. 21 Simplify: \[ \frac{\sqrt{6}}{\sqrt{2} + \sqrt{3}} + \frac{\sqrt{2}}{\sqrt{6} + \sqrt{3}} - \frac{\sqrt{3}}{\sqrt{6} + \sqrt{2}} \]

Q. 22 The volume of cuboid is polynomial. \( P(x) = 4x^3 + 20x^2 + 33x + 18 \) find possible expression for dimension of the cuboid.

Q. 23 Factorise: \( x^{12} - 1 \)

Q. 24 Prove that angles opposite to equal sides of a triangle are equal

Q. 25 Find \((a=b)\)

Q. 26 \( AC=AE, AB=AD \) and \( \angle BAD = \angle EAC \) Show that \( AC=AE \)

Q. 27 If \( x^3 + ax^2 + bx + 6 \) has \((x-2)\) has factor and leaves remainder \(3\) when divided by \((x-3)\). Find the values of \(a\) and \(b\).

Q. 28 \( T \) is a point on side QR of \( \triangle PQR \) and S is a exterior point such that RT=ST. Prove that \( PQ+PR>QS \)

Q. 29 \(<1=<3, <2=<4, <3=4\) Write the relation between <1 and <2 Using a Euclid’s axiom

Q. 30 Locate \( \sqrt{3} \) on a number line.

Q. 31 If \( x+y+z =10 \) and \( x^2 + y^2 + z^2 = 40 \) Find \( xy+yz+zx \).