

Q.5 Set. (A)**[8 Marks]**

A cylindrical tensile specimen with an initial gage length of 50 mm and initial diameter of 12.5 mm is tested in a universal testing machine as per ASTM specification. The gage length after fracture was observed to be 65 mm and a minimum diameter at fracture was obtained as 10 mm. The measured load corresponding to the 0.2% offset yield is 100 kN, that at the point of the onset of necking is 130 kN and that at the point of fracture is 110 kN, determine the following:

- (a) 0.2% offset yield strength and ultimate tensile strength
- (b) Fracture strength and applied true fracture strength.
- (c) Elongation and true strain at fracture.
- (d) Reduction of area and true reduction of area at fracture.