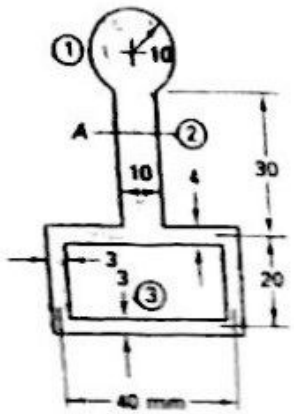
The torsional stiffness of the member



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4 Discuss the miner's rule of fatigue failure giving a suitable example

5 Prove that the principal stresses are the extreme values of the normal stress on any oblique plane in case of a general biaxial stress system

6 At a point the principal stresses are 100 MN/m^2 and 60MN/m^2 both tensile Find by the ellipse of stress the resultant stress on a plane inclined at 35° to the major principal stress

Why is the torsion problem for non-circular members more difficult to solve than for circulars members? Where does the maximum shear stress occur in an elliptical bar subjected to twisting?

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(Following Paper ID and Roll No. to be filled in your Answer Book)

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M. Tech.

(SEM. II) THEORY EXAMINATION, 2013-14

ADVANCED MECHANICS OF SOLIDS

Time 3 Hours] [Total Marks 100

Note: Attempt any five questions All questions carry equal marks

1 Why composites structures are made of multidirectional laminates? Discuss behaviour of unidirectional fibre composites

2 Explain clearly which theory of failure you would recommend to be used for designing

(a) A cast iron bar subjected to compressive load

(b) A shaft subjected to bending and torsion

3 An aluminium extrusion has the cross section shown as in figure If torque T=300 Nm is applied Determine

(a) The maximum shear stresses that would develop in the three different parts of the member, and

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