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III SEMESTER

B.Tech. EVE

SUPPLEMENTARY EXAMINATION

FEB-2019

CCE-201 Mechanics of Solid

Time: 3:00 Hours

Max. Marks : 40

Note: Answer any 5 question
Assume suitable missing data, if any.

- Q.1 a. Deduce a relation between Young's modulus and Rigidity modulus.
b. What are the assumptions made during the derivation of equations related to theory of pure bending? (2x4)
- Q.2 6m long beam simply supported its ends is subjected to UDL of 30 kN/m over 2 meters length from LHS support. Draw the SF and BM diagrams. (8)
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- Q.3 A material is subjected to horizontal tensile stress of 90N/mm^2 and vertical tensile stress of 120N/mm^2 , together with shear stress of 75N/mm^2 determine
(a) the principal stresses
(b) maximum shear stress
(c) the shear stress which, acting along would produce maximum principal stress. (8)
- Q.4 A uniform T-section beam is 100mm wide and 150mm deep with a flange thickness of 25mm and web thickness of 12mm. if limiting bending stress for material are 80N/mm^2 and 160N/mm^2 in compression and tension respectively, find maximum intensity of udl that beam can carry over a simply supported beam. (8)
- Q.5 A beam of square section is used as beam with one diagonal horizontal the is subjected to shear force, at a section. Find the maximum shear in the cross section of the beam and draw shear stress distribution for the section. (8)

P.T.O.

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Q.6 A hollow shaft having an inside diameter 60% of its outer diameter is to replace a solid shaft transmitting in the same power at same speed. Calculate percentage saving of material, if material is also the same. (8)

END
