

B.Tech. (M.E.) 4th Semester (G-Scheme)  
Examination, July-2022  
**STRENGTH OF MATERIALS**  
Paper - PCC-ME-206-G

Time allowed : 3 hours [Maximum marks : 75]

*Note : Question one is compulsory having six parts and each part is of 2.5 marks total of 15 marks and remaining Questions is of 15 marks. And attempt one question from each section.*

1. (a) Elastic constants.
- (b) What is beam & explain different types of beam
- (c) Parallel Axis Theorem
- (d) Rankine Formula
- (e) Torsion
- (f) Poisson's Ratio

Unit - I

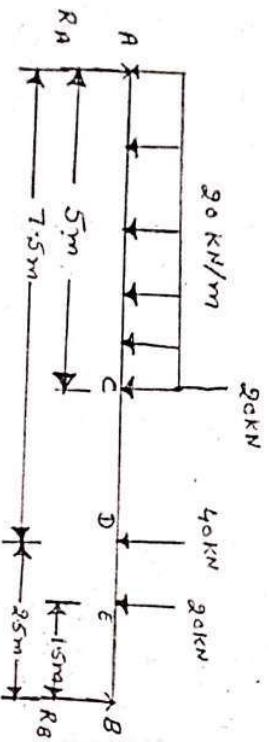
2. What do you mean by Hook's Law and draw the Stress. Strain diagram for ductile and Brittle material. 15
3. Draw and describe the Mohr's circle for Biaxial stresses. 15

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Unit - II

4. Draw the shear force and bending moment diagram for the simply supported beam as shown in figure given below and position of the maximum Bending moment taking place in this beam. 15



5. Derive the relationship between intensity of Loading, Shear Force and Bending Moment. 15

Unit - III

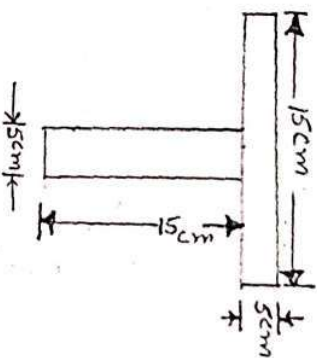
6. Two wooden planks  $5\text{cm} \times 15\text{cm}$  each are connected together to form a cross section of a beam as given below. If a bending moment of  $3400\text{ N.M}$  is applied around the horizontal neutral axis, Find the stresses at

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- extreme fibres of cross-section. Also calculate the total tensile force on the cross section. 15



7. Explain Euler's theory of Buckling of columns. Derive the expression of columns fixed at both ends. 15

Unit - IV

8. What is Torsion and explain the comparison of hollow and solid shaft. 15
9. Explain Maccaulay's method. Derive the expression for Slope and Deflection of point load on Simply supported Beam. 15

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