

Code No RT21355

R13

SET - 1

**II B. Tech I Semester Supplementary Examinations, May/June - 2016**  
**PROPERTIES AND STRENGTH OF MATERIALS**  
(Agricultural Engineering)

Time: 3 hours

Max. Marks: 70

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- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answer **ALL** the question in **Part-A**  
3. Answer any **THREE** Questions from **Part-B**
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**PART -A**

1. a) What are the various types of tiles? Mention any two uses
- b) What are the different characteristics and uses of plywood?
- c) What are the uses of Nickel and Alloys of Aluminium
- d) Define Poissons Ratio and shear Modulus
- e) Define buckling factor and buckling load.
- f) Write down the Clapeyron's three moment equations for the continuous beam with sinking at the supports

**PART -B**

2. a) State the different brand names of flooring tiles available in market. Also state their sizes available in market.
- b) Explain step by step procedure of fixing A.C. sheet with Sketches
3. a) What is seasoning of timber? Explain any *one* method of it.
- b) State different types of Glasses and Plastics used in construction.
4. a) A beam of square section is used as beam with one diagonal horizontal. Obtain the magnitude and location of maximum shear stress in the beam. Draw the variation of shear stress across the section.
- b) A beam is of T-section, angle 145mm x 15mm, web 18mm x120mm. If it is subjected to a shear force of 30kN, find the maximum intensity of shear stress and sketch the distribution of shear stress across the section`



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5. (a) What are the assumptions and limitations of Euler's theory for long columns.  
 (b) A slender pin ended aluminium column 2.0 m long and of circular cross section it to have an outside diameter of 50 mm. Calculate the necessary internal diameter to prevent failure by buckling if the actual load applied is 12kN and the critical load applied is twice the actual load. Take E for aluminium as  $70\text{GN/m}^2$
6. A bracket is welded to its support as shown in Figure 1. All welds are fillet welds of equal thickness. Determine the fillet size if the permissible stress in the weld is  $80\text{ N/mm}^2$ .

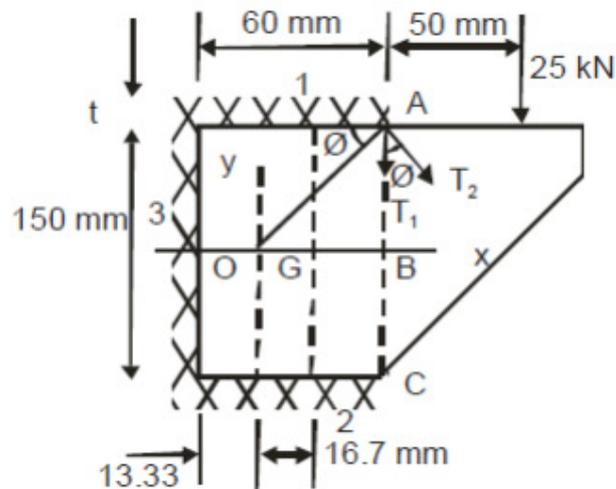


Figure 1

7. Analyze the Continuous beam loaded as shown in Figure 2, by using Slope Deflection Method and draw B.M.D  
 $AB=2I$ ,  $BC=2I$ ,  $CD=I$

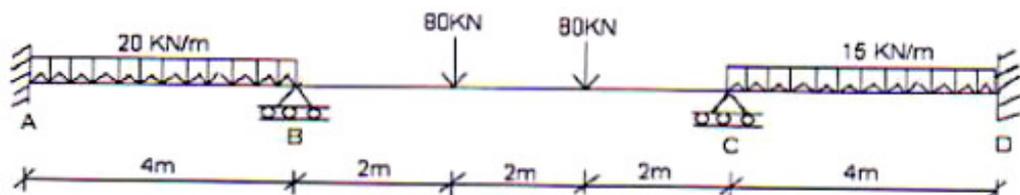


Figure 2

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