

**II B. Tech I Semester Regular Examinations, March - 2021**  
**PROPERTIES AND STRENGTH OF MATERIALS**  
 (Agricultural Engineering)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit  
 All Questions carry **Equal** Marks

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- 1 a) What are the properties, varieties and uses of different bricks? [8M]  
 b) What are the different rocks? What are their uses? [7M]
- Or
- 2 What is the significance of bonding in brick work? Differentiate between English Bond and Double Flemish bond with sketches [15M]
- 3 a) What are the constituents of paint? Bring out the differences between paint and varnish. [8M]  
 b) Discuss the characteristics of rubber and its uses in farm activities [7M]
- Or
- 4 Describe the quantities of good timber and explain the uses of timber in agriculture farm. [15M]
- 5 Find the ratio of buckling strength of a solid column to that of a hollow column of the same material and having the same cross sectional area. The internal diameter of the hollow column is half of its external diameter. Both the columns are hinged and the same length. [15M]
- Or
- 6 A propped cantilever beam AB is subjected to a concentrated load of 60 kN at 3m from end A as shown in Fig. Draw the bending moment and shear force diagrams by the force method. Assume that the flexural rigidity of the beam, EI to be constant throughout. [15M]
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- 7 Derive Euler's column theory [15M]
- Or
- 8 Derive an expression for buckling of a column when both ends are hinged. [15M]
- 9 a) What is the difference between riveted and welded joint? 6M [8M]  
 b) Derive the equation for slope and deflection for continuous beam. [7M]
- Or
- 10 Explain clayperon's theorem of three moments and Application of Clayperon's theorem [15M]