



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Civil Engineering

Semester End Examination; May / June - 2018

Alternative Building Materials

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **FIVE** full questions selecting **ONE** full question from each Unit.

ii) Missing data, if any, may be suitably assumed. iii) Use of IS 1905-1987 is permitted.

UNIT - I

- 1 a. Discuss the environmental issues related to building materials. 6
- b. Discuss energy in building materials and buildings. 6
- c. Explain the role of construction industry in global warming. 8
- 2 a. Suggest how energy alternatives to burnt brick? 10
- b. Write a note on Stabilized Mud Blocks (SMB). 10

UNIT - II

- 3 a. How pozzolana material can be produced by powered burnt clay and fly ash? 10
- b. Explain the properties and applications of fiber reinforced cement composites. 10
- 4 a. Mention the various industrial and mine wastes that can be used in the production of concrete. 10
- b. Explain in detail various uses of industrial wastes. 10

UNIT - III

- 5 a. Discuss in detail the factors to be considered, while selecting a mortar for masonry construction. 10
- b. Explain the properties and applications of ferro cement. 8
- c. List out the various construction techniques of alternatives for wall construction. 2
- 6 a. Mention the advantages of alternative roofing systems. Explain anyone method of roofing. 10
- b. Explain in detail the concept and details of composite beam and panel roofs. 10

UNIT - IV

- 7 a. Derive an expression for biaxial compression in brick and biaxial tension in mortar. 10
- b. A brick masonry prism is made up of 5 bricks joined by mortar of thickness 2 cm. The brick is 7.5 cm in thickness. The prism is subjected to a uniform vertical stress of 4 MPa. The brick has a modulus of 500 MPa and the mortar has a modulus of 8000 MPa. Determine the horizontal lateral stress in brick and mortar. Assume the Poisson's ratio of brick and mortar = 0.1. 10
- 8 a. Write a note on testing for strength of structural masonry. 10
- b. Explain elastic properties of masonry materials and masonry. 10

UNIT - V

9 a. Define the following terms :

i) Column

ii) Effective height

iii) Stress reduction factors

10

iv) Basic compressive stress

v) Slenderness ratio

b. What is cost concept in building? Indicate its importance.

10

10 a. List the cost saving techniques in building construction. Explain.

10

b. Explain as strengths of brick masonry in India.

10

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