



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

(An Autonomous Institution affiliated to VTU, Belagavi)

Fifth Semester, B.E. - Civil Engineering

Semester End Examination; Dec - 2017/Jan - 2018

Alternative Building Materials and Technologies

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- | | | |
|------|---|----|
| 1 a. | Discuss the environmental issues related to building materials. | 10 |
| | b. Discuss energy in building materials and buildings. | 10 |
| 2 a. | How is Stabilized Mud Blocks (SMD) made? Explain in detail mentioning the right choice and proportion of ingredients. | 10 |
| | b. Write a note on Stone Masonry Block. | 4 |
| | c. Explain the influence of density and cement content on block strength. | 6 |

UNIT - II

- | | | |
|------|--|----|
| 3 a. | How pozzolana material can be produced by powdered burnt clay and flyash? Explain. | 10 |
| | b. Explain the behavior of fibre reinforced concrete under compression. | 10 |
| 4 a. | Mention the various industrial and mine wastes that can be used in the production of concrete. | 5 |
| | b. Explain the various applications of agro wastes. | 5 |
| | c. Write a note on various materials used in the production of fibre reinforced concrete composites. | 10 |

UNIT - III

- | | | |
|------|---|----|
| 5 a. | Explain the terms ferro cement and ferro concrete. Discuss in detail the various types of meshes used in ferrocement subjected to tension with the help of diagram. | 10 |
| | b. Explain in detail the cementitious materials of masonry mortars and types of mortars based on their constitutive materials. | 10 |
| 6 a. | Write a note on alternatives for wall construction. | 10 |
| | b. What are the advantages and alternative roofing systems? Explain various types of roofs used in construction. | 10 |

UNIT - IV

- | | | |
|------|--|----|
| 7 a. | Derive an expression for the lateral stresses vary in brick masonry prism in relation to the elastic module of the brick and the mortar. | 10 |
| | b. Discuss the factors influencing compressive strength of masonry. | 10 |

- 8 a. 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 4.0 MPa. The brick has a module 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. Assume the Poisson's ratio of brick and mortar = 0.1. 10
- b. Write a note on strength of Brick Masonry in India. 10

UNIT - V

- 9 a. What is the cost effective building design? Explain the cost of saving techniques in design and construction. 10
- b. Define;
- i) Stress reduction factors ii) Basic compressive stress iii) Slenderness ratio 10
- iv) Effective height v) Allowable compressive stress.
- 10 a. What is cost concept in building? Indicate its importance. 10
- b. Explain the machine used for production of Stabilized Mud Blocks. 10

* * *