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# 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. - 2019**

**Alternative Building Materials**

Time: 3 hrs

Max. Marks: 100

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

## UNIT - I

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|------|---|----|
| 1 a. | Explain the concept of alternative building materials.                          | 5  |
| b.   | Explain different categories of energy consumption in a building, with example. | 5  |
| c.   | Explain environmental issues related to building materials.                     | 10 |
| 2 a. | Explain the concept and manufacture process of SMB.                             | 10 |
| b.   | Explain the concept and manufacture process of Fal-G blocks.                    | 10 |

## UNIT - II

- |      |   |    |
|------|---|----|
| 3 a. | Write the properties and uses of Line pozzolana cement.   | 10 |
| b.   | List out the different types of reinforcing materials in FRC. Explain any one fibre in detail.    | 10 |
| 4 a. | Explain the manufacturing process of FRP composites.  | 10 |
| b.   | List the industries wastes. Which are used as alternative building materials, Explain their uses. | 10 |

## UNIT - III

- |      |  |    |
|------|--|----|
| 5 a. | Explain cavity walls with a neat sketch.   | 5  |
| b.   | List and explain the properties of good Mortar.                                    | 7  |
| c.   | Explain the process of construction of Rammed earth with neat sketch.              | 8  |
| 6 a. | What are Materials used in Ferro cement? Explain its construction method in brief. | 10 |
| b.   | Explain the following: i) Filler slab roofs ii) Composite beams and Panel roofs.   | 10 |

## UNIT - IV

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|------|---|----|
| 7 a. | What is the factor influencing compressive strength of Masonry? Explain any three.  | 10 |
| b.   | Explain briefly the Masonry prism and Masonry wallette.   | 10 |
| 8 a. | Explain briefly the bond strength of Masonry in Flexure and Shear.  | 10 |
| b.   | Design an interior wall of a 3 storeyed building. The ceiling height of each storey being 3 m. The wall is unstiffened and is 3.6 m long floor, from roof 12 kN/m and from floor is 10 kN/m each floor, let us select a cavity wall with overall thickness equal to 250 mm and the thickness of each leaf equal to 100 mm. The thickness is assumed for calculation of self weight and slenderness ratio. | 10 |

## UNIT - V

- |       |   |    |
|-------|---|----|
| 9 a.  | Explain Mardini press machine used to manufacture SMB block.  | 10 |
| b.    | Explain modules method of production of precast elements.   | 10 |
| 10 a. | What is the cost effective building design? Explain the cost saving technique in design and construction. | 10 |
| b.    | Discuss different types of compaction used in the manufacture of concrete.                                | 10 |