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

(An Autonomous Institution affiliated to VTU, Belgaum)

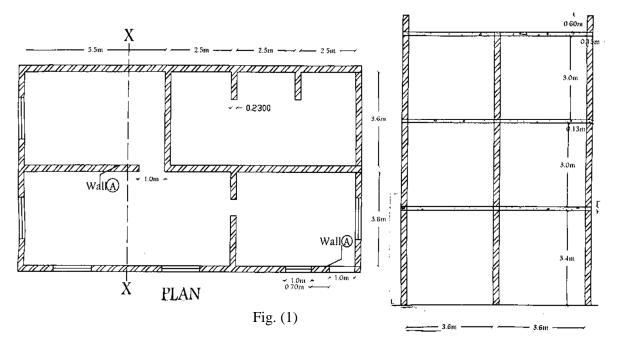
## Eighth Semester, B.E. - Civil Engineering Semester End Examination; June/July - 2015 Alternative Building Materials and Technologies

Time: 3 hrs Max. Marks: 100 Note: Answer any FIVE full questions, selecting at least TWO full questions from each part. PART - A 1 a. List out environmental friendly and cost effective building technologies. Explain any two 7 briefly. b. Write short notes on Global warming. 5 c. Discuss the influence of density and cement content on block strength. 2.a. List out the different blocks used as the masonry units briefly explain any two. b. List out the factors which are considered for selecting the building blocks. Briefly explain any 6 two. c. Explain the process of manufacture of stabilized mud block. 7 3 a. Discuss Pozzolona as a raw material and also explain the process of manufacture by rice husk 10 ash and fly ash as raw materials. b. List out the different types of reinforcing materials in fiber reinforced concrete. 10 Explain: (i) Natural fibres (ii) Mineral fibres. 4 a. List the properties and requirements of mortar. Briefly explain any one. 7 b. List out the components of ferrocement and explain any two. 7 c. Explain the procedure for determing the flow of mortar using sketch as per B.S. 4551-1980. 6 PART - B 5 a. List out the factors influencing compressive strength of masonry. 12 Explain: i) Moisture absorption ii) Thickness of mortar iii) Modular ratio. b. Write a short notes on: 8 i) Types of masonry specimen and their strength evaluation ii) Effect of slenderness ratio. 6 a. Define: i) Column ii) Effective height 5 iii) Slenderness ratio iv) Basic compressive stress v) Stress reduction factors. b. The plan and cross section of a 3 storied load bearing building as shown in Fig. (1). Design and specify the compressive strength of masonry unit using IS – 1905. For M2 type mortar, i. Design middle wall designated as A 15 ii. Portion of masonry between door and window opening shown as wall C,

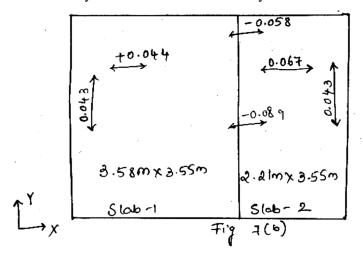
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## Details:

- a. Thickness of wall using burnt bricks = 230 mm
- b. Burnt brick size : 230 x 105 x 75 [L x B x H]
- c. Thickness of plaster on either faces = 15 mm
- d. Density of brick masonry =  $20 \text{ kN/m}^3$
- e. Roof and floor slabs are solid reinforced concrete
- f. Door size  $1.0 \times 2.1$  m



- 7 a. List out the cost reduction technique through construction process efficiency. Explain any two.
  - b. Fig. 7 (b) shows the moments, if a slab with width radio of spaces < 2. Design it for area of steel and also check for serviceability. Draw the reinforcement layout.



- Explain with sketches, the typical construction of roof assembly.
  - b. Explain in detail with sketches of casting process and beams for curved shape (jack arch) panels. 15

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