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B. Architecture (2012 & Onwards) (Sem.-3)

STRUCTURE DESIGN-I

Subject Code : BACH-307

Paper ID : [A2053]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. 1st question is compulsory and carry 10 marks.
2. Answer any other FOUR questions. All other FOUR questions carry EQUAL marks.

Q1. Explain the following :

- a) Shape factor, slenderness ratio
 - b) Rankine's Formula
 - c) The middle third rule
 - d) Bending Stress Check
 - e) Shear Check
- Q2. A brick column of 400mmX400mm carries an axial compressive load of 150KN. Design a square foundation for the column. Soil Bearing Capacity of soil is 125KN/m^2 .
- Q3. A masonry retaining wall is 1.5m wide at the top and 3m wide at the base and is 5m high. It retains soil level with the top. The density of soil is 18KN/m^3 and density of masonry is 21KN/m^3 . Check the stability of the wall.
- Q4. Design a brick column to carry an axial load of 140KN. The ratio of mortar is 1:4 and compressive strength of brick is 10N/mm^2 .
- Q5. Design a brick wall to carry a udl of load of 12KN/m . The ratio of mortar is 1:4 and compressive strength of brick is 10N/mm^2 . The length between supports is 4m and the height is 3.2m. the top of the wall supports a RCC slab.
- Q6. Design a teak wood beam for an inside location to carry a udl of 12KN/m over an effective span of 3.2m.
- Q7. Design a compressive member of a timber truss to carry an axial compressive load of 55KN. The length of member is 2m.
- Q8. Design a tension member of a timber roof truss to carry an axial tensile force of 65KN. The length of the member is 2.3m.