Roll No. | | | | | | | | | | | | | Total No. of Pages : 03

Total No. of Questions : 09

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

STRUCTURE DESIGN-I

Subject Code : BACH-307

M.Code : 70419

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt SIX questions. Q. No. 1 is COMPULSORY. Attempt any FIVE from the rest.**

1. a) What do you mean by Bending stress?

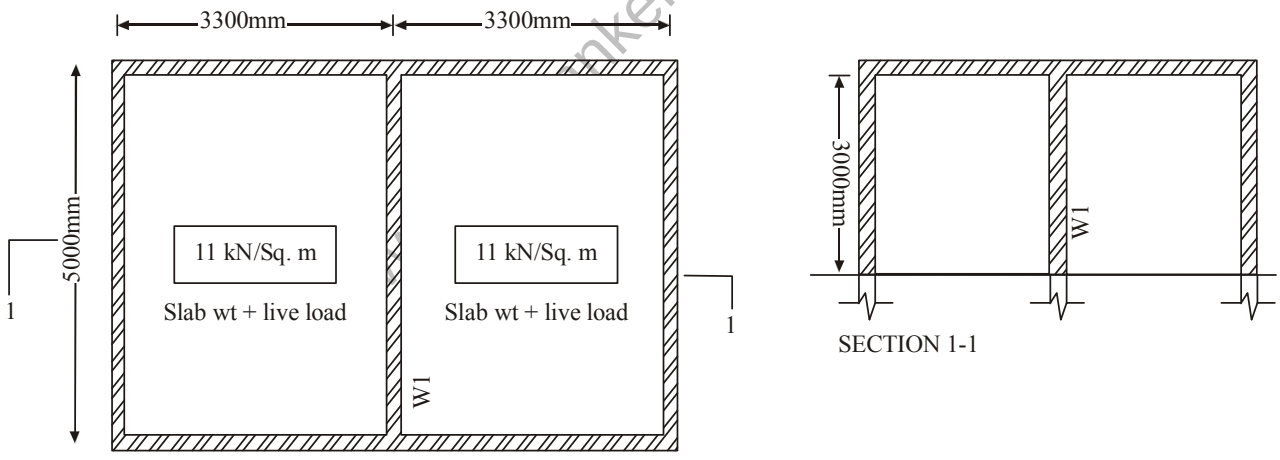
   b) What is difference between column and beam?

   c) What is difference between gross bearing capacity and net bearing capacity?

   d) What is difference between short column and slender column?

   e) What is difference between tensile stress and bending stress?

2.



9″ THK BRICK WALL
HEIGHT OF SLAB 3000MM FROM GROUND LVL.

FIG.1

Design brick foundation for wall W1

Assume bearing capacity of soil for foundation 900mm below natural Ground Level.

3. Calculate the base pressure diagram developed in brick retaining wall of following case?

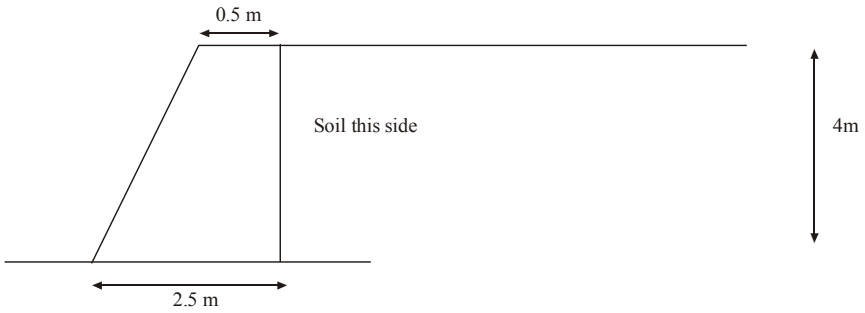


FIG.2

Density of Soil γ = 18 kn /m^3

Density of brick work = 22 Kn/m^3

Angle of repose φ = 30 degree.

4. Explain middle third rule? Find base pressure for following diagram.

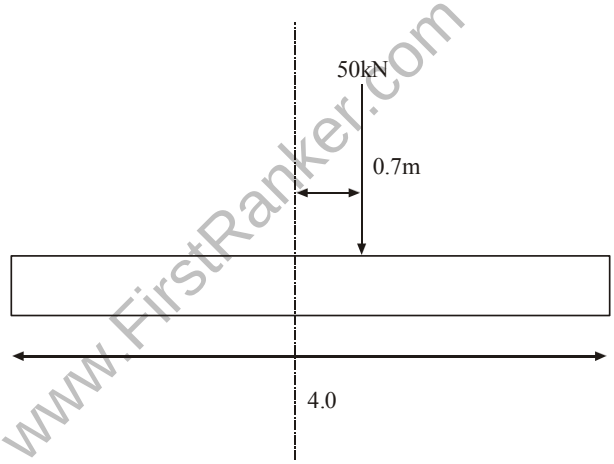


FIG.3

Base resting on elastic pad length is 4m and width is 0.1m (eccentricity of load is 0.7m)

5. Design a brick column for compressive load of 100kN and bending moment 10kN-m Assume safe compressive stress of bricks 90kG per square cm.

6. Find factor of safety against overturning for figure no.3.

7. Explain rankine formula for minimum depth of foundation. What will be the minimum depth of foundation.for maximum stress on soil below foundation 90 kN/square meter, assume angle of repose of soil - 30 degree?

8. Write short note on following :

   a) Moment of inertia.

   b) Effective length of column

   c) Moment of resistance

   d) Shear stress in beam

9. A timber beam, 5m long, section depth 200 and width 200mm is simply supported on edges, find the bending tensile and compression stresses if a UDL of 2kN is applied on it.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.