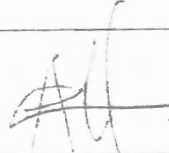




**FACULTY: ENGINEERING
SEMESTER II EXAMINATIONS (JULY 2016)
2015/2016 ACADEMIC SESSION**


HOD'S SIGNATURE

**COURSE CODE: CVE 308
COURSE TITLE: DESIGN OF STRUCTURES I
DURATION: 2.5 Hours**

INSTRUCTIONS:

1. YOU ARE TO ANSWER ANY FOUR QUESTIONS
2. SEVERE PENALTIES APPLY FOR MISCONDUCT, CHEATING, POSSESSION OF UNAUTHORIZED MATERIALS DURING EXAM
3. YOU ARE NOT ALLOWED TO BORROW CALCULATORS AND ANY OTHER WRITING MATERIALS

ELIZADE UNIVERSITY, ILARA-MOKIN
 FACULTY OF ENGINEERING
 DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
 SECOND SEMESTER 2015/2016 EXAMINATIONS
 CVE 308: DESIGN OF STRUCTURE I

Instructions: Attempt ANY FOUR questions. Candidate's Name

Time allowed: 3hrs. Mat. No.....

- 1a. What is the aim of structural design.
- b. Enumerate the three stages of design process.
- c. what is characteristic strength?
- d. what is design strength?
- e. Enumerate factors that may reduce the strength of concrete in a structure. (25 marks).

2. For the structural plan in figure Q2, 3, & 4 estimate the ultimate load on beam B2 and column C4 at the ground floor. Given: slab thickness = 200mm, imposed load = 5kN/m², partition load = 2.0kN/mm², finishes = 1.5kN/mm², roof load = 2.0kN/m², L₁ = 6m, L₂ = 4m, number of storey = 5. Take partition load and finishing load as part of the dead load of the structure. (25 marks).

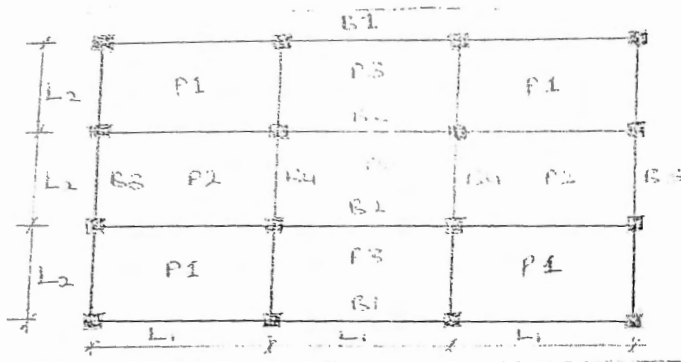


Figure Q2, 3 & 4

3. Design beam B2 in Fig. Q2, 3& 4 for tension and compression reinforcements and check for deflection. Given: Usage of building – office for general use; slab thickness – 150 mm; Finishes – 1.0 kN/m²; partition load – 2.0 kN/m²; beam dimension – 250 mm x 500mm; f_{cu} = 25 N/mm²; f_y = 460 N/mm²; L₁ = 7 m; L₂ = 5 m; cover – 20mm; diameter of reinforcement – 20mm. (25 marks).

4. Design panel P1 in Fig. Q2. 3 & 4 for tension reinforcement and check for deflection. Given: Usage of building – gymnasium; slab thickness – 150 mm; Finishes – 1.0 kN/m²; partition load – 1.5 kN/m²; f_{cu} = 25 N/mm²; f_y = 460 N/mm²; L₁ = 6m; L₂ = 4m; cover – 20mm; diameter of reinforcement – 12 mm. (25marks).

5. Figure Q5 shows the structural plan of a building. Design the slab if its thickness is 200mm, and loads due to partitioning and finishes are 1.5 kN/m² and 1.0 kN/mm² respectively. Take f_{cu} = 25 N/mm², f_y = 460KN/mm², usage of the building is classrooms, and cover = 25mm. L₁ = 9 m, L₂ = 4 m; cover – 20mm; diameter of reinforcement – 12 mm. (25marks).

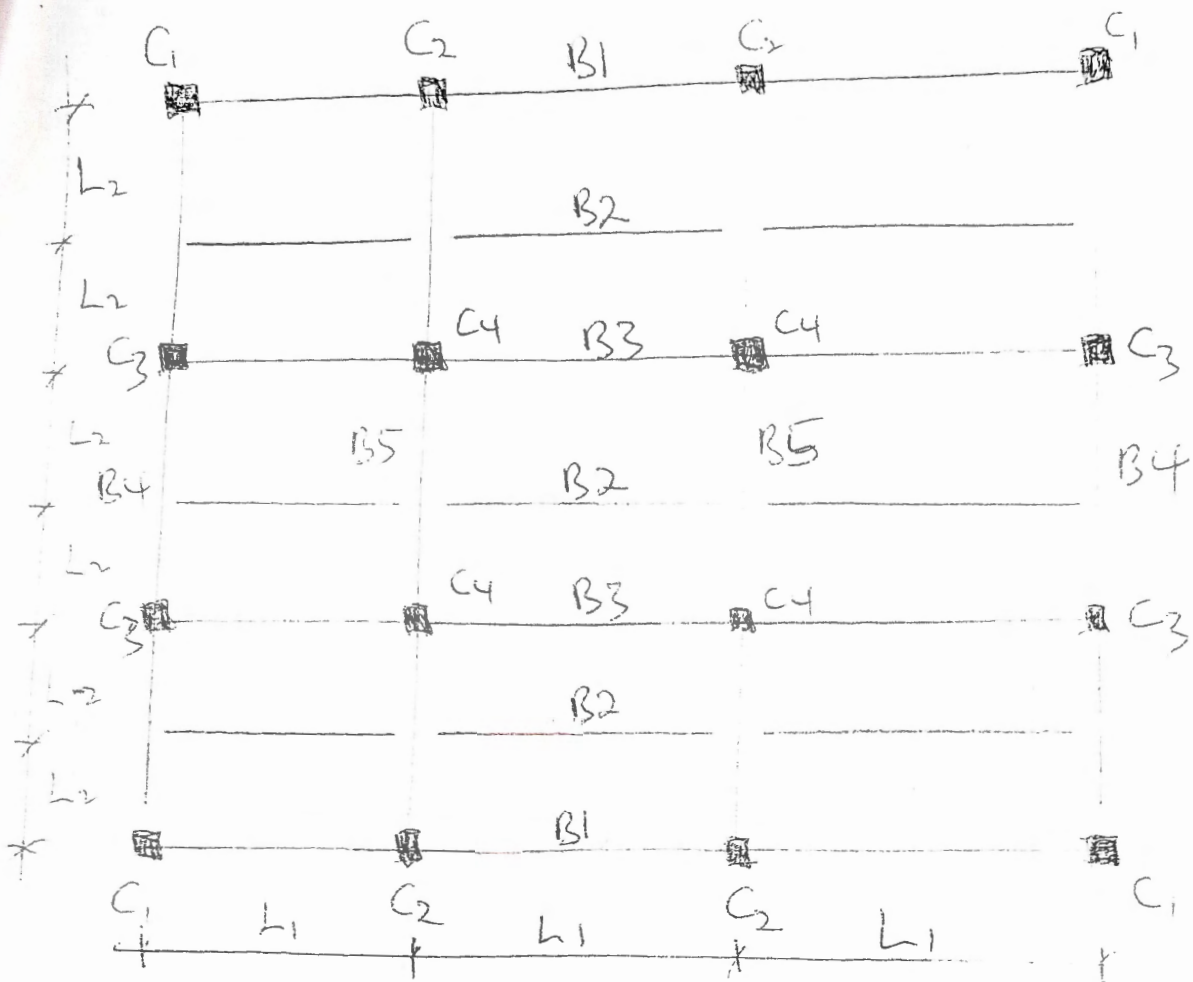


Figure Q5