Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 10

B. Arch. (2012 & Onwards) (Sem.–4)

STRUCTURE DESIGN – III

Subject Code : BACH-409

Paper ID : [A2257]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **Attempt FIVE questions in ALL taking atleast ONE question from EACH UNIT.**
2. **Use of IS : 456-2000 is permitted.**
3. **Use M20 Concrete & Fe 415 steel.**

UNIT-I

Q1. Design a singly reinforced beam of 5m clear span to carry a super imposed uniformly distributed load of 20KN/m. Apply check for Shear & Deflection,

Q2. Design a doubly reinforced beam having effective span 8m and factored load of 52KN/m. The size of beam is restricted to 300mm × 650mm overall with 50mm effective cover. Apply shear check only.

UNIT-II

Q3. Design a simply supported RCC one way slab to carry a factored load of 16KN/sqm (including its own self weight) over an effective span of 3.1m.

Q4. Design a simply supported RCC slab over a room 5m × 7m. The edges are not held down. Live load on slab 3KN/sqm. Bearing 150mm.

UNIT-III

Q5. Design a dog legged stair to connect two floors vertically 3m apart. The live load is 3KN/sqm. Dead load of finishing is IKN/sqm. Dead load of railing is 0.75KN/sqm.

Q6. Design a dog legged staircase inside a stair case hall of 3.2m × 5.5m. height between floors-3m. live load= 5KN/sqm.

UNIT-IV

Q7. Design a short axially loaded square column 500mm × 500mm for a service load of 2000KN.

Q8. Design a short rectangular column subjected to a factored load of 2200KN. Take long side= 1.5 times short side.

UNIT-V

Q9. Design a square foundation for a RCC Column of 400 × 400mm to carry an axial load of 1200KN. The safe bearing capacity of soil is 150KN/sqm.

Q10. Design a Rectangular foundation for a RCC Column of 300 × 450mm to carry an axial load of 1100KN. The safe bearing capacity of soil is 120KN/sqm.