Sub.Code : 658

NEB-GRADE XII

Structural Analysis and RCC Design

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Time: 3 hrs.Full Marks: 75Pass Marks: 27 (For partial students only)

Attempt all questions.

Group 'A' (Very short answer questions) 5x3=15

- 1. Define beam, truss and arch.
- 2. Write the equations of static equilibrium.
- 3. What is Free Body Diagram ?
- 4. List the different grades of concrete and reinforcing steel used in RCC structures.
- 5. Define ductility, strength and stiffness.

Group 'B'

(Short answer questions)

- 6. What do you understand by preliminary design? Explain why preliminary design is necessary in the design of RCC structure?
- 7. Define moment of inertia, radius of gyration and parallel axes theorem.
- 8. What is doubly reinforced beam? List the conditions under which doubly reinforced sections are essential.
- 9. Define conjugate beam. Draw shear force and bending moment diagrams of a simply supported beam of span L carrying a point load P at the mid-span point.
- 10. Differentiate between one-way and two-way slab. Why corner reinforcements are necessary in two way slab.

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11. Explain briefly about bond and development length in RCC.

Group 'C' (Long answer questions)

3x10=30

12. Design a column to carry an axial load of 1000KN. The length of column is 3.10 m and the ends of the columns are properly restrained in position, but not restrained against rotation. Use M20 grade concrete and HSD bars.

- 13. Determine support reactions and draw shear and moment diagrams for the beam shown in figure below.
- 14. Calculate the forces in all members of the truss loaded as shown in the figure below.

6x5 = 30