B.Tech. Degree VIII Semester (Supplementary) Examination in Civil Engineering (Habitat Engineering and Construction Management), October 2002

CE 804 (A) ADVANCED DESIGN OF STRUCTURES II

Time: 3 Hours Maximum Marks: 100

(Use of IS 456 and SP-16 permitted)
(Assume suitable data wherever necessary)

I. Design the interior panel of a flat slab without drop, but with capitals 4.0m x 5.0m in size to carry a superimposed load of 8 kN/m^2. Use M20 Concrete and Fe 415 steel. Use the direct design method Sketch the reinforcement details (30)

OR

II a) Design a deep beam for an opening in a 20cm wall of span 2.5m The depth of the beam is 2.0m It carries a superimposed load of 100kN/m. Use M25 grade concrete and Fe 415 steel. (20)

b) Explain the step by step procedure for design of a grid floor system. What are its advantages ? (10)

III a) Explain the shear wall structural system for tall buildings (5)

b) Analyse the building frame subjected to horizontal forces as shown in fig.1 Use portal method. (20)

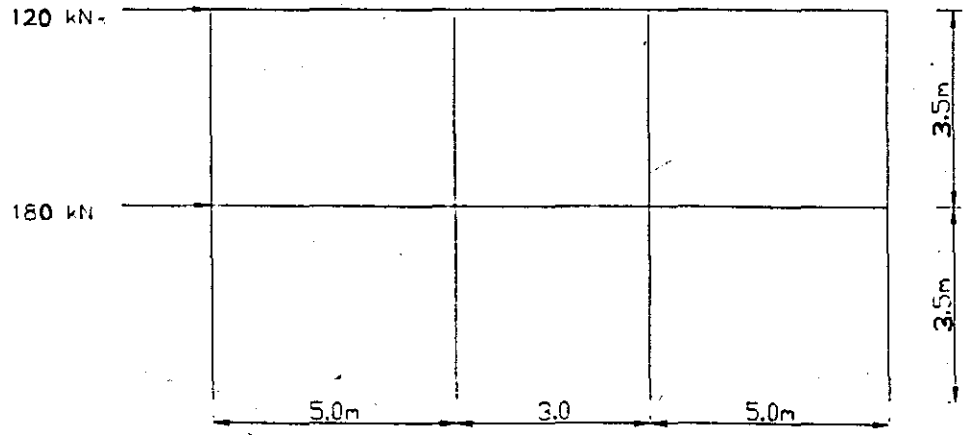

Fig.1

OR

IV Analyse the frame shown in figure.2 using the cantilever method. Assume that all columns have the same cross sectional area (25)

(Turn over)

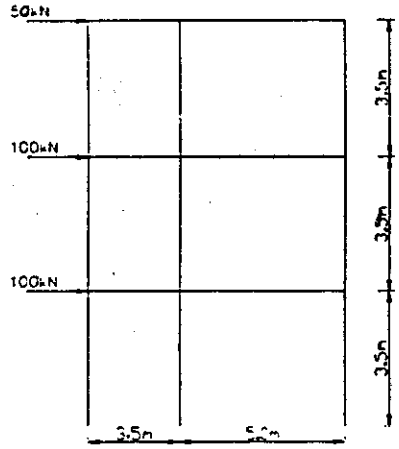

Fig.2

V Design a spherical dome over a circular room for the following data

Inside diameter of room	=	20m
Rise of dome	=	5m
Live load	=	1.0 kN/m^2

Use M25 concrete & Fe 415 steel. Design of the ring beam also (25)

OR

VI Design the interior shell of a symmetrically loaded multiple shell roof without edge beams for the following data use M20 concrete & Fe 415 steel

Span	=	19m
Radius	=	9.5m
Thickness	=	10cm
Semicentral angle	=	40 degrees
Live Load	=	1.0 Kn/m^2

(25)

VII a) Explain the terms "Plate action" and "Slab action" with respect to folded plates (5)

b) Describe in detail the Simpson's method of analysis of folded plates (15)

OR

VIII Analyse a 30 degree V shaped symmetrical folded plate of four plates for the following data.

Thickness of plate	=	100mm
Span	=	7m
Live load	=	1 kN/m^2

(20)

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