

B.Tech. Degree VIII Semester (Supplementary) Examination, September 2006

CE 803 A/B (a) ADVANCED DESIGN OF STRUCTURES (2002 Admissions)

Time: 3 Hours

Maximum Marks: 100

- I a) Design a two way ribbed floor slab for a hall of inside dimensions 8.70m x 10.5m. Thickness of wall is 300mm. Ribs are spaced at 900mm c/c. The roofing slab is subjected to a superimposed load of 3000N/m². Use M20 concrete and Fe 415 steel. (20)
- b) What is a deep beam? Explain how to design continuous deep beams. (10)

OR

- II Design a chimney of 60m height. External diameter throughout the height is 4m. The chimney has fire brick lining of 100 mm thickness provided for a height of 36m above ground level with an air gap of 100mm. The temperature difference of inside gases and outside surrounding air is 150°C. Coefficient of thermal expansion for concrete is $11 \times 10^{-6}/^{\circ}\text{C}$ and $E_s = 2.05 \times 10^5$ Mpa. Use M25 grade concrete. (30)

- III Design a spherical dome having 10 m diameter at base with a rise equal to 3m. The dome has been provided with a lantern at its top which causes a load of 30kN acting along the periphery of 2 m diameter opening at the crown. Assume live load on the dome as 2000N/m². (35)

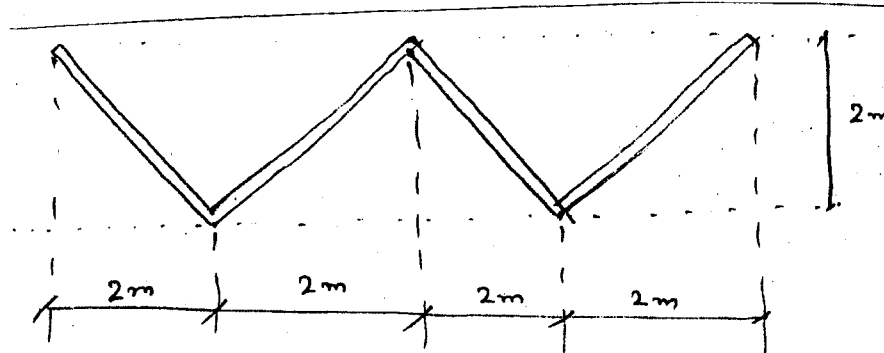
OR

- IV Analyse the symmetrical V-shaped folded plate shown in figure by beam method and design reinforcements.

Given the following:

Span of the folded plate	=	20m;
Thickness of plates	=	100mm
Live load	=	0.75kN/m ²

Use M20 concrete and Fe 415 steel.



(35)

- V Design a slab bridge from the following data:
 Clear span - 4m
 Width of carriage way (two-lane)
 Thickness of wearing coat - 75mm
 Live load - IRC Class A loading
 Use M20 concrete and Fe 415 steel. Show reinforcement details. (35)

OR

- VI Design the deck slab in interior panel for a T-beam bridge for the following data:
 Width of road 2 lane
 Span - 16m
 Live load IRC class A loading
 Wearing coat thickness - 80 mm
 Use concrete mix M20 and Fe 415 steel
 Show reinforcement details. (35)
