

Code No: NR320102

III B.Tech II Semester Supplementary Examinations, March 2006
STRUCTURAL ENGINEERING-III(DESIGN AND DRAWING)

(Civil Engineering)

Time: 3 Hours

Max. Marks: 80

Note: Answer any ONE question from Part-A
And any THREE questions from Part-B

PART- A (32 marks)

1. Design an R.C box culvert having inside dimensions 3m x 3m, to carry a live – load of 50 KN/m^2 and a superimposed dead load of 10 KN/m^2 . Take the density of soil as 16 KN/m^3 and angle of repose 30° use M : 20 grade concrete and Fe 415 grade TOR steel. (Consider any one load case) (24)
Draw the C.S. of the box culvert showing the details of reinforcement. (8)
2. A steel foot bridge of effective span 16m, has clear width of 2.5m and timber plank flooring for a live load of 4 KN/m^2 . Design the most heavily stressed one top chord member, one bottom chord member, one inclined member and one vertical member. There are 8 panels of 2m each. The height of truss is 1.8m. Cross-girders are provided at panel points. (24)
Draw the details to a suitable scale. (8)

PART-B (16 x 3=48 marks)

3. Design a concrete chimney of 40m height of external dia. 3m throughout. The chimney is to be designed for wind pressure in Bombay area. The temperature difference is 65°C . Use M25 grade concrete and Fe 415 grade steel. Sketch the details of reinforcement. (16)
4. The dimensions of an Intze-tank are as follows:
Top dome: central rise = 1.25m
Cylindrical portion : dia = 6m, height = 3m.
Conical bottom : bottom dia = 3m, height = 2m.
Bottom down : central rise = 1m
Design the conical bottom using M : 20 grade concrete and Fe-250 grade steel. Sketch the reinforcement details. (16)
5. For the data given in Q No.4, design the bottom spherical dome. Find the capacity of tank. Sketch the reinforcement details. (16)

Contd..2

6. A flight of stairs is to be provided for an office building. It is supported by a stringer beam on one edge and brick wall on the other. The effective horizontal span of the stairs is 1.6m. Design the steps. Sketch the reinforcement details.(16)
- 7.a) With the help of neat sketches illustrate the following:
- i) Line of nosing
 - ii) Winders
 - iii) Soffit
 - iv) Going
 - v) Rise
- (8)
- b) What are the general design considerations for a good stair? (8)

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