

Code: CE7T1

**IV B.Tech - I Semester – Regular/Supplementary Examinations
October - 2018**

**ADVANCED STRUCTURAL ENGINEERING
(CIVIL ENGINEERING)**

Use of relevant I.S. codes and IRC standards is permitted.
Data not given and found necessary may be assumed suitably.

Duration: 3 hours

Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

$$11 \times 2 = 22$$

1.

- a) What are different types of bridges?
- b) What are the investigations required to be carried out for major bridges?
- c) Differentiate between Class – A & Class – B IRC loadings.
- d) Give limitations of Courbon's method.
- e) Write the different types of rational methods in design of water tanks.
- f) What are the different forces to be considered while designing the staging of a water tank?
- g) What is the permissible crack width in water tanks?
- h) Where are the uses of gantry girders?

- i) State the additional loads to be considered due to Vertical Impact in gantry girders.
- j) What are guyed towers?
- k) State the different type of bracings used in communication towers.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.
 $3 \times 16 = 48 \text{ M}$

- 2. a) Sketch the details of reinforcement in Deck slab. 4 M
- b) Determine the method to load dispersions in two way slabs. 4 M
- c) What are the different loadings to be considered on the bridges according to IRC? 8 M
- 3. The slab panel of a reinforced concrete Tee beam and slab deck is 2.5m wide between main girders and 4 m between cross girders. Design the slab for IRC Class A loading. Adopt M-30 Grade of concrete and Fe-415 grade HYSD bars. 16 M
- 4. Design a Circular overhead RCC water tank of 2,50,000 litres capacity. The sidewalls and the base slab are casted separately. Designing of staging is not necessary. Adopt M30, Fe 500. 16 M

5. Design a simply supported electric gantry girder for the following data:

Capacity of crane = 150 kN

Weight of the crane excluding trolley = 100 kN

Distance between centres of crane wheels = 4.0 metres

Span of gantry girders = 8 m

Edge Distance = 1 m

Assume necessary suitable data. 16 M

6. a) What is the purpose of communication tower and factors that govern the tower configuration? 8 M
- b) Explain the variation of longitudinal load along the height of the tower. 8 M