PVP 14

Code: CE7T1

IV B.Tech - I Semester –Regular / Supplementary Examinations
MARCH - 2021

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 x 2 = 22 M

1.

a) Define economic span in a bridge.
b) State the components of a bridge.
c) What is the importance of impact factor in the design of bridges?
d) What is the reaction factor as per Courbon's Theory?
e) Distinguish between class AA tracked & class AA wheeled vehicle.
f) What are the types of joints used in concrete water tank?
g) List out the forces acting on walls of water tanks.
h) What are the loads to be considered for the design of gantry girder?
i) Which section is recommended for gantry girder? Why?

j) State the different loads acting on the tower.

k) What are the different types of communication towers?

PART – B

Answer any ***THREE*** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) List the various classification of bridges according to its materials used in the construction. 8 M

b) Write a detail note on the investigation procedure for the selection of site and the type of bridge. 8 M

3. Design a T beam bridge for the following data.
Effective span=5.0m
Clear width of the carriage way=8.0m
Thickness of the wearing coat=70mm
Provide footpath of 800mm wide on either side
loading=IRC Class AA Use M20 grade concrete and Fe 415 steel. 16 M

4. Design an Intz-type tank to hold 1.5 million liters of water. The height of tank above general ground level is 20 m. The site has a bearing capacity of soil = 250 kN/m^2. Use M-25 concrete and Fe-415 steel. 16 M

5. Design of gantry girder for an electric overhead crane with the following data: Capacity of crane = 100 KN. Weight of

trolley = 40 KN, Weight of crane girder = 200KN, Span of crane girder = 18m. Centre to Centre distance between columns = 8m, Minimum clearance between trolley and gantry girder =1.2m, centre distance of crane wheels = 3m. 16 M

6. a) Explain the design procedure of communication tower. 8 M

b) What are the various loads considered for the design of towers and explain the procedure for calculation of wind load on tower? 8 M