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B.Tech
PECI5406

7th Semester Regular / Back Examination 2017-18

Bridge Engineering

BRANCH : CIVIL

Time : 3 Hours

Max Marks : 70

Q.CODE : B343

**Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.**

- Q1 Answer the following questions : (2 x 10)**
- a) What are the various hydraulic parameters which influence the design of bridges?
 - b) What do you mean by *linear waterway*?
 - c) State the condition for *economic span* of a bridge.
 - d) Define *normal scour depth*.
 - e) State various types of IRC loadings.
 - f) What are the different types of foundations provided for bridge piers.
 - g) State two examples of deep foundations. Draw figures for each one.
 - h) Distinguish between pier and abutment.
 - i) Courbon's method of analysis is adopted for what type of structures/members.
 - j) State the various types of IRC loadings.
- Q2 a) Describe the various steps involved in site investigation and planning for a bridge project? (6)**
- b) What do you mean by *scouring* in a channel? Explain the various factors which affect the scouring. (4)**
- Q3 Draw the longitudinal section and cross section of a IRC Class AA tracked vehicle and show the dimensions for each direction. (10)**
- Q4 a) State the function of cross girders in a RCC bridge deck system. (5)**
- b) Explain the concept of pre stressing and its application for long span bridges. (5)**
- Q5 a) What is the function of bridge piers? State the various types of bridge piers and various forces acting on a piers. (5)**
- b) How the location of piers are selected? Draw the figure for column bents provided in a bridge and show different components. (5)**
- Q6 a) State the various superstructure components of a bridge. Draw a figure and write the function of each one. (5)**
- b) What do you mean by a girder bridge? State different types of girder bridges and the load distribution mechanism. (5)**
- Q7 a) Draw the typical section of a well foundation and show different components. (6)**
- b) Explain the importance of construction joints provided in bridges. (4)**
- Q8 Write short answer on any TWO : (5 x 2)**
- a) Site investigation for bridge design
 - b) Choice of bridge foundation
 - c) Courbon's method of analysis
 - d) Skew slab