6. Write down the step by step procedure for analysis and designing the cable stayed and suspension bridges. **15**

Unit IV

7. Explain why maintenance of a bridge is important ? Also write down some inspection tools used during the inspection of a bridge. **15**

8. What are the factors that are considered during the construction of a bridge ? Also write down importance of inspection. **15**

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CC561

M. Tech. EXAMINATION, May 2019

(Third Semester)

(B. Scheme) (Re-appear)

CE(SE)

CES601

BRIDGE ENGINEERING

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Assume any data if missing in the question paper.

Unit I

1. (a) Explain the importance of hydraulic factors in bridge design. **8**

(b) Define bridges, also draw and explain all the components of a bridge in detail. **7**

2. List the factor on which site selection of a bridge depends. Explain any *four* in detail. **15**

Unit II

3. The following data pertains to a deck slab bridge : **15**

Clear distance between abutments : 7.5 m

Road : National Highway (two lane)

Footpath : 0.85 m on either side.

Wearing Coat : 75 mm (average)

Loading : IRC Class AA (tracked)

Material : M40 concrete, Fe 500 grade steel.

4. A well foundation is to be designed for an abutment of 10 m × 5 m base dimensions. The well is founded on a sandy soil. The data are available are as follows : **15**

Height of bearing above the maximum scour level : 28 m

Permissible horizontal displacement of the bearing level : 50 m

Height of the abutment : 6.0 m

Total vertical load including weight of the abutment and well (considering buoyancy effects) : 20,000 kN

Total lateral load at the scour level = 400 kN

Submerged unit weight of the soil : 9.5 kN/m^3

Design the well and verify the stresses in the steining.

Unit III

5. What do you understand by the modern methods of construction of steel bridges ? Explain any of *two* methods in detail with neat and clean diagram. **15**