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BICEE-010

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

00623

December, 2016

BICEE-010 : ANALYSIS AND DESIGN OF BRIDGES

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Relevant IRC and IS codes are permitted.*

1. (a) Provide a classification of bridges. *7*

(b) What are the various investigations required for selection of a bridge site ? *7*

2. Briefly discuss the following in reference to design of bridges : *14*

(a) Impact load due to vehicles

(b) Longitudinal forces due to stopping and accelerating vehicles

3. Provide preliminary dimensions for a slab culvert to suit the following data :

Effective span = 6 m

Thickness of wearing coat = 80 mm

Width of road = 7·5 m

Loading : IRC Class-A loads

Sketch the details of reinforcement in the culvert. *14*

4. (a) Provide a neat sketch of a plate girder and label its various portions. 7

(b) Briefly discuss the need and importance of stiffening of web plate of a deep plate girder. 7

5. (a) Write the importance of bearings provided in bridges. 7

(b) Provide a neat sketch of an expansion bearing. 7

6. (a) What are the advantages of prestressed concrete bridges in comparison to RC bridges ? 7

(b) Explain how an arch-shaped bridge span is different from a simply supported beam bridge span in the context of bearing of load. 7

7. Write short notes on any ***two*** of the following topics : *2×7=14*

(a) Superelevation in Roads

(b) Importance of Drainage in Roads

(c) WBM Roads