Roll No ....

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CE - 302

B.E. III Semester

Examination, June 2014

Transportation Bridges and Tunnels

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) Discuss the Tractive resistances.   2

b) Explain the purpose of welding of rails.   2

c) What is the ballast in permanent way? Mention the functions of ballast.   3

d) Mention the relative merits and demerits of Flat-Footed rails and Bull-headed rails.   7

Or

Discuss the different types of sleepers in use of Indian Railways and state relative merits and demerits of each.
7

2. a) Discuss the station yard. 2

   b) What are the objects of signaling? 2

   c) What is meant by a crossing? What are the essential requirements of a good crossing? Discuss various types of crossings in used on Indian Railways. 3

   d) A 5° curve diverged from a 3° main curve in reverse direction in the layout of a B.G. Yard. If the speed on the branch line is restricted to 35 km.p.h., determine the restricted speed on the main line. 7

Or

Calculate the maximum permissible speed on a curve of high speed B.G. track having the following particulars:

   i) Degree of the curve = 1°

   ii) Amount of superelevation = 8.0 cm

   iii) Length of transition curve = 130 metres

   iv) Maximum speed of the section likely to be sanctioned = 153 km.p.h. 7

Unit - III

3. a) Discuss the depth of foundation of railway bridge. 2

   b) Discuss the Afflux. and its significance. 2

   c) Discuss the various factors affecting the suitable site of railway bridges. 3

   d) What is meant by economical span? Derive the condition for an economical span, stating clearly the assumptions made in the derivations. 7

Or

Explain the different types of loadings for designing the railway bridges. 7

Unit-IV

4. a) Discuss the maintenance and inspections of railway bridges. 2

   b) Explain the causes of foundation failures. 2

   c) Explain the types of foundations. 3

   d) Describe the procedure for construction of well foundation. 7

Or

Explain the Coffer dam with the help of a neat sketch. 7

Unit-V

5. a) Discuss the advantages of tunnels. 2

   b) Explain the alignment of tunnels. 2

   c) Explain the methods of tunnel ventilation. 3

   d) Explain the methods of tunneling in hard rocks. 7

Or

What is the tunnel lining? And explain the objects and types of lining. 7

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