

C 14720

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Name.....

Reg. No.....

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2010**

CE 04 605—TRANSPORTATION ENGINEERING—II

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Missing data, if any, may suitably be assumed.

1. (a) Explain with a neat sketch coning of wheels and its effect on rails.
(b) Why is the uniformity of gauge desirable in any country ?
(c) What do you understand by plate-laying ? Explain any one method of plate-laying.
(d) Explain any *two* methods of controlling train movements.
(e) Explain the salient features of one of the important commercial harbour of India.
(f) Distinguish between a dry dock and wet dock.
(g) Explain Benefit-cost ratio method of economic analysis.
(h) Mention the objectives of the third road development plan in India.
- (8 × 5 = 40 marks)
- II. (a) Why are gradients necessary ? Discuss the various types of gradients giving their permissible values adopted in Indian Railways.
- (7 marks)
- (b) Calculate the maximum permissible speed on a curve of a high-speed B.G. track having the following particulars :
- (i) Degree of curve = 1 degree.
 - (ii) Length of transition curve = 120 m.
 - (iii) Super elevation = 80 mm.
 - (iv) Cant deficiency = 100 mm.
 - (v) Maximum speed of the section likely to be sanctioned = 160 km/hour.

(8 marks)

Or

Turn over

(c) Explain the functions of railway sleepers. Discuss the materials widely used as sleeper S in Indian Railways.

(7 marks)

(d) What is creep ? Discuss the theories propounded for the probable causes of creep and how does one arrest creep ?

(8 marks)

III. (a) Explain the different types of signals used in the station yards.

(7 marks)

(b) Explain with a neat sketch, the working of mechanical interlocking of points and signals of a two line railway station.

(8 marks)

Or

(c) With neat sketches, explain any two methods of tunneling in soft soils.

(7 marks)

(d) Write short notes on any *two* :

(i) Tunnel lining.

(ii) Tunnel ventilation.

(iii) Lighting of tunnels.

(8 marks)

IV. (a) Explain the requirements of an ideal site for a labour. How are harbours classified based on the natural configuration of land and based on functions ?

(9 marks)

(b) Explain the various forces acting on an upright wall breakwater.

(6 marks)

Or

(c) With the help of a neat sketch, explain the construction of a mound breakwater. State under what conditions mound breakwaters are suitable.

(7 marks)

(d) Explain any *two* :

(i) Mooring buoys.

(ii) Lock gates.

(iii) Navigational aids.

(8 marks)

V. (a) State and explain the factors on which the motor vehicle operation cost depends. (7 marks)

(b) From the following data for a district, calculate the road length required based on Nagpur Road Plan :

- (i) Total area = 6800 km².
- (ii) Agricultural area = 3300 km².
- (iii) Existing Railway line = 150 kms.
- (iv) Existing length of metalled road = 350 kms.
- (v) Existing length of unmetalled road = 450 kms.

<i>Population range</i>	<i>Numer of towns</i>
> 5000	15
2001-5000	18
1001-2000	130
501-1000	280
< 500	580

Metalled road length (Kms) = $(A/8 + B/32 + 1.6 N + 8 T) + D - R$

unmetalled road length (kms) = $(0.32 V + 0.8 Q + 1.6 P + 3.25) + D$.

(8 marks)

Or

(c) Explain in detail the Inter-modal mix recommended by the National Transport Policy.

(8 marks)

(d) Explain what is meant by intelligent Transport System.

(7 marks)

[4 × 15 = 60 marks]