

**320614(20)**

**B. E. (Sixth Semester) Examination 2020**

**(Old Scheme)**

**(Civil Engg. Branch)**

**TRANSPORTATION ENGINEERING-II**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Attempt all questions. Part (a) of each question is compulsory and carries 2 marks. Attempt any two parts from (b), (c) and (d) which carry 7 marks each.***

**Unit-I**

1. (a) What are the merits of rail transportation compared to road transportation?

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- (b) What do you mean by gauge of a railway track? Describe the different gauges used in India. What are the problems due to use of different gauges? 7
- (c) Explain the following terms : 7
- (i) Coning of wheel
  - (ii) Length of rail
  - (iii) Rail joints
- (d) Explain the creep of rail giving different theories. What are the effects of creep on railway track? 7

### Unit-II

2. (a) What are requirements of good sleepers? 2
- (b) From a main line curve of  $5^\circ$  on a BG track, a branch line of  $8^\circ$  diverges in opposite direction. If the maximum speed permitted on main line is 90 kmph, calculate the super elevation and maximum speed on branch line. 7
- (c) Explain the following terms : 7
- (i) Cant deficiency

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- (ii) Transition Curve
  - (iii) Bearing Plates
- (d) What are the requirements of good ballast? Using a sleeper density of  $(n + 6)$ , determine the number of sleepers required for constructing a B G track 2210 m long. 7

### Unit-III

3. (a) What is Gathering Lines? 2
- (b) Explain the following with neat sketches : 7
- (i) Diamond crossing
  - (ii) Crossover
  - (iii) Turn triangle
- (c) Draw a neat cross-section of switch showing all component parts. Design a turnout with 1 in 12 crossing from the following data : 7
- (i) Gauge = 1.676 m
  - (ii) Heel divergence = 13.3 cm
  - (iii) Straight arm between TNC and TP of crossing curve = 1.346 m

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(iv) Angle of crossing  $34^{\circ} 45' 49''$

(v) Angle of switch =  $1^{\circ} 8' 0''$

(d) Describe different methods of interlocking giving neat sketches. 7

#### Unit-IV

4. (a) Explain drainage of tunnels. 2

(b) Describe the "Using Needle Becam" method of tunneling giving neat sketch. 7

(c) Write notes on the following : 7

(i) Lining of tunnels

(ii) Ventilation of tunnels

(iii) Shapes of tunnels

(d) Explain any one method of tunneling in rocks, in details giving neat sketches. 7

#### Unit-V

5. (a) What do you mean by Artificial Harbor? 2

(b) What do you mean Breakwaters? Describe any two types of breakwaters in details. 7

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(c) Write notes on : 7

(i) Dry dock

(ii) Fishing Harbour

(iii) Harbour of refuge

(d) Explain the following : 7

(i) Jetties

(ii) Wharves

(iii) Navigational aids

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