

Enrollment No.....



Faculty of Engineering
End Sem (Odd) Examination Dec-2018
CE3EL07 Transportation Bridges & Tunnels

Programme: B.Tech.

Branch/Specialisation: CE

Duration: 3 Hrs.**Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. The first Indian railway was laid in **1**
 (a) 1775 (b) 1804 (c) 1825 (d) 1853
- ii. Rail section first designed on Indian railways, was **1**
 (a) Bull headed (b) Double headed
 (c) Flat footed (d) Both (a) and (b)
- iii. Superelevation (e) does not depend upon **1**
 (a) Gauge length of rail (b) Speed of train
 (c) Radius of curvature (d) Length of Rail.
- iv. A circular curve consisting of a single arc of uniform radius is called **1**
 (a) Transition curve (b) Simple curve
 (c) Compound curve (d) Reverse curve
- v. The distance between toe of switch and stock rail is known as **1**
 (a) Throw of switch (b) Heel divergence
 (c) Heel of switch (d) Heel block
- vi. The angle between the gauge faces of the stock rail and tongue rail, **1**
 is called
 (a) Switch angle (b) Angle of crossing
 (c) Angle of turn-outs (d) None of these
- vii. Which of them is not a type of RCC Bridges. **1**
 (a) Slab bridges (b) Rigid frame bridges
 (c) T beam bridges (d) Pin framed bridges
- viii. Which of them is not a type of foundation used in bridges **1**
 (a) Pile foundation (b) Well foundation
 (c) Column footing (d) Caissons Foundations

- ix. Which one of the following linings is suitable for shield driven tunnels particularly in the subaqueous regions?
 (a) Brick lining (b) Stone lining
 (c) Cast iron lining (d) Concrete lining
- x. Concrete lining is provided concurrently with the driving operation **1**
 in case of
 (a) Rock terrain (b) Soft rock
 (c) Running soil (d) None of these

- Q.2 i. Define Sleeper Density. **2**
 ii. What do you mean by Coning of Wheels? **3**
 iii. What are requirements of good Ballast? **5**
- OR iv. What are the basic requirement of ideal alignment of railway track. **5**
- Q.3 i. Define Curve and enumerate its different types. **3**
 ii. Define Superelevation and its importance. Derive the relationship of superelevation (e) with gauge (G), speed (V) and radius of curve (R). **7**
- OR iii. What are the various factors affecting the resistance to traction. **7**
- Q.4 i. What are the objectives of Signalling? **3**
 ii. Explain why points and crossings are provided. Draw a neat sketch of double line turnout showing all important terms used in points and crossings. **7**
- OR iii. What is the purpose and facilities required at railway stations and describe their classifications. **7**
- Q.5 i. Explain in brief, the selection of site of bridges. **3**
 ii. Explain various types of coffer dams, where they are constructed. Also write down procedure of construction. **7**
- OR iii. Explain pile foundation and well foundation for bridges with neat sketches. Also discuss procedure of sinking of wells. **7**
- Q.6 Attempt any two:
 i. Explain in brief a suitable alignment of tunnel. Write a short note on shape and size of tunnels. **5**
 ii. Discuss various methods of tunnelling in rock. **5**
 iii. Describe the lining of tunnels and their various types. **5**

P.T.O.

Marking Scheme

CE3EL07 Transportation Bridges & Tunnels

Q.1	i.	The first Indian railway was laid in (d) 1853	1
	ii.	Rail section first designed on Indian railways, was (b) Double headed	1
	iii.	Superelevation (e) does not depend upon (d) Length of Rail.	1
	iv.	A circular curve consisting of a single arc of uniform radius is called (b) Simple curve	1
	v.	The distance between toe of switch and stock rail is known as (a) Throw of switch	1
	vi.	The angle between the gauge faces of the stock rail and tongue rail, is called (a) Switch angle	1
	vii.	Which of them is not a type of RCC Bridges. (d) Pin framed bridges	1
	viii.	Which of them is not a type of foundation used in bridges (c) Column footing	1
	ix.	Which one of the following linings is suitable for shield driven tunnels particularly in the subaqueous regions? (c) Cast iron lining	1
	x.	Concrete lining is provided concurrently with the driving operation in case of (a) Rock terrain	1
Q.2	i.	Definition of Sleeper Density.	2
	ii.	Coning of Wheels	3
	iii.	Requirements of good Ballast 0.5 mark for each point	5 (0.5 mark * 10)
OR	iv.	Requirement of ideal alignment of railway track. 0.5 mark for each point	5 (0.5 mark * 10)
Q.3	i.	Define Curve Its different types.	1 mark 2 marks
	ii.	Define Superelevation and its importance. Derivation	3 marks 4 marks
OR	iii.	Factors affecting the resistance to traction. 1 mark for each point	7 (1 mark *7)

Q.4	i.	Objectives of Signalling 0.5 mark for each point	(0.5 mark *6)	3
	ii.	Reason for points and crossings are provided Sketch and terms used in points and crossings	2 marks 5 marks	7
OR	iii.	Purpose Facilities required at railway stations Their classifications.	2 marks 2 marks 3 marks	7
	Q.5	i.	Selection of site of bridges. 0.5 mark for each point	(0.5 mark *6)
ii.		Explain various types of coffer dams, where they are constructed Procedure of construction	3 marks 4 marks	7
OR	iii.	Pile foundation and well foundation for bridges Procedure of sinking of wells.	3 marks 4 marks	7
	Q.6	Attempt any two:		
i.		Alignment of tunnel Shape and size of tunnels.	2 marks 3 marks	5
ii.		Methods of tunnelling in rock (Any three method)	5	5
	iii.	Lining of tunnels Their various types	2 marks 3 marks	5
