

Enrollment No.....



Faculty of Engineering  
End Sem (Even) Examination May-2018  
CE2CO11 Transportation Engineering - I

Programme: Diploma

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. Which one is the correct alternative among the following – **1**
- (a) Road transport requires less energy per unit weight per unit distance than railways.
  - (b) Rail transport requires less energy per unit weight per unit distance than road transport.
  - (c) Water transport requires highest energy per unit weight per unit distance.
  - (d) Air transport requires least energy per unit weight per unit distance.
- ii. Following transportation has the maximum flexibility of services – **1**
- (a) Rail transport                      (b) Air transport
  - (c) Road transport                      (d) Water transport
- iii. Measurement of gauge is taken as **1**
- (a) Horizontal distance between outer faces of rails
  - (b) Height of rail
  - (c) Clear distance between inner faces of rails
  - (d) Clear distance between inner faces of wheels
- iv. What is the gauge length of the MG rail section? **1**
- (a) 1.69 m    (b) 1.42 m    (c) 1.00 m    (d) 0.696 m
- v. Coning of wheels is provided with – **1**
- (a) Outward slope of 1 in 20    (b) Inward slope of 1 in 20
  - (c) No slope at all                      (d) Anyone of (a) or (b)

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- vi. Sleeper density is the – **1**  
(a) Number of sleepers per rail length of the rail  
(b) Number of sleepers per meter of rail length  
(c) Density of material of sleeper  
(d) Number of sleepers per kilometre of the rail
- vii. Linear waterway is the – **1**  
(a) Center to center distance between the end piers  
(b) Equal to distance between banks of river at bridge site  
(c) Length of the maximum water spread anytime in history  
(d) Equal to the sum of all the clear spans
- viii. Open foundation for bridge may be provided in – **1**  
(a) Sufficiently firm dry ground  
(b) In rivers  
(c) In swampy grounds  
(d) Land with low bearing capacity
- ix. Following is not the method of tunneling in soft ground – **1**  
(a) Needle beam method (b) Linear plate method  
(c) Full face method (d) Shield method
- x. In rocky ground for circular tunnels – **1**  
(a) Entire walls placed in one operation  
(b) Rigid base first then side walls and roof in one operation  
(c) Rigid base first then side walls and roofs  
(d) Any of the above

- Q.2 i. Explain briefly the modes of transportation systems. **2**  
ii. Write down the advantages of railway transport. **3**  
iii. Write the role of transport in development of nation. **5**  
OR iv. Write comparison between road and railway transportation. **5**
- Q.3 i. Why Indian railways are divided in zones? **2**  
ii. What is Permanent way? Explain each component with neat sketch and requirement. **8**  
OR iii. Draw the cross section of a BG and MG track on embankment. **8**

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- Q.4 i. Write in detail about locomotive yards with diagrams. **3**  
ii. Write the principles of geometric design of railway tracks. Explain different types of ballast. **7**  
OR iii. What are the different types of crossings in railway tracks? Draw the details of acute angle crossing. **7**
- Q.5 i. Which data are collected for Bridge design? Discuss each in brief. **4**  
ii. Write in detail about various types of concrete bridges with diagram/sketched. **6**  
OR iii. What are the salient features of solid piers in bridges? Also explain Afflux and scour depth in brief. **6**
- Q.6 Attempt any two:  
i. Write down the advantages and disadvantages of tunnels. **5**  
ii. Enumerate different ways of tunneling in soft ground and rocks. Explain any one method only in soft ground or rocks. **5**  
iii. What are the surveying work operations in tunneling? Discuss them in brief. **5**

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**Marking Scheme**  
**CE2CO11 Transportation Engineering - I**

Q.1	i.	Which one is the correct alternative among the following – (a) Road transport requires less energy per unit weight per unit distance than railways.	1		ii.	Definition of Permanent way Sketch Component Requirement.	1 mark 2 marks 2.5 marks 2.5 marks	8
	ii.	Following transportation has the maximum flexibility of services – (c) Road transport	1	OR	iii.	Cross section of a BG track on embankment Cross section of a MG track on embankment	4 marks 4 marks	8
	iii.	Measurement of gauge is taken as (c) Clear distance between inner faces of rails	1	Q.4	i.	Definition of locomotive yards Diagrams.	2 marks 1 mark	3
	iv.	What is the gauge length of the MG rail section? (c) 1.00 m	1		ii.	Principles of geometric design of railway tracks Different types of ballast.	3.5 marks 3.5 marks	7
	v.	Coning of wheels is provided with – (d) Anyone of (a) or (b)	1	OR	iii.	Different types of crossings in railway tracks Acute angle crossing with diagram	4 marks 3 marks	7
	vi.	Sleeper density is the – (a) Number of sleepers per rail length of the rail	1	Q.5	i.	Data are collected for Bridge design Each point 1 mark	(1 mark *4)	4
	vii.	Linear waterway is the – (b) Equal to distance between banks of river at bridge site	1		ii.	Types of concrete bridges Diagram/sketched.	3 marks 3 marks	6
	viii.	Open foundation for bridge may be provided in – (b) In rivers	1	OR	iii.	Features of solid piers in bridges 1 mark each (1 mark * 3) Afflux Scour depth	3 marks 1.5 marks 1.5 marks	6
	ix.	Following is not the method of tunneling in soft ground – (c) Full face method	1	Q.6	Attempt any two:			
	x.	In rocky ground for circular tunnels – (d) Any of the above	1		i.	Advantages of tunnels. Disadvantages of tunnels.	2.5 marks 2.5 marks	5
Q.2	i.	Modes of transportation systems. Each mode 1 mark (1 mark *2)	2		ii.	Ways of tunneling in soft ground and rocks. 1 mark each (1 mark * 3) Any one method only in soft ground or rocks.	3 marks 2 marks	5
	ii.	Advantages of railway transport. Each Advantages 1 mark (1 mark *3)	3		iii.	Surveying work operations in tunnelling Each operation 1 mark	(1 mark *5)	5
	iii.	Role of transport in development of nation. Each point 1 mark (1 mark *5)	5		*****			
OR	iv.	Comparison between road and railway transportation. Each point 1 mark (1 mark *5)	5					
Q.3	i.	Why Indian railways are divided in zones Each point 1 mark (1 mark *2)	2					