

Th3. RAILWAY & BRIDGE ENGINEERING

Period	Unit	Topic
1.	Introduction	Railway terminology Advantages of railways
2.		Classification of Indian Railways
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4.	Permanent way	definition and components of a permanent way Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions
5.		Rails. Functions and requirement of rails Types of rail sections, length of rails
6.		Rail joints – types, requirement of an ideal joint. Purpose of welding of rails & its advantages.
7.		Creep- definition, cause & prevention
8.		Sleepers Definition, function & requirements of sleepers.
9.		Classification of sleepers. Advantages & disadvantages of different types of sleepers.
10.		Ballast Functions & requirements of ballast
11.		Materials for ballast Fixtures for Broad gauge
12.		Connection of rails to rail-fishplate, fish bolts
13.		Connection of rails to sleepers
14.	Geometric for broad gauge	Typical cross – sections of single & double broad gauge railway track in cutting and embankment
15.		Permanent & temporary land width.
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18.		Gradients for drainage.
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21.		Super elevation – necessity & limiting values.
22.	Points and crossings	
23.		Definition, necessity of Points and crossings.
24.		
25.		Types of points & crossings with tie diagrams.
26.	Laying & maintenance of track	
27.		
28.		Methods of Laying & maintenance of track
29.		Duties of a permanent way inspector
30.	BRIDGES Introduction to bridges	
31.		Definitions
32.		Components of a bridge
33.		Classification of bridges Requirements of an ideal bridge

34.	Bridge site investigation, hydrology & planning	Selection of bridge site, Alignment
35.		Determination of Flood Discharge
36.		Waterway & economic span
37.		Afflux, clearance & free board
38.	Bridge foundation	
39.		Scour depth minimum depth of foundation.
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41.		Types of bridge foundations – spread foundation, pile foundation- wellfoundation – sinking of wells, caisson foundation
42.		
43.		Coffer dams
44.		
45.	Bridge substructure and approaches	Types of piers
46.		Types of abutments
47.		Types of wing walls
48.		Approaches
49.	Culvert & Cause ways	Types of culverts
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51.		Types of causeways
52.	Revision	
53.		Revision classes
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