Deparment: Civil Engineering	Semester : 5TH SEM SEC B	Name of the Teaching faculty: Jasodhara Sahoo	
Th3. RAILWAY & BRIDGE ENGINEERING	No.of Days/ week class allotted : 04/week	Semester from date: 01/08/2023 to 30/11/2023 No. of Weeks :18	
Week	Class Day	Topics	Remarks
		Section – A: RAILWAYS	
1ST WEEK		**1.Introduction**	
	DAY 2	1.1 Railway terminology	
	DAY 3	1.2 Advantages of railways 1.2 Advantages of railways 1.3 Classification of Indian Railways	
		2.Permanent way	
	DAY 4	2.1 Definition and components of a permanent way	
2ND WEEK	DAY 1	2.1 Definition and components of a permanent way	
	DAY 2	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
	DAY 3	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
	DAY 4	2.2 Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions	
3RD WEEK		**3.Track materials**	
	DAY 1	3.1 Rails 3.1.1 Functions and requirement of rails	
	DAY 2	3.1.2 Types of rail sections, length of rails	
	DAY 3	3.1.3 Rail joints – types, requirement of an ideal joint	
	DAY 4	3.1.4 Purpose of welding of rails & its advantages	
4TH WEEK	DAY 1	3.1.5 Creep- definition, cause & prevention	
	DAY 2	3.2 Sleepers 3.2.1 Definition, function & requirements of sleepers	
	DAY 3	3.2.2 Classification of sleepers 3.2.3 Advantages & disadvantages of different types of sleepers	
	DAY 4	3.3 Ballast 3.3.1 Functions & requirements of ballast 3.3.2 Materials for ballast	

5TH WEEK	DAY 1	3.4 Fixtures for Broad gauge 3.4.1 Connection of rails to rail-fishplate, fish bolts	
	DAY 3	3.4.2 Connection of rails to sleepers	
		4.Geometric for broad gauge	
	DAY 4	4.1Typical cross – sections of single & double broad gauge railway track in cutting and embankment	
6TH WEEK	DAY 1	4.1Typical cross – sections of single & double broad gauge railway track in cutting and embankment	
	DAY 3	4.1Typical cross – sections of single & double broad gauge railway track in cutting and embankment	
	DAY 4	4.2 Permanent & temporary land width	
7TH WEEK	DAY 1	4.2 Permanent & temporary land width	
	DAY 2	4.3 Gradients for drainage	
	DAY 3	4.3 Gradients for drainage	
	DAY 4	4.4 Super elevation – necessity & limiting valued	
8TH WEEK	DAY 1	4.4 Super elevation – necessity & limiting valued	
	DAY 3	4.4 Super elevation – necessity & limiting valued	
		5.Points and crossings	
	DAY 4	5.1 Definition, necessity of Points and crossings	
9TH WEEK	DAY 1	5.1 Definition, necessity of Points and crossings	
	DAY 2	5.2 Types of points & crossings with tie diagrams	
	DAY 3	5.2 Types of points & crossings with tie diagrams	
10TH WEEK		**6.Laying & maintenance of track**	
	DAY 2	6.1 Methods of Laying & maintenance of track	
	DAY 3	6.1 Methods of Laying & maintenance of track	
	DAY 4	6.2 Duties of a permanent way inspector	
11TH WEEK	DAY 1	6.2 Duties of a permanent way inspector	
		Section – B: BRIDGES	
		1.Introduction to bridges	
	DAY 2	1.1 Definitions 1.2 Components of a bridge	

11TH WEEK	DAY 3	1.3 Classification of bridges 1.4 Requirements of an ideal bridge	
		2.Bridge site investigation, hydrology & planning	
	DAY 4	2.1 Selection of bridge site, Alignment,	
12TH WEEK	DAY 1	2.2 Determination of Flood Discharge	
	DAY 2	2.2 Determination of Flood Discharge	
	DAY 3	2.3 Waterway & economic span	
	DAY 4	2.4 Afflux, clearance & free board	
13TH WEEK	PUJA HOLIDAYS		
14TH WEEK		**3.Bridge foundation**	
	DAY 1	3.1 Scour depth minimum depth of foundation	
	DAY 2	3.1 Scour depth minimum depth of foundation	
	DAY 3	3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation	
	DAY 4	3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation	
15TH WEEK	DAY 1	3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation	
	DAY 2	3.2 Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation	
	DAY 3	3.3 Coffer dams	
	DAY 4	3.3 Coffer dams	
16TH WEEK		**4.Bridge substructure and approaches**	
	DAY 1	4.1 Types of piers	"
	DAY 2	4.1 Types of piers	
	DAY 3	4.2 Types of abutments	
	DAY 4	4.3 Types of wing walls	
17TH WEEK	DAY 1	4.4 Approaches	
		5.Culvert & Cause ways	
	DAY 2	5.1 Types of culvers – brief description	
	DAY 3	5.1 Types of culvers – brief description	
	DAY 4	5.1 Types of culvers – brief description	
18TH WEEK	DAY 2	5.2 Types of causeways – brief description	
	DAY 3	5.2 Types of causeways – brief description	

Jasodhara Sahu 01/08/23
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