LESSON PLAN

DISCIPLINE: Civil Engineering		**SEMESTER:** 5th Semester	**NAME OF THE TEACHING FACULTY:** P Sankar Rao PTGF (Civil Engg.)
SUBJECT: Railway & Bridge Engineering		**NO. OF DAYS/PER WEEK** **CLASSES ALLOTTED:**4	**SEMESTER FROM DATE: 16.08.2024 TO DATE:_____** **NO. OF WEEKS:15**

Week	Class Day		Theory Topic
	Section – A: RAILWAYS		
1ST			**1.** Introduction
	1st	**1.1** **1.2**	Railway terminology Advantages of railways
	2nd	**1.3**	Classification of Indian Railways
			2. Permanent way
	3rd	**2.1**	Definition and components of a permanent way
	4th	**2.2**	Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions
2ND	1st	**2.2**	Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions
	2nd	**2.2**	Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions
	3rd	**2.2**	Concept of gauge, different gauges prevalent in India, suitability of these gauges under different conditions
			3. Track materials
	4th	**3.1** **3.1.1**	Rails Functions and requirement of rails

3RD	1st	3.1.2	Types of rail sections, length of rails
	2nd	3.1.2 3.1.4	Rail joints – types, requirement of an ideal joint Purpose of welding of rails & its advantages
	3rd	3.1.5	Creep- definition, cause & prevention
	4th	3.2 3.2.1 3.2.2	Sleepers: Definition, function & requirements of sleepers Classification of sleepers
4TH	1st	3.2.3	Advantages & disadvantages of different types of sleepers
	2nd	3.3 3.3.1	Ballast: Functions & requirements of ballast
	3rd	3.3.2	Materials for ballast
	4th	3.4 3.4.1	Fixtures for Broad gauge Connection of rails to rail-fishplate, fish bolts
5TH	1st	3.4.2	Connection of rails to sleepers
			4. Geometric for broad gauge
	2nd	4.1	Typical cross – sections of single & double broad gauge railway track in cutting and embankment
	3rd	4.1	Typical cross – sections of single & double broad gauge railway track in cutting and embankment
	4th	4.2	Permanent & temporary land width
6TH	1st	4.2	Permanent & temporary land width
	2nd	4.2	Permanent & temporary land width
	3rd	4.3	Gradients for drainage
	4th	4.3	Gradients for drainage
7TH	1st	4.4	Super elevation – necessity & limiting valued
	2nd	4.4	Super elevation – necessity & limiting valued
	3rd	4.4	Super elevation – necessity & limiting valued
			5. Points and crossings
	4th	5.1	Definition, necessity of Points and crossings
8TH	1st	5.1	Types of points & crossings with tie diagrams
	2nd	5.1	Types of points & crossings with tie diagrams

	3rd	5.1	Types of points & crossings with tie diagrams
			6. Laying & maintenance of track
	4th	6.1	Methods of Laying & maintenance of track
9TH	1st	6.1	Methods of Laying & maintenance of track
	2nd	6.2	Methods of Laying & maintenance of track
	3rd	6.2	Duties of a permanent way inspector
	Section – B: BRIDGES		
			1. Introduction to bridges
	4th	1.1 1.2 1.3	Definitions Components of a bridge Classification of bridges
10TH	1st	1.4	Requirements of an ideal bridge
			2. Bridge site investigation, hydrology & planning
	2nd	2.1	Selection of bridge site, Alignment,
	3rd	2.2	Determination of Flood Discharge
	4th	2.2	Determination of Flood Discharge
11TH	1st	2.3	Waterway & economic span
	2nd	2.4	Afflux, clearance & free board
			3. Bridge foundation
	3rd	3.1	Scour depth minimum depth of foundation
	4th	3.2	Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation
12TH	1st	3.2	Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation
	2nd	3.2	Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation
	3rd	3.2	Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation

	4th	3.2	Types of bridge foundations – spread foundation, pile foundation- well foundation – sinking of wells, caission foundation
13TH	1st	3.3	Coffer dams
	2nd	3.3	Coffer dams
			4. Bridge substructure and approaches
	3rd	4.1	Types of piers
	4th	4.2	Types of abutments
14TH	1st	4.2	Types of abutments
	2nd	4.3	Types of wing walls
	3rd	4.4	Approaches
			5. Culvert & Cause ways
	4th	5.1	Types of culvers – brief description
15TH	1st	5.1	Types of culvers – brief description
	2nd	5.1	Types of culvers – brief description
	3rd	5.2	Types of causeways – brief description
	4th	5.2	Types of causeways – brief description