GOVERNMENT POLYTECHNIC JAJPUR
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DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

Discipline: Civil Engg.	**Semester: 5th**	**Name of the Teaching faculty: RAJASHREE NAYAK**
Subject: Railway & Bridge Engg. Th-3	**No of Days/Week class alloted: 4**	**Semester from Date: 01.07.2024 To Date:08.11.2024** **No of weeks: 15**
Week	**Class Day**	**Topics**
1st	1st	1.0 Introduction : 1.1Railway terminology
	2nd	1.2Advantages of railways 1.3Classification of Indian Railways
	3rd	2. Permanent way 2.1 Definition
	4th	components of a permanent way
2nd	1st	Concept of gauge
	2nd	different gauges prevalent in India
	3rd	suitability of these gauges under different
	4th	3.Track materials 3.1 Rails 3.1.1 Functions and requirement of rails
3rd	1st	3.1.2 Types of rail sections , length of rails 3.1.3 Rail joints – types, requirement of an ideal joint
	2nd	3..1.4 Purpose of welding of rails & its advantages 3.1.5 Creep definition, cause & prevention
	3rd	3.2 Sleepers 3.2.1 Definition, function & requirements of sleepers 3.2.2 Classification of sleepers 3.2.3 Advantages & disadvantages of different types of sleepers
	4th	3.3 Ballast 3.3.1 Functions & requirements of ballast 3.3.2 Materials for ballast
4th	1st	3.4 Fixtures for Broad gauge 3.4.1 Connection of rails to rail-fishplate, fish bolts 3.4.2 Connection of rails to sleepers
	2nd	4.Geometric for Broad gauge 4.1 Typical cross – sections of single
	3rd	double broad gauge railway track in cutting
	4th	embankment
5th	1st	4.2 Permanent & temporary land width
	2nd	Gradients for drainage
	3rd	Super elevation – necessity & limiting valued
	4th	Numerical problem

6th	1st	Numerical problem
	2nd	Numerical problem
	3rd	Numerical problem
	4th	5.0 Points and crossings
7th	1st	5.1 Definition,
	2nd	necessity of Points and crossings
	3rd	5.2 Types of points
	4th	&types of crossings with tie diagrams
8th	1st	diagrams
	2nd	6.0 Laying & maintenance of track
	3rd	6.1 Methods of Laying
	4th	maintenance of track
9th	1st	Details of a permanent way inspector
	2nd	Section – B : BRIDGES 7.0 Introductions 7.1 Definitions 7.2 Components of a bridge
	3rd	7.3 Classification of bridges. 7.4 Requirements of an ideal bridge
	4th	8.Bridge Site investigation, hydrology & planning 8.1 Selection of bridge site
10th	1st	8.2 Bridge alignments
	2nd	8.3 Determination of flood discharge
	3rd	8.4 Waterway & economic span
	4th	8.5 Afflux, clearance & free board 8.6 Collection of bridge design data & sub surface investigation
11th	1st	9.Bridge foundation
	2nd	9.1 Scour depth minimum depth of foundation 9.2 Types of bridge
	3rd	pile foundation-, pile driving,
	4th	well foundation – sinking of wells caission foundation
12th	1st	foundations – spread foundation
	2nd	9.3 Coffer dams
	3rd	pile foundation-, pile driving,
	4th	well foundation – sinking of wells caission foundation
13th	1st	foundations – spread foundation
	2nd	9.3 Coffer dams
	3rd	10.Bridge substructure and approaches
	4th	10.Bridge substructure and approaches 10.1 Types of piers
14th	1st	10.2 Types of abutments
	2nd	10.3 Types of wing walls
	3rd	**10.4 Approaches**
	4th	11.0Permanent bridges 11.1 Masonry bridges
15th	1st	**11.2 Steel bridges – classification with sketches**
	2nd	11.3 Concrete bridges – classification, brief description with sketches

		11.4 IRC bridge loading
	3rd	12.Culvert & cause ways 12.1 Types of culvers - brief description
	4th	12.2 Types of causeways - brief description
16th	1st	PREVIOUS YEAR QUESTION DISCUSSION

LearningResources:

Sl No.	Author Name	Name of the Book
1	Chandra & Agrawal	Railway Engineering
2	S.C.Sexena & S.P.Arora	A Text book of Railway Engineering
3	S. C. Rangwala	Railway Engineering

RAJASHREE NAYAK
FACULTY SIGNATURE