GOVERNMENT POLYTECHNIC, BALANGIR

DEPARTMENT OF CIVIL ENGINEERING

LESSION PLAN

SESSION 2023-24

SUBJECT: RAILWAY & BRIDGE ENGINEERING	BRANCH: CIVIL ENGINEERING
NAME OF THE FACULTY: ABINASH BISWAL	SEMESTER: 5TH

SECTION – A: RAILWAYS

SL NO.	CHAPTER	HOURS	LECTURE NO.	TOPIC TO BE COVERED
1	CHAPTER 01	02		**INTRODUCTION**
			1	Railway terminology, Advantages of railways
			2	Classification of Indian Railways
2	CHAPTER 02	05		**PERMANENT WAY**
			1	Definition and components of a permanent way
			2	Components of a permanent way
			3	Concept of gauge
			4	Different gauges prevalent in India,
			5	Suitability of these gauges under different conditions
3	CHAPTER 03	10		**TRACK MATERIALS**
			1	Rails, Functions and requirement of rails
			2	Types of rail sections, length of rails
			3	Rail joints – types, requirement of an ideal joint
			4	Purpose of welding of rails & its advantages. Creep- definition, cause & prevention
			5	Definition of Sleepers, function & requirements of sleepers
			6	Classification of sleepers
			7	Advantages & disadvantages of different types of sleepers
			8	Functions & requirements of ballast, Materials for ballast
			9	Fixtures for Broad gauge, Connection of rails to rail-fishplate, fish bolts
			10	Connection of rails to sleepers

4	CHAPTER 04	10		**GEOMETRIC FOR BROAD GAUGE**
			1	Typical cross – sections of single broad gauge railway track in cutting and embankment
			2	Typical cross – sections of double broad gauge railway track in cutting and embankment
			3	Permanent land width
			4	Temporary land width
			5	Gradients for drainage
			6	Problems on Gradients for drainage
			7	Super elevation – necessity & limiting valued
			8	Super elevation – necessity & limiting valued
			9	Problems on super elevation
			10	Problems on super elevation
5	CHAPTER 05	04		**POINTS AND CROSSINGS**
			1	Definition points and crossings
			2	Necessity of Points and crossings
			3	Types of points & crossings with tie diagrams
			4	Types of points & crossings with tie diagrams
6	CHAPTER 06	04		**LAYING & MAINTENANCE OF TRACK**
			1	Methods of Laying & maintenance of track
			2	Methods of Laying & maintenance of track
			3	Duties of a permanent way inspector
			4	Duties of a permanent way inspector

SECTION – B: BRIDGES

SL NO.	CHAPTER	HOURS	LECTURE NO.	TOPIC TO BE COVERED
1	CHAPTER 01	02		**INTRODUCTION TO BRIDGES**
			1	Definitions, Components of a bridge
			2	Classification of bridges, Requirements of an ideal bridge
2	CHAPTER 02	05		**BRIDGE SITE INVESTIGATION, HYDROLOGY & PLANNING**
			1	Selection of bridge site, Alignment,
			2	Selection of bridge site, Alignment,
			3	Determination of Flood Discharge
			4	Waterway & economic span
			5	Afflux, clearance & free board
3	CHAPTER 03	08		**BRIDGE FOUNDATION**
			1	Scour depth minimum depth of foundation
			2	Scour depth minimum depth of foundation
			3	Scour depth minimum depth of foundation
			4	Types of bridge foundations – spread foundation
			5	Types of bridge foundations – spread foundation
			6	Types of bridge foundations – spread foundation
			7	pile foundation- well foundation – sinking of wells,
			8	caisson foundation, Coffer dams

1	CHAPTER 04	05		**BRIDGE SUBSTRUCTURE AND APPROACHES**
			1	Types of piers
			2	Types of piers
			3	Types of abutments
			4	Types of wing walls
			5	Approaches
5	CHAPTER 05	05		**CULVERT & CAUSE WAYS**
			1	Types of culvers – brief description
			2	Types of culvers – brief description
			3	Types of causeways – brief description
			4	Types of causeways – brief description
			5	Types of causeways – brief description

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