

**ACADEMIC LESSON PLAN FOR WINTER 2022**  
**DEPT. OF CIVIL ENGG. GOVT.POLYTECHNIC BALASORE**  
**NAME OF THE FACULTY – Er. GAYATRI JENA**  
**RAILWAY & BRIDGE ENGINEERING**

Course code- Th-3  
 Theory – 4 P/W  
 Total period – 60 P/Sem  
 Examination – 3hrs  
 Semester - 5<sup>th</sup> Civil

Class test- 20  
 End semester exam-80  
 Total mark- 100  
 Start From- 15<sup>th</sup> Sept.

WEEK	CLASS	TOPIC
1 <sup>st</sup>	1 <sup>st</sup>	Section-A: RAILWAYS  Introduction :Railway terminology
	2 <sup>nd</sup>	Advantages of railways  Classification of Indian Railways
	3 <sup>rd</sup>	Permanent way Definition
	4 <sup>th</sup>	components of a permanent way
2 <sup>nd</sup>	1 <sup>st</sup>	Concept of gauge
	2 <sup>nd</sup>	different gauges prevalent in India
	3 <sup>rd</sup>	suitability of the gauges under different conditions
	4 <sup>th</sup>	Track materials  Rails ,Functions and requirement of rails
3 <sup>rd</sup>	1 <sup>st</sup>	Types of rail sections , length of rails
	2 <sup>nd</sup>	Rail joints – types, requirement of an ideal joint
	3 <sup>rd</sup>	Purpose of welding of rails & its advantages
	4 <sup>th</sup>	Creep definition, cause & prevention

4 <sup>th</sup>	1 <sup>st</sup>	Sleepers - Definition, function & requirements of sleepers  Classification of sleepers ,Advantages & disadvantages of different types of sleepers
	2 <sup>nd</sup>	Ballast -Functions & requirements of ballast , Materials for ballast
	3 <sup>rd</sup>	Fixtures for Broad gauge, Connection of rails to rail-fishplate, fish bolts Connection of rails to sleepers
	4 <sup>th</sup>	Geometric for Broad gauge  Typical cross – sections of single broad gauge railway track in cutting & embankment
5 <sup>th</sup>	1 <sup>st</sup>	Typical cross – sections of double broad gauge railway track in cutting & embankment
	2 <sup>nd</sup>	Permanent & temporary land width
	3 <sup>rd</sup>	Gradients for drainage
	4 <sup>th</sup>	Super elevation – necessity & limiting valued
6 <sup>th</sup>	1 <sup>st</sup>	Numerical Problem
	2 <sup>nd</sup>	Numerical Problem
	3 <sup>rd</sup>	Points and crossings
	4 <sup>th</sup>	Definition, necessity of Points and crossings
7 <sup>th</sup>	1 <sup>st</sup>	Types of points & crossings with tie diagrams
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Previous Year Question Discussion

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**NAME OF THE FACULTY – BIKASH KUMAR PATRA**  
**RAILWAY & BRIDGE ENGINEERING**

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WEEK	CLASS	TOPIC
1 <sup>st</sup>	1 <sup>st</sup>	Laying & maintenance of track
	2 <sup>nd</sup>	Methods of Laying & maintenance of track
	3 <sup>rd</sup>	Duties of a permanent way inspector
	4 <sup>th</sup>	Section – B: BRIDGES Introduction to bridges Definitions, Components of a bridge
2 <sup>nd</sup>	1 <sup>st</sup>	Classification of bridges
	2 <sup>nd</sup>	Requirements of an ideal bridge
	3 <sup>rd</sup>	Bridge site investigation, hydrology & planning
	4 <sup>th</sup>	Selection of bridge site, Alignment
3 <sup>rd</sup>	1 <sup>st</sup>	Determination of Flood Discharge
	2 <sup>nd</sup>	Waterway & economic span
	3 <sup>rd</sup>	Afflux, clearance & free board
	4 <sup>th</sup>	Bridge foundation
4 <sup>th</sup>	1 <sup>st</sup>	Scour depth minimum depth of foundation
	2 <sup>nd</sup>	Types of bridge foundations

	3 <sup>rd</sup>	spread foundation, pile foundation
	4 <sup>th</sup>	Well foundation
5 <sup>th</sup>	1 <sup>st</sup>	sinking of wells, caisson foundation
	2 <sup>nd</sup>	Coffer dams
	3 <sup>rd</sup>	Bridge substructure and approaches
	4 <sup>th</sup>	Types of piers
6 <sup>th</sup>	1 <sup>st</sup>	Types of abutments
	2 <sup>nd</sup>	Types of wing walls
	3 <sup>rd</sup>	Approaches
	4 <sup>th</sup>	Culvert & Cause ways
7 <sup>th</sup>	1 <sup>st</sup>	Types of culvers – brief description
	2 <sup>nd</sup>	Types of causeways – brief description
	3 <sup>rd</sup>	Revision and previous year question discussion
	4 <sup>th</sup>	Revision and previous year question discussion