

## Lesson Plan

Name of Faculty : Virender Singh Dalal  
 Discipline : Civil Engg.  
 Semester : 6th  
 Subject : **RAILWAYS, BRIDGES AND TUNNELS**  
 Lesson Plan Duration : 15 Weeks (From January 2020 to April 2020)

Week	Theory	
	Lecture Day	Topic (including assignment/test )
1st	1st	Introduction to Indian Railways
	2nd	Railway surveys: Factors influencing the railways route
	3rd	Railway surveys: Factors influencing the railways route
	4th	brief description of various types of railway survey
2nd	5th	Classification of permanent way describing its component parts
	6th	Classification of permanent way describing its component parts
	7th	Classification of permanent way describing its component parts
	8th	Rail Gauge: Definition, types, practice in India
3rd	9th	Rail Gauge: Definition, types, practice in India
	10th	Rails – types of rails
	11th	Rails – types of rails
	12th	Rail Fastenings
4th	13th	Rail joints, types of rail joints, fastenings for rails
	14th	fish plates, bearing plates
	15th	Sleepers: Functions of sleepers
	16th	types of sleepers,
5th	17th	types of sleepers,
	18th	requirements of an ideal material for sleepers
	19th	Ballast: Function of ballast,
	20th	requirements of an ideal material for ballast
6th	21st	Assignment I
	22nd	Sessional Exam+ revision
	23rd	Sessional Exam+ revision
	24th	Sessional Exam+ revision
7th	25th	Crossings and signalings: Brief description regarding different types of crossings/signalings (Latest electronics operated signal devices )
	26th	Maintenance of track: Necessity, maintenance of track, inspection of soil, track and fixtures
	27th	maintenance and boxing of ballast maintenance gauges, tools
	28th	Earth work and drainage: Features of rail road, bed level, width of formation,
8th	29th	sideslopes, drains, methods of construction, requirement of drainage system
	30th	Station and yards: purpose and types of stations and yards
	31st	Bridge – its function and component parts, difference between a bridge and a culvert
	32nd	Bridge – its function and component parts, difference between a bridge and a culvert

Week	Theory	
	Lecture Day	Topic (including assignment/test )
9th	33rd	Classification of Bridges
	34th	Classification of Bridges
	35th	Classification of Bridges
	36th	Classification of Bridges
10th	37th	Classification of Bridges
	38th	Revision
	39th	Bridge Foundations: Introduction to open foundation,
	40th	pile foundation, well foundation
11th	41st	Assignment 2
	42nd	2 <sup>nd</sup> Sessional Exam + revision
	43rd	2 <sup>nd</sup> Sessional Exam + revision
	44th	2 <sup>nd</sup> Sessional Exam + revision
12th	45th	Piers-definition, parts; types –solid (masonry and RCC), open
	46th	Abutments and wing walls – definition, types of abutments (straight and tee),
	47th	abutment with wing walls (straight, splayed, return and curved
	48th	Bridge bearings: Purpose of bearings,
13th	49th	types of bearings –fixed plate, rocker and roller.Elastomeric bearings.
	50th	Inspection of bridges
	51st	Routine maintenance
	52nd	Revision
14th	53rd	Definition and necessity of tunnels
	54th	Typical section of tunnels for a national highway and single and double broad gauge railway track
	55th	Ventilation –necessity and methods of ventilation,
	56th	Ventilation –necessity and methods of ventilation,
15th	57th	Drainage method of draining water in tunnels
	58th	Lighting of tunnels
	59th	Assignment 3
	60th	Revision