Lesson Plan

Name of Faculty : Pardeep Kumar
Discipline : Civil Engg.
Semester : 5th
Subject : **RAILWAYS, BRIDGES AND TUNNELS**
Lesson Plan Duration : 15 Weeks (From Sept.2020 to Dec.2020)

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1st	**1st**	Introduction to Indian Railways		
	2nd	Introduction to Indian Railways		
	3rd	Railway surveys: Factors influencing the railways route		
	4th	Railway surveys: Factors influencing the railways route		
	5th	brief description of various types of railway survey		
2nd	**6th**	brief description of various types of railway survey		
	7th	Classification of permanent way describing its component parts		
	8th	Classification of permanent way describing its component parts		
	9th	Classification of permanent way describing its component parts		
	10th	Rail Gauge: Definition, types, practice in India		
3rd	**11th**	Rail Gauge: Definition, types, practice in India		
	12th	Rail Gauge: Definition, types, practice in India		
	13th	Rails – types of rails		
	14th	Rails – types of rails		
	15th	Rail Fastenings		
4th	**16th**	Rail joints		
	17th	types of rail joints, fastenings for rails		
	18th	fish plates, bearing plates		
	19th	Sleepers: Functions of sleepers		
	20th	types of sleepers,		
5th	**21th**	requirements of an ideal material for sleepers		
	22th	requirements of an ideal material for sleepers		
	23th	Ballast: Function of ballast,		
	24th	requirements of an ideal material for ballast		
	25th	requirements of an ideal material for ballast		
6th	**26th**	Sessional Exam + revision		
	27th	Sessional Exam+ revision		
	28th	Sessional Exam + revision		
	29th	Sessional Exam+ revision		
	30th	Sessional Exam+ revision		
7th	**31th**	Crossings and signaling: Brief description regarding different types of crossings/signaling (Latest electronics operated signal devices)		
	32th	Crossings and signaling: Brief description regarding different types of crossings / signaling (Latest electronics operated signal devices)		
	33th	Maintenance of track: Necessity, maintenance of track, inspection of soil, track and fixtures		
	34th	maintenance and boxing of ballast maintenance gauges, tools		
	35th	Earth work an drainage: Features of rail road, bed level, slopes, drains, methods of construction, requirement of drainage system		

8th	**36th**	width of formation, side		
	37th	Bridge – its function and component parts, difference between a bridge and a culvert		
	38th	Bridge – its function and component parts, difference between a bridge and a culvert		
	39th	Bridge – its function and component parts, difference between a bridge and a culvert		
	40th	According to life-permanent and temporary		
9th	**41th**	According to deck level – Deck, through and semi-through		
	42th	According to material –timber, masonry, steel, RCC, pre-stressed		
	43th	Grade Seperators-Railway Overbridges (ROB), Railway underbridge (RUB)		
	44th	- Beam type –RCC, T-Beam, steel girder bridges, plate girder and box girder, balanced cantilever, Trussed bridges.		
	45th	- Arch type – open spandrel and filled spandrel barrel and rib type		
10th	**46th**	- Suspension type – unstiffened and stiffened and table (its description with sketches)		
	47th	- According to the position of highest flood level submersible and non submersible		
	48th	IRC classification		
	49th	Bridge Foundations: Introduction to open foundation,		
	50th	pile foundation, well foundation		
11th	**51st**	2nd Sessional Exam + revision		
	52th	2nd Sessional Exam + revision		
	53th	2nd Sessional Exam + revision		
	54th	2nd Sessional Exam + revision		
	55th	2nd Sessional Exam + revision		
12th	**56th**	Piers-definition, parts; types –solid (masonry and RCC), open		
	57th	Abutments and wing walls – definition, types of abutments (straight and tee),)		
	58th	abutment with wing walls (straight, splayed, return and curved		
	59th	Launching of Equipment Bridges		
	60th	Purpose of bearings; types of bearings –		
13th	**61th**	fixed plate, rocker and roller.		
	62th	Inspection of Steel and Equipment bridges		
	63th	Routine maintenance		
	64th	Routine maintenance		
	65th	Definition and necessity of tunnels		
14th	**66th**	Definition and necessity of tunnels		
	67th	Typical section of tunnels for a national highway and		
	68th	single and double broad gauge railway track		
	69th	Ventilation –necessity and methods of ventilation, by blowing, exhaust and		
	70th	combination of blowing and exhaust		
15th	**71th**	combination of blowing and exhaust		
	72th	Drainage method of draining water in tunnels		
	73th	Drainage method of draining water in tunnels		
	74th	Lighting of tunnels		
	75th	Lighting of tunnels		