CIVIL DEPARTMENT

SESSION: Jan - July 2025.

SUBJECT NAME : TRANSPORTATION ENIGNEERING

SUBJECT CODE: 2020475(020)

LECTURE NO.	UNIT NO.	SUB TOPIC TO BE COVERED UNDER THIS UNIT	PLANNED DATE	EXECUTION DATE	REMARK
1	1	UNIT-1Highway Alignment ,Geometrics And Traffic Engineering1.1 Highway Alignment and Surveys-Classsification of roads as per IRC, Highway alignment, requirements of highway alignment, factors controlling alignment, map study, reconnaissance survey, preliminary survey. final location and detailed, surveys, drawings and reports.	3/2/25 4/2/25 4/2/25	4/2/25 5/2/25 6/2/25	
2		1.2 Highway Geometrics 1.2.1 Cross Section Elements - pavements characteristics , camber, width of pavement, traffic	5/2/25	6/2/25	
3		1.2.2 Sight Distance- Sight distance, total reaction time, Stopping Distance ,	10/2/25	8/2/25	
4		Stopping Sight Distance, Overtaking Sight Distance, over taking zones, sight distance at intersections.	11/2/25	10/2/25	
5		1.2.3 Horizontal Alignment - Horizontal curves, super elevation	11/2/25	10/2/25	
6		,necessity of superelevation, radius and degree of curve, extra widening of pavements at horizontal curves,horizontal transition curves, object of providing transition curves.	12/2/25	10/2/25	
7		1.2.4 Vertical Alignment – gradient, classification of gradients, compensation in gradient at curves, vertical curves.	17/2/25	17/2/25	
8		1.3.Traffic Engineering- 1.3.1 Traffic studies- traffic volume studies, origin and destination study, traffic capacity study, passenger car unit (PCU) and capacity of roads as per IRC.	18/2/25 18/2/25	18/2/25 18/2/25	
9		1.3.2 Traffic Operation - Traffic regulations, traffic control devices – traffic signs and signals, road marking.	19/2/25	19/2/25	
10		1.3.3 Channelization- Traffic islands, unchannelized and channelized intersections,Rotary intersection, advantages and limitations of traffic rotary.	24/2/25	20/2/25	
11		Unit 2.02.1Pavement Materials and Highway Construction 2.1 Pavement materials - 2.1.1 Significance of subgrade soil, California Bearing Ratio (CBR).	25/2/25 25/2/25	24/2/25 25/2/25	
12		2.1.2 Stone Aggregates-Desirable properties of road aggregate, Tests for road aggregate- crushing test, Abrasion test, impact test, soundness test, shape test, specific gravity and water absorption test.	3/3/25 4/3/25	25/2/25 25/2/25	
13		2.1.3 Bituminous Materials-Bitumen, requirements of bitumen, tests on bitumen – penetration test, ductility test, flash and fire point test,	4/3/25 5/3/25	27/2/25 3/3/25	

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14		softening point test, viscosity test, cutback bitumen,bituminous emulsion, tar, tests on tar.	10/3/25	4/3/25	2 hrs.
15	2	2.2 Highway Construction – 2.2.1 Earthwork- Excavation, excavation equipments, embankment, construction of embankment, compacting equipments.2.2.2 Construction of earth roads, Gravel roads,	11/3/25 11/3/25	5/3/25 8/3/25	
16		2.2.3 Construction of Bituminous Pavements –Types of Bituminous construction, construction procedure with equipments for- surface dressing, penetration macadam, bituminous macadam, premixed bituminous carpet,	12/3/25. 17/3/25	10/3/25 11/3/25	2 hrs
17		2.2.4 Construction of Cement Concrete Pavements –Materials, plants and equipments, construction steps,	18/3/25	12/3/25	
18		joints in cement concrete pavements – expansion joint, contraction joint, construction joint, longitudinal joints.	18/3/25	17/3/25	
19		2.3 Drainage of Roads2.3.1 Importance of Road drainage.2.3.2 Requirements of road drainage system	19/3/25	18/3/25	
20		2.3.2 Surface drainage system, cross drainage and subsurface drainage2.3.4 Drainage of slopes and erosion control.	24/3/25	18/3/25	
21	3	UNIT-3 (a)Railway Track Geometrics 3.1.1Permanent way, Requirements of ideal permanent way, gauges, selection of gauges, uniformity of gauges, railway track cross sections, coning of wheels.	25/3/25 25/3/25	19/3/25 20/3/25	
22		3.1.2 Gradient, types of gradients, grade compensation. 3.1.3 Degree of curve, superelevation or Cant, Object of providing superelevation, determination of superelevation , cant deficiency, limits of superelevation and Cant deficiency, transition curves and its necessity, curve indicators, purpose	26/3/25 1/4/25 1/4/25	24/3/25 24/3/25 26/3/25	
23		,necessity of providing check rails on curves, Extra widening on curves, Extra Clearance on curves	2/4/25	08/31/25	
24		(b) Railway track Material 3.2.1Ballast- functions, requirements of good ballast, types of ballast, ballast size and gradation, ballast section and profile, methods of packing ballasts	7/4/25 8/4/25	2/4/25 5/4/25	
25		3.2.2 Sleepers-Functions, types of sleeper, requirements of sleeper, prestressed concrete sleeper, merits, demerits,limitations and service life of prestressed concrete sleepers,	8/4/25 9/4/25	5/4/25 7/4/25	
26		3.2.3 Rails –Function of rail, requirement of rail section, Types of rails sections, Standard rail section, Length of rails, Wear of rails,	15/4/25	8/4/25	

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27		Cause and methods to reduce wear of rails, rail joints, requirements of an ideal joint, types of rail joints, Welding of rail joints, Length of welded rails, Creep of rails, its indication, effect, measurement, preventions.	15/4/25 16/4/25	8/4/25 9/4/25	2 hrs.
28		3.2.4 Rail fixtures and fastening-Purpose, types of fastening, Fish plates, requirements of fish plates, section of fish plates, slide chair,	21/4/25	9/4/25	
29		bearing plates, keys, elastic fastenings, functions of elastic fastenings, elastic railpad, elastic rail clip.	22/4/25	12/4/25	
30	4	UNIT 4- Points and Crossings and Track Junctions; Layout of Stations and Yards and Signaling and Control System 4.1 Points and Crossings and Track Junctions 4.1.1Necessity of points and crossings,	22/4/25	12/4/25	
31		turnout, important terms used in pints and crossings, Points or Switches types of switches; Crossings, types of crossings.	23/4/25	15/4/25 15/4/25	
32		4.1.2 Turnouts, Symmetrical split, Three throw switch, double turnout, Diamond crossing, Cross over, Single and Double slip, Scissors cross over, Gathering lines, Triangle	28/4/25 29/4/25	16/4/25 17/4/25	
33		4.2 Stations and Yards – 4.2.1 Requirements of a railway station, Classification, and description of railway stations, Passenger platforms- requirements, length and width, clearance	30/4/25	21/4/25	2 hrs
34		height ;Goods platform- requirements, Station Yards- Passenger Bogie Yards, Goods Yards, Marshalling Yards, Locomotive Yards.	5/5/25	22/4/25	2 hrs.
35		4.2.2 Necessity of equipments in station yards, Cranes, Weigh Bridges, Loading Gauges, End Loading Ramps, Engine Sheds, Triangle, Turn Table, Traverser,	6/5/25	23/4/25	
36		Scotch Block, Derailing switch, Fouling Marks, Buffer Stops, Sand Hump	6/5/25	28/4/25	
37		4.3Signaling , Control Systems and Interlocking – Objects of signaling, classification of signals,	7/5/25	28/4/25	
38		shunting signal, colour light signals, reception and departure signals, control of train movements,	12/5/25	29/4/25	
39		Absolute Block System, Automatic Block System, Necessity and functions of interlocking.	13/5/25	29/4/25	
40		UNIT 5-(a) Bridge Classification ,Site Investigation and Bridge Substructure 5.1.1 Classification- classification of bridge according to span, material, life, alignment, HFL, loading, level of bridge floor.	13/5/25	1/5/25	

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41		5.1.2 Site Selection & Investigation – factors affecting selection of site for bridge, bridge alignment-factors controlling alignment, bridge site investigation.	19/5/25	1/5/25	
42		5.1.3Waterway-Waterway, economic span, afflux, scouring, free board,	20/5/25	5/5/25	
43	5	Standard values of clearances and freeboard as per IRC.	20/5/25	6/5/25.	
44		5.1.4Bridge sub structure- components of bridge –pier, abutment,	21/5/25	7/5/25.	
45		wing wall, foundation, bearings		13/5/25	
46		5.2.1Permanent Bridges-Types of RCC bridges- slab, slab and girder, prestressed concrete bridges,	26/5/25	13/5/25.	
47		advantages of prestressed concrete bridges,		15/5/25	
48		5.2.2Construction-steps involved bridge construction, erection of steel girder and truss bridges, erection of RCC	26/5/25		

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