ACADEMIC SESSION : SUMMER-2024

Discipline : CIVIL ENGG	Semester :4TH	Name of the Teaching Faculty : DEBASIS LENKA
Subject : HIGHWAY ENGINEERING	No. of days / week class allotted: 5	Semester From date: 16/01/2024 to 26/04/2024 Nos. of Weeks per semester : 15
Week	**Class Day**	**Theory/ Practical Topics**
1ST	1st	Introduction about Highway Engineering
	2nd	Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute
	3rd	Functions of Indian Roads Congress
	4th	IRC classification of road
	5th	Organisation of state highway department
2ND	1st	Road Geometrics
	2nd	Glossary of terms used in geometric and their importance
	3rd	right of way, formation width, road margin
	4th	road shoulder, carriage way, side slopes, kerbs
	5th	horizontal and vertical curves
3RD	1st	formation level, camber and gradient
	2nd	Design and average running speed
	3rd	, stopping and passing sight distance
	4th	Necessity of curves
	5th	horizontal and vertical curves
4TH	1st	Necessity of curves
	2nd	horizontal and vertical curves
	3rd	transition curves
	4th	transition curves
	5th	super elevation
5TH	1st	super elevation
	2nd	Methods o f providing super – elevation
	3rd	Methods o f providing super – elevation
	4th	Related problems
	5th	Related problems
6TH	1st	Difference types of road materials

	2nd	soil, aggregates
	3rd	binders
	4th	Function of soil as highway Subgrade
	5th	California Bearing Ratio
7TH	1st	methods of finding CBR valued in the laboratory and at site and their significance
	2nd	Testing aggregates: Abrasion test
	3rd	impact test, crushing strength test
	4th	water absorption test & soundness test
	5th	Road Pavement: Flexible and rigid pavement, their merits and demerits,
8TH	1st	typical cross-sections, functions of various components
	2nd	Sub-grade preparation: Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment,
	3rd	construction of embankment, compaction, stabilization, preparation of subgrade, methods of checking camber, gradient and alignment as per recommendations of IRC
	4th	equipment used for subgrade preparation
	5th	Necessity of sub base, stabilized sub base, purpose of stabilization (no designs) Types of stabilization
9TH	1st	Mechanical stabilization Lime stabilization•
	2nd	Cement stabilization
	3rd	Fly ash stabilization
	4th	Base Course: Preparation of base course, Brick soling, stone soling and metalling, Water Bound Macadam and wet-mix Macadam
	5th	Bituminous constructions: Different types
10TH	1st	Surface dressing (i) Premix carpet and (ii) Semi dense carpet
	2nd	Bituminous concrete Grouting, Rigid Pavements: Concept of concrete roads as per IRC specifications
	3rd	Hill Roads
	4th	Introduction: Typical cross-sections showing all details of a typical hill road in cut
	5th	partly in cutting and partly in filling
11TH	1st	partly in cutting and partly in filling
	2nd	Breast Walls, Retaining walls
	3rd	different types of bends

	4th	different types of bends
	5th	Necessity of road drainage work
12th	1st	cross drainage works
	2nd	Surface and sub-surface drains and storm water drains
	3rd	Location, spacing and typical details of side drains
	4th	side ditches for surface drainage,
	5th	intercepting drains, pipe drains in hill roads
13th	1st	details of drains in cutting embankment, typical cross sections
	2nd	Introduction: Typical cross-sections showing all details of a typical hill road in cut
	3rd	Common types of road failures – their causes and remedies
	4th	Common types of road failures – their causes and remedies
	5th	Maintenance of bituminous road such as patch work and resurfacing
14th	1st	Maintenance of concrete roads – filling cracks,
	2nd	repairing joints, maintenance of shoulders (berm)
	3rd	maintenance of traffic control devices
	4th	Basic concept of traffic study, Traffic safety and traffic control signal
	5th	Preliminary ideas of the following plant and equipment; Hot mixing plant
15th	1st	Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers,
	2nd	shovels, graders, roller dragline
	3rd	Asphalt mixer and tar boilers
	4th	Road pavers
	5th	Modern construction equipments for roads

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16.01.24

Approved By:
16/1/24
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