

PROGRAMME : CIVIL ENGINEERING COURSE NAME : HIGHWAY ENGINEERING COURSE CODE : TH-4 SEMESTER : 4TH PERIODS/WEEK: 5 TOTAL PERIODS: 75	NAME OF THE FACULTY: UTKALIKA PRADHAN SESSION : 2020-2021 DATE : 05-04-2021 to 30-06-2021
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WEEK	CLASS	TOPICS
1	1	Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.
	2	Functions of Indian Roads Congress , Organisation of state highway department
	3	IRC classification of roads
	4	Road geometrics: Cross-sectional elements like carriage way, road margin, road shoulder, formation width
	5	Cross-sectional elements: right of way, camber, side slopes, kerbs, formation level, gradient etc
2	1	Different cross sections road
	2	Design and average running speed
	3	Stopping Sight Distance(SSD): Definition, Analysis of SSD
	4	Stopping Sight Distance: Numerical problems
	5	Overtaking Sight Distance(OSD): Definition, Analysis of OSD
3	1	Overtaking Sight Distance: Derivations
	2	Overtaking Sight Distance: Numerical problems
	3	Curves: Necessity of curves, Types of curves
	4	Horizontal Curves: Definitions, Examples
	5	Super elevation: Definition, Analysis of super elevation
4	1	Numerical problems on analysis of super elevation
	2	Design of super elevation
	3	Numerical problems on super elevation design
	4	Methods of providing super elevation
	5	Vertical curves: Definition, types; Transition curves: Definition, types
5	1	Difference types of road materials in use: soil, aggregates, and binders
	2	Function of soil as highway Subgrade ,properties of soil
	3	Aggregates: types, properties
	4	Binders: types, properties
	5	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
6	1	Testing aggregates: Abrasion test, Impact test,
	2	Crushing strength test, Water absorption test & Soundness test
	3	Road Pavement: Flexible and rigid pavement, their merits and demerits,
	4	Typical cross-sections of pavements
	5	Functions of various components of flexible & rigid pavements
7	1	Flexible pavement: Subgrade preparation,
	2	Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization
	3	Types of stabilization: Mechanical stabilization ,Lime stabilization

	4	Cement stabilization ,Fly ash stabilization
	5	Base Course: Preparation of base course, Brick soling, stone soling and metalling, Water Bound Macadam and wet-mix Macadam,
8	1	Bituminous constructions: Different types
	2	Surfacing: Surface dressing [(i) Premix carpet and (ii) Semi dense carpet] Bituminous concrete, Grouting
	3	Rigid Pavements: Concept of concrete roads as per IRC specifications
	4	Hill Roads: Introduction, Importance
	5	Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling
9	1	Breast Walls, Retaining walls
	2	Different types of bends
	3	Road Drainage: Necessity of road drainage work
	4	Cross drainage works
	5	Surface drainage: Definition, methods
10	1	Location, spacing and typical details of side drains, side ditches for surface drainage
	2	Sub-surface drainage: Definition, different methods
	3	Details of drains in cutting embankment, typical cross section
	4	Road Maintenance: Necessity, Different types of road failures
	5	Causes & remedies of failures
11	1	Maintenance of bituminous road such as patch work and resurfacing
	2	Maintenance of concrete roads – filling cracks, repairing joints
	3	Maintenance of shoulders (berm), Maintenance of traffic control devices
	4	Basic concept of traffic study
	5	Traffic safety: traffic control devices
12	1	Traffic signs: Definition & types with diagram
	2	Traffic signals: Definition & types
	3	Pavement markings: types
	4	Construction equipments: Preliminary ideas, Different types of equipments
	5	Hot mixing plant,: preliminary ideas
13	1	Asphalt mixer and tar boilers
	2	Preliminary ideas on Tipper, tractors (wheel and crawler) scraper
	3	Preliminary ideas on bulldozer, dumpers, shovels, graders, roller dragline
	4	Road pavers: types & uses
	5	Modern construction equipments for roads.
14	1	Revision of Chapter-1:Introduction
	2	Revision of Chapter-2: Cross-sectional elements of road
	3	Revision of Chapter-2: Stopping Sight Distance
	4	Revision of Chapter-2: Overtaking Sight Distance
	5	Revision of Chapter-2: Curves & Super elevation
15	1	Revision of Chapter-3:Different road materials
	2	Revision of Chapter-3: CBR test, Different tests of aggregates
	3	Revision of Chapter-4: Flexible & Rigid Pavements & their components
	4	Revision of Chapter-4: Preparation of each layer of pavement, Stabilization
	5	Revision of Chapter-5:Hill Roads
16	1	Revision of Chapter-6: Road Drainage
	2	Revision of Chapter-7: Road Maintenance
	3	Revision of Chapter-7: Traffic safety & traffic control devices
	4	Revision of Chapter-8: Construction Equipments

	5	Discussion of previous year questions
17	1	Discussion of previous year questions
	2	Discussion of most probable questions(Short type)
	3	Discussion of most probable questions(Short type)
	4	Discussion of most probable questions(Long type)
	5	Discussion of most probable questions(Long type)