BHADRAK ENGINEERING SCHOOL & TECHNOLOGY (BEST), ASURALI, BHADRAK

HIGHWAY ENGINEERING (Th- 04)

TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	Periods as per syllabus	Periods actually needed	Expected mark
1.	Introduction	05	05	05
2.	Road Geometric	20	15	25
3.	Road Materials	09	10	15
4.	Road Pavements	13	10	15
5.	Hill Roads	07	04	10
6.	Road Drainage	07	05	10
7.	Road Maintenance	07	06	10
8	Construction equipments	07	07	10
	TOTAL	75	62	100

Sign of Lect. **Sign of HOD.** **Sign of AIC** **Sign of Vice Principal**

LESSON PLAN

Discipline: Civil Engineering	**Semester:** Fourth (4th)	**Name Of The Faculty:** Er. Kirti Bhusan Sethi
Subject: Highway Engineering	**No of days/ week class allotted:** Six(6)	**Semester from date:** 14. 02.2023 **to Date:** 23. 05.2023 **No of weeks: 15**
WEEK	**CLASS DAY**	**THEORY TOPICS**
1st	1st	**Chapter No-01(Introduction)** Importance of Highway transportation: importance organizations like Indian roads congress.
	2nd	Ministry of Surface Transport, Central Road Research Institute.
	3rd	Functions of Indian Roads Congress
	4th	IRC classification of roads
	5th	Organization of state highway department
	6th	***Possible Question Answer Discussion***
2nd	1st	**Chapter No-02 (Road Geometric)** Glossary of terms used in geometric and their importance.
	2nd	Right of way formation width, road margin
	3rd	Road shoulder, carriage way
	4th	Side slopes, kerbs, formation level,
	5th	Camber and gradient
	6th	Problem for practice
3rd	1st	Problem for practice
	2nd	Design and average running speed
	3rd	Stopping and passing sight distance
	4th	Problem for practice
	5th	Necessity of curves
	6th	horizontal and vertical curves including transition curves and super elevation
4th	1st	***Monthly Test- 1***
	2nd	Problem for practice
	3rd	Problem for practice
	4th	Methods of providing super – elevation
	5th	***Possible Question Answer Discussion***
	6th	**Chapter No-03 (Road Materials)** Difference types of road materials in use: soil,

5th	1st	Aggregates, and binders
	2nd	Function of soil as highway Subgrade
	3rd	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
	4th	Cont.
	5th	Testing aggregates: Abrasion test,
	6th	Impact test, crushing strength test
6th	1st	Water absorption test
	2nd	Soundness test
	3rd	Cont.
	4th	***Possible Question Answer Discussion***
	5th	**Chapter No- 04 (Road Pavements)** Road Pavement: Flexible and rigid pavement, Their merits and demerits, typical cross-sections,
	6th	Functions of various components- Flexible pavements:
7th	1st	***Monthly Test- 2***
	2nd	Sub-grade preparation: Setting out alignment of road
	3rd	Setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment,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	Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization (no designs)
	6th	Types of stabilization :Mechanical stabilization , Lime stabilizationCement stabilization , Fly ash stabilization
8th	1st	Base Course:Preparation of base course, Brick soling, stone soling and metalling,
	2nd	Water Bound Macadam and wet-mix Macadam, Bituminous constructions: Different types
	3rd	Surfacing: Surface dressing (i) Premix carpet and (ii) Semi dense carpet
	4th	Bituminous concrete ,Grouting
	5th	Rigid Pavements: Concept of concrete roads as per IRC specifications
	6th	***Possible Question Answer Discussion***
9th	1st	**Chapter No-05 (Hill Roads)** Introduction: Typical cross-sections showing all details of a typical hill road in cut,
	2nd	partly in cutting and partly in filling
	3rd	Breast Walls,
	4th	Retaining walls,
	5th	Different types of bends
	6th	***Possible Question Answer Discussion***

10th	1st	***Monthly Test- 3***
	2nd	**Chapter No-06 (Road Drainage)** Necessity of road drainage work,
	3rd	cross drainage works
	4th	Surface and sub-surface drains and storm water drains
	5th	Location, spacing and typical details of side drains, side ditches for surface drainage,
	6th	Intercepting drains, pipe drains in hill roads, details of drains in cutting embankment, typical cross sections
11th	1st	***Possible Question Answer Discussion***
	2nd	**Chapter No-07 (Road Maintenance**) Common types of road failures – their causes and remedies
	3rd	Maintenance of bituminous road such as patch work and resurfacing
	4th	Maintenance of concrete roads – filling cracks,
	5th	repairing joints, maintenance of shoulders (berm),
	6th	Maintenance of traffic control devices
12th	1st	Basic concept of traffic study, Traffic safety and traffic control signal
	2nd	***Possible Question Answer Discussion***
	3rd	**Chapter No-08 (Construction equipments)** Preliminary ideas of the following plant and equipment: Hot mixing plant ,
	4th	Tipper, tractors (wheel and crawler) scraper, bulldozer,
	5th	dumpers, shovels, graders, roller dragline
	6th	Asphalt mixer and tar boilers
13th	1st	***Monthly Test- 4***
	2nd	Road pavers
	3rd	Cont.
	4th	Modern construction equipment for roads
	5th	Cont.
	6th	***Possible Question Answer Discussion***
14th	1st	Review Class for Chapter No.- 01
	2nd	Review Class for Chapter No.- 01
	3rd	Review Class for Chapter No.- 02
	4th	Review Class for Chapter No.- 02
	5th	Review Class for Chapter No.- 03
	6th	Review Class for Chapter No.- 03
15th	1st	Review Class for Chapter No.- 04
	2nd	Review Class for Chapter No.- 04
	3rd	Review Class for Chapter No.- 05
	4th	Review Class for Chapter No.- 06
	5th	Previous Year (S- 22) Question Answer Discussion
	6th	Previous Year (S- 21) Question Answer Discussion

Chapters covered up to IA: ***1, 2 ,3 & 4***