

| Department of Civil Engineering | | | | | | |
|---------------------------------|---------|----------------------------|------------|------------------------------------|--|---------|
| 4th Semester | | | | | | |
| Theory No: | | 4 | | Faculty Name- Soumyasagar Tripathy | | |
| Subject: | | Highway Engineering (TH-4) | | | | |
| Sl No | Week No | Period | | Numbers of Classes to be Scheduled | Topics to be covered | Remarks |
| | | From | To | | | |
| 1 | W 1 | 07.02.2022 | 12.02.2022 | 5 | 1.1 Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.1.2 Functions of Indian Roads Congress 1.3 IRC classification of roads 1.4 Organization of state highway department 2.1 Glossary of terms used in geometric and their importance, right of way, formation width, road margin, road shoulder, carriage way, side slopes, kerbs, formation level, camber and gradient | |
| 2 | W 2 | 14.02.2022 | 19.02.2022 | 5 | 2.2 Design and average running speed, stopping and passing sight distance | |
| 3 | W 3 | 21.02.2022 | 26.02.2022 | 5 | 2.3 Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods of providing super – elevation 3.1 Difference types of road materials in use : sol, aggregates, binders 3.2 Function of soil as highway sub grade 3.3 California Bearing Ratio : methods of finding CBR valued in the laboratory and at site and their significance | |

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| 4 | W 4 | 28.02.2022 | 09.03.2022 | 5 | 3.4 Testing aggregates : Abrasion test, impact test, crushing strength test, water absorption test & soundness test 3.5 Aggregates : Availability of road aggregates in India, Requirements of road aggregates as per IS specifications 3.6 Binders : common binders : cement, bitumen and Tar, properties as per IS specifications, penetration and viscosity test of bitumen, procedure and a significance of cut back bitumen and bituminous emulsion and their uses | 1 st and 5 th March are govt. holiday |
| 5 | W 5 | 10.03.2022 | 17.03.2022 | 5 | Road Pavement : Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components Sub-grade preparation : Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment, construction of embankment, compaction, stabilization, preparation of sub grade, methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation 4.3 Flexible pavements : necessity of sub base, stabilized sub base: purpose of stabilization(no designs) Types of stabilization "a Mechanical stabilization b. Lime stabilization c. Cement stabilization d. Fly ash stabilization | |
| 6 | W 6 | 21.03.2022 | 26.03.2022 | 5 | 4.4 Base Course :Preparation of base course a. Brick soling b. Stone soling c. Metalling : Water Bound Macadam and Bituminous Macadam 4.5 Surfacing : Types of surfacing a. Surface dressing b. (i) Premix carpet (ii) Semi dense carpet c. Bituminous concrete d. Grouting Methods of constructions as per Ministry of Surface Transport, specifications and quality control 4.6 Rigid Pavements :Construction of concrete roads as per IRC specifications : From laying, mixing and placing the concrete, compacting and finishing, curing, joints in concrete pavement, equipment used. | |
| 7 | W 7 | 28.03.2022 | 02.04.2022 | 5 | 5.1 Introduction :Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling 5.2 Breast Walls, Retaining walls, | 1 st April is a Govt. holiday |

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| 8 | W 8 | 04.04.2022 | 09.04.2022 | 5 | different types of bends 6.1 Necessity of road drainage work, cross drainage works 6.2 Surface and sub-surface drains and storm water drains. Location, spacing and typical details of side drains, side ditches for surface drainage, intercepting drains | |
| 9 | W 9 | 11.04.2022 | 20.04.2022 | 5 | pipe drains in hill roads, details of drains in cutting embankment, typical cross sections 7.1 Common types of road failures – their causes and remedies 7.2 Maintenance of bituminous road such as patch work and resurfacing | 14 th and 15 th is holiday |
| 10 | W 10 | 21.04.2022 | 28.04.2022 | 5 | 7.3 Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices. Output and use of the following plant and equipment :8.1 Hot mixing plant8.2 Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers, shovels, graders, roller dragline8.3 Asphalt mixer and tar boilers | |
| 11 | W 11 | 29.04.2022 | 07.05.2022 | 5 | 8.4 Road pavers 8.5 Modern construction equipments for roads. 9.1 Basic concept of traffic study 9.2 Traffic safety and traffic control signal 9.3 Road junctions | 1 st and 3 rd is holiday |
| 12 | W 12 | 09.05.2022 | 14.05.2022 | 5 | 9.4 Traffic island and refuge island; advantages and disadvantages 10.1 Meaning of landscaping and arboriculture 10.2 Aesthetics in road side development | |
| Total | 12 | | | 75 | | |

