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| TH4 4TH SEM HIGHWAY ENGINEERING |
| Period | Unit | Topic |
| 1 | Introduction | Importance of highway transportatio: importnce organizations like Indian Road Congress, Ministry of Surface Transport, Central Road Research Institute. |
| 2 | Functions of Indian Roads Congress and other organizations. |
| 3 | Classification of Roads according to Indian Road of Congress |
| 4 | Organisation of state highway department |
| 5 | Revision of class and question answer session |
| 6 | Road Geometrics  | Introduction to road geomtrics and their importance and factors affecting geometric design |
| 7 | Various termilogy of road geometrics and their importance. |
| 8 | Grossary of terms used in geometric like suface properties of pavment, right of way, formation width, road shoulder. |
| 9 | Carriage way, Side slopes, kerbs, formation level, Camber and Gradient  |
| 10 | Cross section of road, Design speed and average running speed. |
| 11 | Type of sight distance, stopping sight distance and its analysis |
| 12 | Numerical on stopping sight distance |
| 13 | Passing or Overtaking sight distance and its analysis |
| 14 | Numerical on passing or overtaking sight distance |
| 15 | Necessity of curves, horizontal and vertical curves including transition curve |
| 16 | Superelevation and its analysis |
| 17 | Design of superelevation and numerical |
| 18 | Numericals of superelevation |
| 19 | Methods of providing superelevation |
| 20 | Numericals on design and running speed |
| 21 | Analysis on horizontal curves |
| 22 | Analysis on vertical curves |
| 23 | Revision of class and question answer session |
| 24 | Problem discussion on SSD and OSD |
| 25 | Problem discussion on Super elevation and design speed |
| 26 | Road Materials | Different types of materials in use: soil, aggregate and binders |
| 27 | Functions of soil as highway subgrade |
| 28 | California Bearing Ratio(CBR) : methods of finding CBR valued in the laboratory and at site |
| 29 | Concept of stress Strain diagram of concrete and steel |
| 30 | Singificance and analysis graphs of CBR |
| 31 | Testing aggregates: Abrasion test, impact test |
| 32 | Testing aggregates: crushing strenght test, water absorption test and soundness |
| 33 | Road pavements | Road pavement: Flexible and rigid pavement, their merits and demerits |
| 34 | Typical cross-sections, functions of various components |
| 35 | Subgrade preparation: setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, compaction. |
| 36 | Subgrade preparation: Methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation |
| 37 | Sub base course preparation: Necessity of sub base, purpose of stabilization. |
| 38 | Types of stabilization: Mechanical Stabilization, Lime stabilization, cement stabilization and fly ash stabilization |
| 39 | Base Course: Preparation of base course, brick soling, stone soling and metalling, Water Bound Macadam and Wet-mix Macadam |
| 40 | Bituminous constructions: Different types Surfacing: Surfacr dressing; premix carpet and semidense carpet |
| 41 | Bitumicous concrete, Grouting |
| 42 | Rigid pavements: Concept of concrete roads as per IRC specifications |
| 43 | Rigid pavements: Different Joints on rigid pavements |
| 44 | Rigid pavements: Different Joints on rigid pavements |
| 45 | Revision of class and question answer session |
| 46 | Hill Roads | Introduction to hill road |
| 47 | Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling |
| 48 | Breast wall and Retaining wall |
| 49 | Differentiate between Breast wall and Retaining wall |
| 50 | Different types of bend |
| 51 | Differentiate between types of bend |
| 52 | Revision of class and question answer session |
| 53 | Road Drainage | Necessity of road drainage work, cross drainage works |
| 54 | Surface Drainage system |
| 55 | Sub-surface drainage system |
| 56 | Location, spacing and typical details of side drains |
| 57 | Side ditches for surface drainage, intersecting drains  |
| 58 | Pipe drains in in hill roads |
| 59 | Details of drains in cutting embankment, typical cross section and question answer session |
| 60 | Road Maintenance | Common types of road failures-their causes |
| 61 | Common types of road failures-their remedies |
| 62 | Maintenance of bituminous road such as patch work and resurfacing |
| 63 | Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm) |
| 64 | Maintenance of traffic control devices |
| 65 | Basic concept of traffic study, Traffic safety and traffic control signal |
| 66 | Basic concept of traffic study, Traffic safety and traffic control signal |
| 67 | Construction equipments | Introduction |
| 68 | Hot mixing plant |
| 69 | Tipper, tractors (wheel and crawler) scraper,  |
| 70 | Bulldozer, dumpers, shovels, graders, roller dragline |
| 71 | Asphalt mixer and tar boilers |
| 72 | Road pavers |
| 73 | Modern construction equipments for roads. |
| 74 | Revision Classes | Revision Classes |
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