

Lesson Plan

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| Name of the Faculty | : Ms. Menka |
| Discipline | : B.Tech in Civil Engineering |
| Semester | : VIII (4 th Year) |
| Subject | : CVE – 404L Railway and Airport Engineering |
| Lesson Plan Duration | : 15 Weeks (from January, 2018 to April, 2018) |
| Work Load (Lecture / Practical) per week (in hrs.) | : Lectures – 03 |

CVE – 404L Railway and Airport Engineering

| Week | Theory | | Dated |
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| | Lecture day | Topic (Including Assignment Test) | |
| 1 st | 1 | Introduction, Permanent Way and Rails, Rail transportation and its importance in India. | |
| | 2 | Permanent way: requirements and components | |
| | 3 | Gauges in India and abroad. Selection of gauge. Coning of wheels. Adzing of sleepers | |
| 2 nd | 4 | Rails: functions, composition of rail steel, types of rail sections, requirements of an ideal rail section, length of rails. | |
| | 5 | Defects in rails. Creep of rails. Long welded rails and continuously welded rails. | |
| | 6 | Sleepers: functions, requirements of an ideal sleeper. Types of sleepers: wooden, cast iron, steel and concrete sleepers, advantages, disadvantages and suitability of each type. | |
| 3 rd | 7 | Sleeper density. Fastenings for various types of sleepers: fish plates, spikes, bolts, bearing plates, keys, chairs, jaws, tie bars. | |
| | 8 | Elastic fastenings. Ballast: functions, requirements, types of ballast and their suitability | |
| | 9 | Numerical on Sleeper Density and depth of blast | |
| 4 th | 10 | Points and Crossings: Necessity. Turnout: various components, working principle. | |
| | 11 | Switch: components, types. Crossing: components and types. | |
| | 12 | Design elements of a turnout, design of a simple turnout. | |
| 5 th | 13 | Layout plan of track junctions: crossovers, diamond crossing, single-double slips, throw switch, turn table, triangle. | |
| | 14 | Signaling, Interlocking and Train Control: Signals: objects, types and classification. | |
| | 15 | Semaphore signal: components, working principle. Requirements / principles of a good interlocking system. | |
| 6 th | 16 | Brief introduction to devices used in interlocking. Methods of control of train movements: absolute block system, automatic block system, | |
| | 17 | Centralized train control and automatic train control systems. | |
| | 18 | Geometric Design of the Track: Gradients, grade compensation. Super elevation, cant deficiency, negative super elevation. | |
| 7 th | MINOR TEST I | | |
| 8 th | 22 | Maximum permissible speed on curves. Tractive resistances, types. Hauling capacity of a locomotive. | |
| | 23 | Stations, Yards and Track Maintenance: Stations: functions and classification. | |
| | 24 | Junction, non-junction and terminal stations. | |
| 9 th | 25 | Yards: functions, types. Marshalling yard: functions, types. | |
| | 26 | Maintenance of railway track: necessity, types of maintenance. | |
| | 27 | Brief introduction to mechanized maintenance, M.S.P and D.T.M. | |
| 10 th | 28 | Introduction and Airport Planning: Air transportation, its importance and characteristics, status in India | |

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| | 29 | Layout plan of an airport and its basic elements: terminal area, apron, taxiway, runway, hanger | |
| | 30 | Aircraft characteristics, their effect on elements of an airport. | |
| 11 th | 31 | Site selection of an airport | |
| | 32 | Classification of airports | |
| | 33 | Runway Layout and Pavement Design: Runway orientation | |
| 12 th | 34 | Wind Rose diagram | |
| | 35 | Basic runway length. Corrections to basic runway length | |
| | 36 | Numerical Problem | |
| 13 th | 37 | Runway patterns | |
| | 38 | Difference between highway and runway pavement | |
| | 39 | Types of runway pavements | |
| 14 th | | MINOR TEST II | |
| 15 th | 43 | Design factors for runway pavement. | |
| | 44 | Brief introduction to design of thickness of a runway pavement | |
| | 45 | Illustrative example for runway pavement thickness | |