LessonPlan

**Name of the faculty:** Sh. Naveen

**Discipline:** Electrical

**Semester: 5**th

**Subject:** Utilization of electrical engineering

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| **Week** |
| **Topic(Including assignment/test)** |
| 1st | Introduction |
| Advantages of electrical heating |
| Resistanceheating–directandindirectresistanceheating,electricovens,theirtemperaturerange, properties of resistance heating elements, domestic water heaters and other heating appliances, thermostat control circuit |
| discussion |
| Revision |
| 2nd | Induction heating; principle of core type and coreless induction furnace, their construction andapplications |
| Electricarcheating;directandindirectarcheating,construction,workingandapplicationsofarcfurnace |
| Dielectric heating, applications in various industrial fields |
| Infra-redheatinganditsapplications(constructionandworkingoftwoappliances |
| Revision |
| 3rd | Microwaveheatinganditsapplications(constructionandworkingoftwoappliances |
| SolarHeatingCalculationofresistanceheatingelements(simpleproblems) |
| Calculation of resistance heating elements(simple problems) |
| revision& Copy check |
| revision& Copy check |
| 4th | Advantages of electric welding |
| Welding method |
| 3.2.1Principlesofresistancewelding, |
| types–spot, projection, seam and buttwelding, |
| Revision |
| 5th | welding equipments |
| Principleofarcproduction,electricarcwelding,characteristicsofarc;carbonarc |
| metal arc,. |
| hydrogen arc welding method and their applications |
| revision |
|  | Power supply requirement.  |
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| 6th | 3rd | Advantages of using coated electrodes, comparison between AC and DC arc welding, welding control circuits,  |
| 4th | welding of aluminum and copper |
| 5th | revision& Copyc heck |
| 7th | Ist | Sessional test |
| 2nd | .Electrolytic Processes:(10hrs)4.1Needofelectro-deposition |
| 3rd | 2Lawsofelectrolysis,processofelectro-deposition-clearing,operation,depositionofmetals,Polishing and buffing |
| 4th | Equipment and accessories for electroplating |
| 5th | Factors affecting electro-deposition |
| 8th | Ist | Principle of galvanizing and its applications |
| 2nd | 6Principlesofanodizinganditsapplications |
| 3rd | Electroplatingofnon-conductingmaterials4.8ManufactureofchemicalsbyelectrolyticprocessPower supplies for electroplating |
| 4th | ElectricalCircuitsusedinRefrigeration,AirConditioningandWaterCoolers,introduction |
| 5th | 5.1Principleofairconditioning,vapourpressure,refrigerationcycle, |
| 9th | Ist | eco-friendly refrigerants |
| 2nd | Description of Electrical circuit used in Refrigerato |
| 3rd | Description of Electrical circuit used in Air-conditioner |
| 4th | Description of Electrical circuit used in Watercooler |
| 5th | Revision & Copy check |
| 10th | Ist | Advantages of electricdrives |
| 2nd | Characteristics of differentmechanicalloads |
| 3rd | Types of motors used as electricdrive |
| 4th | Electric braking Plugging |
| 5th | Rheostatic braking |
| 11th | Ist | Regenerative braking |
| 2nd | General idea about the methods of power transfer by direct coupling by using devices like beltdrive, gears, chain drives etc.  |
| 3rd | Examples of selection of motors for different types of domestic loads |
| 4th | Selectionofdriveforapplicationssuchasgeneralworkshop,textilemill,papermill,steelmill,Printing press, crane and lift etc. Application of flywheel |
| 5th | Sessional test |
| 12th | Ist | Specifications of commonly used motors e.g.squirrelcagemotors, |
| 2nd | Specifications of commonly used motors slip ring inductionmotors, |
| 3rd | Specifications of commonly used motorsACseriesmotors, |
| 4th | Specifications of commonly used motorsFractionalkiloWatt(FKW)motors |
| 5th | Specifications of commonly used motorsFractionalkiloWatt(FKW)motors |
| 13th | Ist | Selection of motors for Domestic Appliances |
| 2nd | Revision &Copy check |
| 3rd | Electric Traction |
| 4th | Advantagesofelectrictractionoverothertypesoftraction.7.2Differentsystemsofelectrictraction, DC and ACsystems, dieselelectricsystem |
| 5th | Types of services–urban,sub-urban,and mainline and their speed-time curves |
| 14th | Ist | Differentaccessoriesfortrackelectrification;suchasoverheadcatenarywire,conductorrailsystem, current collector-pentagraph |
| 2nd | Factorsaffectingscheduledspeed7 |
| 3rd | Electrical block diagram of an electric locomotive with description of various equipmentandAccessories used. |
| 4th | Types of motors used for electrictraction |
| 5th | Powers upply arrangements |

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| 15th | Ist | Starting and braking ofelectriclocomotives |
| 2nd | Introductiont of EMU and metro railways |
| 3rd | TrainLightingSchemeNote:StudentsshouldbetakenforvisitstonearestelectrifiedrailwaytrackAnd railway station to study the electric traction system. |
| 4th | Revision & Copycheck |
| 5th | revision& Copycheck |

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| 16th | Ist | Sessional test |
| 2nd | Revision |
| 3rd | Revision |
| 4th | Revision & Copycheck |
| 5th | revision& Copycheck |