Course Outcomes
MSBTE prescribed syllabus, as per the Scheme 'G'

Semester – I

Abbreviation	Subject	Code
ENG –	**English**	**(17101)**

1) Understand English - the language as a medium of expressing oneself and being global language, use it in all spheres of life – Personal, Professional and Social.
2) Developing the vocabulary.
3) Learn and apply rules of grammar.
4) Comprehend the given unseen paragraph.

EPH –	**Basic Physics**	**(17102)**

1) Understand the method of selection of material for intended purpose.
2) Application of knowledge of heat conductors (good and bad conductors of heat) in various engineering concepts.
3) Understand the effect of interference between the waves of light.
4) Application of knowledge of wave motion and resonance in various engineering applications.
5) Application of concept photoelectric effect for application like Photoelectric cell and Solar cell.

ECH –	**Basic Chemistry**	**(17103)**

1) Understand the concept of valence electron and valency of elements.
2) Application of knowledge of electrolysis in engineering applications.
3) Understand the formation process/reactions of various molecules.
4) Application of the properties of metals and alloys in engineering field.
5) Understand the use of non-metallic material in engineering field.

BMS –	**Basic Mathematics**	**(17104)**

1) Apply the Crammer's rule and Matrix method to solve simultaneous equations in three variables.
2) Use concept of allied angle, compound angle, multiple and sub-multiple angles to solve engineering problems.
3) Use factorization and de-factorization formulae to solve examples.
4) Understand the relationship of two variables.

EGG –   **Engineering Graphics**   **(17001)**

1) Draw different engineering curves and know their applications.
2) Draw orthographic projections of different objects.
3) Visualize three dimensional objects and draw Isometric Projections.
4) Draw simple geometrical figures using CAD package.

CMF –   **Computer Fundamentals**   **(17002)**

1) Use of Operating System.
2) Use MS-Word, MS-Excel, MS-Power Point, effectively for documentation.
3) Use browser for accessing the Internet
4) Handle Personal Computer System

Semester – II

Abbreviation	Subject	Code
CMS –	**Communication Skills**	**(17201)**

1) Utilize the skills necessary to be a competent communicator.
2) Select and apply the appropriate methods of communication in various situations.

APH –   **Applied Physics**   **(17210)**

1) Understand laws and principles of electrical circuits.
2) Classify solids on the basis of semiconductor band theory.
3) Understand principles of Laser and its applications in engineering fields.
4) Identify superconductor and its types.
5) Understands applications of nanoparticles in engineering field.

ACH –   **Applied Chemistry**   **(17211)**

1) Select proper type of cell based on the requirement in electronics and computer engineering.
2) Apply knowledge of extraction, properties of copper and aluminium in engineering applications.
3) Know various insulating or dielectric materials used in for electronic equipments and computers.
4) Generalize different factors which affect atmospheric as well as electrochemical corrosion.

FEE –   **Fundamentals of Electrical Engineering.**   **(17214)**

1) Understand various definitions, laws and concepts involved in electrical field, circuits, magnetism.
2) Understand concepts of electrical circuits and magnetic circuits.
3) Realize importance of electromagnetic induction in regards to machines and power system.
4) Understand utility and maintenance of storage batteries.
5) Study different types of electric supply.

EMS –   **Engineering Mathematics**   **(17216)**

1) Use complex numbers for representing different circuit component in complex form to determine performance of electrical circuit and machines.
2) Apply rules and methods of differential calculus to solve problems.
3) Apply various numerical methods to solve algebraic and simultaneous equations.

DLS –   **Development of Life Skills**   **(17010)**

1) Understand and appreciate importance of life skills.
2) Use self-analysis and apply techniques to develop personality.
3) Use different search techniques for gathering information and working effectively.
4) Improve the presentation skills.

Semester – III

Abbreviation	Subject	Code
AMS –	**Applied Mathematics**	**(17301)**

1) Apply derivatives to find slope, maxima, minima and radius of curvature.
2) Apply integral calculus to solve different engineering problems.
3) Apply the concept of integration for finding area.
4) Apply differential equation for solving problems in different engineering fields.
5) Apply the knowledge of probability to solve the examples related to the production process.

BEE –   **Basic Electronics (Electrical)**   **(17301)**

1) Define the scope of electronics.
2) State some applications of electronics in our day-to-day life.
3) State the latest trends in the field of electronics.
4) Draw the symbol, characteristics & applications of some important active devices.
5) Testing of active & passive components.
6) List the specifications of active & passive components.
7) Reading the data sheets of electronic components.

EEM –   Electrical & Electronic Measurement   (17322)

1) To know the vocabulary of electrical measurement system
2) Identify various measuring instruments
3) To read different meters properly
4) Select proper meter / equipment for particular measurement
5) Calibrate various types of meters/ instruments as per ISS

ECN –   Electrical Circuits and Networks   (17323)

1) Understand basic elements of the circuit, terminology used and various quantities involved.
2) Use network theorems for solution of DC network.
3) Realize the importance of series ac circuit and parallel ac circuit.
4) Know the relations between phase and line values of various quantities in three phase ac circuit.
5) Calculate various parameters of a.c. circuits.

EPG –   Electrical Power Generation   (17324)

1) Classify the different sources of electric power generation.
2) Decide the various factors governing selection of site for power plant and list their merits.
3) Describe principle and operation of power generation.
4) Identify and describe the function of each component of power plant.
5) Select the power generation technique based on economy.
6) Compare between various sources of power generation.

CPP –   Computer Programming   (17022)
1) Describe concepts, variables and constants.
2) Write simple input/output program.
3) Write simple programs related to condition handling.
4) Write a program related to looping.
5) Understand concept of function.
6) MATLAB as a mathematical problem solving tool.
7) To draw 2 D plots using MATLAB.

EWS –   Electrical Workshop   (17023)
1) Identify various electrical accessories, & appliances.
2) Draw & understand the wiring diagrams& specifications.
3) Prepare schedule of material.
4) Use methods of wiring.
5) Lay wires/cables for making connections
6) Fix the accessories at proper place
7) Test the circuit

PPO –   **Professional Practices-I**   **(17024)**

1) Acquire information from different sources.
2) Prepare notes for given topic.
3) Present given topic in a seminar.
4) Interact with peers to share thoughts.
5) Prepare a report on industrial visit, expert lecture.

Semester – IV

Abbreviation   **Subject**   **Code**

EST –   **Environmental Studies**   **(17401)**

1) Understand the importance of environment.
2) Know key issues about environment.
3) Understand the reasons for environment degradation.
4) Know aspects about improvement methods.
5) Know initiatives taken by the world bodies to restrict and reduce degradation.

EME –   **Elements of Mechanical Engineering**   **(17413)**

1) Know the function of different mechanical equipment along with their location.
2) Understand working of high pressure boilers and steam turbine and thermal power plant.
3) Know the operation and control of fuel and steam supply.
4) Enlist sources of waste heat from boiler, IC engine.
5) Describe internal combustion engine.

IIN –   **Industrial Instrumentation**   **(17414)**

1) Identify different components of instrumentation system.
2) Understand different qualitative parameters of instruments.
3) Identify appropriate transducers for different physical variables.
4) Understand different signal conditioning circuits.
5) Understand different Data Acquisition System types and their use.
6) Design of complete system for measurement of process variables.

IES –   **Industrial Electrical Systems – I**   **(17416)**

1) Read & interprets Electrical Installation drawings.
2) Understand & apply IE rules.
3) Make use of data tables & specification of wire, cables, LT lines & Distribution
4) Transformer, MCCB, ELCB.
5) Understand principles & procedures of earthing.
6) Know basic terms to prepare design & estimate of installation.
7) Understand & apply procedures for contracts & tenders.

DMT–   **D. C. Machine and Transformer**   **(17415)**

1) Understand the laws governing the operation of electrical machines.
2) Understand the working principles of different DC machines and transformer.
3) Know the constructional details of the DC machines and transformer.
4) Know the areas of application of the various dc machines and different types of transformers

TDE –   **Transmission & Distribution of Electrical Power**   **(17417)**

1) Know various types of Transmission & distribution system.
2) Identify various components & know their functions.
3) Know types of conductors used in transmission and distribution circuits
4) Know the effect of changes in parameters on performance of the lines
5) Draw substation layout as per the requirements.

PPE –   **Professional Practices-II**   **(17038)**

1) Acquire information from different sources.
2) Prepare notes for given topic.
3) Present given topic in a seminar.
4) Interact with peers to share thoughts.
5) Prepare a report on industrial visit, expert lecture.

Semester – V

Abbreviation   Subject   Code

ECA –   **Energy Conservation and Audit**   **(17506)**

1) Identify the energy losses and wastage.
2) Suggest the energy conservation techniques in various sectors.
3) Find the opportunity for saving in energy consumption through tariff structure.
4) Prepare energy audit report.

IES-II –   **Industry Electrical Systems-II**   **(17507)**

1) Select drive for specific application.
2) Compare different methods of electric heating & welding.
3) Explain the importance of good illumination
4) Explain the various components in electric traction system.
5) Get the knowledge of electrical energy conservation.

SAP –   **Switchgear and Protection**   **(17508)**

1) Understand the principles, concepts & procedural aspects of switchgear & protection.
2) Identify various components of switchgear & protection system & their locations.
3) Know the specification and to select a switchgear for a particular application.
4) Identify various faults in power system & measures to minimize it.
5) Know the basic concepts of protection scheme and to select appropriate protection scheme for a particular application.
6) Know the need of insulation co-ordination.

MCA –   **Microcontroller and Applications**   **(17509)**
1) Understand 8051 microcontroller architecture.
2) Understand instruction set and assembly language programming
3) Understand the use of higher level language (C programming) to develop programs for 8051 microcontroller.
4) Know the interfacing of various peripherals to 8051
5) Learn basic concepts of system design based on 8051 for typical applications.

ACM –   **A. C. Machines**   **(17511)**
1) To know the various types and constructional details of AC machines.
2) To understand the working principle various AC machines.
3) To operate various AC machines.
4) To apply the knowledge for testing of machines.
5) To coordinate the knowledge for understanding the other subjects.

BSC –   **Behavioural Science**   **(17075)**
1) Develop him/her as Team leader.
2) Use self-motivation and motivate others.
3) Build a team and develop team spirit among the team members.
4) Improve the interpersonal relationship skills.
5) Learn Problem solving and decision making skills.
6) Discuss a particular topic in a group and face the interview.

EDP –   **Entrepreneurship Development and Industrial Project (17059)**
1) Identify entrepreneurship opportunity.
2) Acquire entrepreneurial values and attitude.
3) Use the information to prepare project report for business venture.
4) Develop awareness about enterprise management.

PPT –   **Professional Practices – III**   **(17060)**
1) Acquire information from different sources.
2) Prepare notes for given topic.
3) Present given topic in a seminar.
4) Interact with peers to share thoughts.
5) Prepare a report on industrial visit, expert lecture.

Semester – VI

Abbreviation   **Subject**   **Code**

MAN –   **Management**   **(17601)**
1) Get familiarized with environment related to business processes.
2) Know the management aspects of the organisations.
3) Understand Role & Responsibilities of a Diploma engineer.
4) Understand importance of quality improvement techniques.
5) Appreciate need and importance of safety in industries.
6) Understand process of Industrial finance and its management.
7) Know the latest trends in industrial management.

TME –   **Testing and Maintenance of Electrical Machines**   **(17637)**
1) Know I.S. codes/I.E. Rules & safety measures related to electrical machines.
2) Identify / Locate common troubles in electrical machines.
3) Plan & carry out routine & preventive maintenance
4) Prepare trouble-shooting charts for electrical machines.
5) Ascertain the condition of insulation & revarnishing if necessary.
6) Initiate total productive maintenance.

PEL –   **Power Electronics**   **(17638)**
1) Understand the physical processes for the switching of a thyristor.
2) Know the various methods of triggering a thyristor and different gate turn-on methods.
3) Develop logic about the turning off mechanism of a thyristor and get acquainted with some methods of turning a thyristor off.
4) Become familiar with other members of the thyristor family as well as other power electronic devices.
5) Know the characteristics of different power electronic devices.
6) Know the working of rectifiers, choppers, inverters and industrial applications of the thyristor.

IIN –   **Illumination Engineering**   **(17639)**
1) Understand the meaning of the terms used in illumination engineering
2) Realise the requirements of various types of consumers
3) Study requirements of illumination levels for various applications.
4) Understand the requirements of illumination equipment and accessories for different Applications

MET –   **Modern Electric Traction (Elective)**   **(17640)**

1) Identify and describe the use of components of power supply arrangements for electric traction
2) Know different overhead equipment's
3) Compare the different type of current collecting systems and current collecting gears
4) Explain various types of signals and track circuits
5) Describe supervisory control used in electric traction
6) Know special requirements of train lighting system
7) Understand the importance of electric locomotive maintenance and protective system
8) Describe the recent trends in electric traction- LEM propelled traction, Metro Rail System, Mono Rail System

EIA –   **Elements of Industrial Automation (Elective)**   **(17641)**

1) Understand the working of various industrial control components.
2) Use principles of machine control to design simple schemes for control.
3) Understand the working of basic control actions (viz. ON-OFF, P+I+D).
4) Know skills to use PLC for implementing simple industrial control applications.

IPR –   **Project**   **(17801)**

1) Work in Groups, Plan the work, and Coordinate the work.
2) Develop leadership qualities
3) Analyse the different types of Case studies.
4) Develop basic technical Skills by hands on experience
5) Write project report.
6) Develop skills to use latest technology in Electrical field.