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| **Course – 26 Title: Electrical Technology** | |
| **Course Code: EEE 211 Credit: 3.00 Contact Hour: 3** | **Total marks: 100** |

**11.1 Rationale:**

To be a computer engineer, its practitioner needs to know about the concepts, characteristics and working principle of poly phase circuits, different types of motors, generators, transformers, transducers, amplifiers and their applications in electrical field.

**11.2 Objectives:**

1. To learn the basic concepts, classification and interconnection of three phase circuits.
2. To understand and apply different types of motors, generators, alternators and transformers in electrical technology.
3. To know the classification, characteristics, working principle and applications of transducers.
4. To understand the classification and analyze the characteristics of instrumentation amplifiers.

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| **11.3**  **Learning Outcomes** | **11.4**  **Course Content** | **11.5**  **Teaching Strategy/ Learning Experience** | **11.6 Assessment Strategy** |
| 1. Define and classify three phase circuits. | Introduction to three phase circuits | Lecture, Exercise, Web | Essay, Short Question, Exercise, Viva Voce |
| 1. Define alternators 2. Explain the function of alternators | Alternators | Lecture, Exercise | Essay, Short Question, Exercise |
| 1. Define and classify transformers 2. Explain the function of transformers 3. Derive transformer parameters 4. Solve transformer circuits | Transformers | Lecture, Exercise, Web | Essay, Short Question, Exercise |
| 1. Define and classify different types of motor 2. Explain the working principle of motors. 3. Characterize different types of motor 4. List the applications and operating troubles of motors | Principles of operation of DC, synchronous, induction, universal, and stepper motors | Lecture, Exercise, Web, Assignment, Video | Essay, Short Question, Exercise, Observation, Assignment |
| 1. Define and classify generators 2. Explain the construction and working principle of generator 3. Compare the characteristics of different generators 4. Derive the e.m.f and maximum efficiency equation of generator 5. Solve generator circuits | DC Generator | Lecture, Demonstration, Exercise, Web, Video | Essay, Short Question, Exercise, Observation |
| 1. Define and explain the function of thyristor 2. Implement microprocessor based speed control of motors | Thyristor and microprocessor based speed control of motors | Lecture, Exercise, Web | Essay, Exercise |
| 1. Define and classify different types of amplifiers 2. Analyze the characteristics of different types of amplifiers | Instrumentation amplifiers: differential, logarithmic and chopper amplifiers; | Lecture, Exercise, Reading | Essay, Exercise |
| 1. Explain frequency and voltage measurements using digital techniques 2. Differentiate between oscilloscope and logic analyzer 3. Discuss Data acquisition and interfacing to microprocessor based systems | Frequency and voltage measurements using digital techniques; Recorders and display devices, spectrum analyzers and logic analyzers; Data acquisition and interfacing to microprocessor based systems | Lecture, Exercise, Reading | Essay, Exercise, Assignment |
| 1. Define and classify different types of transducers 2. Explain the construction and working principle of different types of transducers 3. Discuss the noise reduction in instrumentation | Transducers: terminology, types, principles and application of photovoltaic, piezoelectric, thermoelectric, variable reactance and opto-electronic transducers; Noise reduction in instrumentation | Lecture, Exercise, Reading, Web, Video | Essay, Exercise, Assignment |

**Recommended Books:**

1. B.L. Theraja : A text book of Electrical Technology, Volume: I
2. Bhattacharya :Electrical Machines
3. Rosenblatt : Direct and Alternating Current Machinery
4. A.K. Sawhney : Electrical and Electronic Measurements and Instrumentation