Code: CE2T5, ME2T5

I B.Tech - II Semester – Regular/Supplementary Examinations
April - 2019

BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Common for CE & ME)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer **all** the questions.   All questions carry equal marks

$$11 \times 2 = 22 \text{ M}$$

1.

   a) Explain the conventional sources of energy.

   b) Develop the layout of solar power plant.

   c) Define Ohm's law.

   d) Analyze the Kirchhoff's voltage law with an example.

   e) Draw slip torque characteristics of a 3-ϕ induction motor.

   f) Draw the circuit diagram of 1-ϕ capacitor start induction motor.

   g) Write an expression for regulation of 1-ϕ transformer.

   h) List the applications of DC welding generator.

   i) Explain the V- I characteristics of a P-N junction diode.

   j) Draw the circuit diagram of single stage CE amplifier.

   k) List out the different losses in a 1-ϕ transformer.

PART – B

Answer any **THREE** questions. All questions carry equal marks.

$$3 \times 16 = 48 \text{ M}$$

2. Explain the function of each component & operation of a gas turbine power plant with neat diagrams. 16 M

3. a) Obtain the expressions for equivalent resistance of a star-delta network transformations. 8 M

   b) A resistance of 10 ohms is connected in series with two resistances of each 20 ohms arranged in parallel. If a voltage source of 40 V is connected across the circuit, Determine: i) Total resistance.

   ii) Total current.

   iii) Current flow in each resistor.

   iv) Power dissipated by each resistor.

   8 M

4. a) A 6 pole, 3-phase, 50 Hz Induction motor has a full load speed of 950 rpm. Determine: 8 M
   i) Synchronous speed   ii) Slip speed
   iii) Slip   iv) Rotor frequency

b) Explain the principle of operation of split phase induction motor.   8 M

5. a) Derive the EMF equation of a single phase transformer.   8 M

   b) List out the differences between AC and DC welding.   8 M

6. a) Explain the operation of half wave rectifier with neat diagrams.   8 M

   b) Explain the working of P-N-P transistor with neat diagrams.   8 M