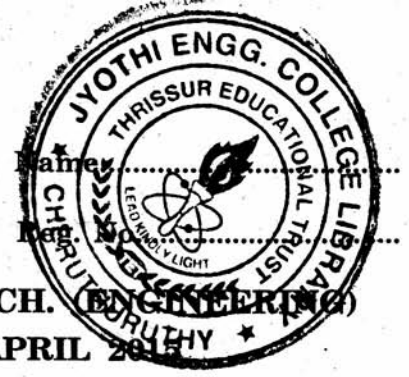(Pages : 4)

COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING) DEGREE (14 SCHEME) EXAMINATION, APRIL 2015

EN 14 107—BASICS OF ELECTRICAL AND ELECTRONICS AND COMMUNICATION ENGINEERING

Time : Three Hours

Maximum : 100 Marks

Section 1

PART A

*Answer any **four** questions.*
Each question carries 5 marks.

1. Compare the electrical circuit and magnetic circuits. Obtain on expression for MMF. What is its unit.

2. A conductor 30 cm. long rotates about one end at 1000 r.p.m. in a plane perpendicular to a magnetic field of strength 0.5 Wb/m^2. Find the e.m.f. induced in it.

3. State and explain self inductance and hence to define Coefficient of self inductance.

4. What are the application of a D C Motors.

5. With neat block diagram explain the basic structure of a power system.

$(4 \times 5 = 20 \text{ marks})$

PART B

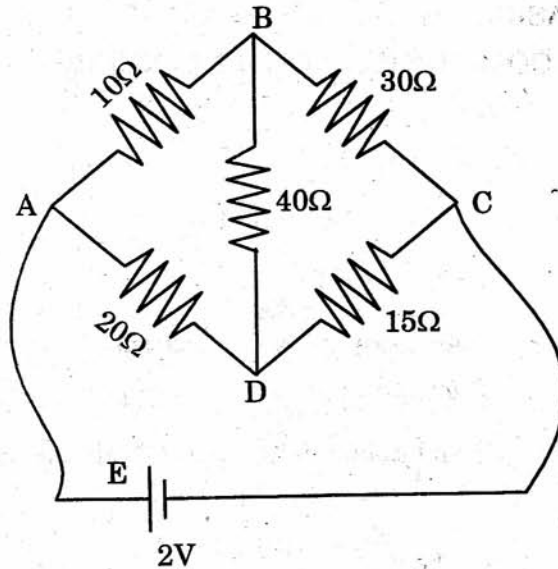*Answer any **one** question from each module.*
Each question carries 15 marks.

MODULE I

6. (a) (i) State and explain Kirchoff's Law. Explain with a neat circuit diagram voltage and current division rule.

Turn over

(ii) A bridge network ABCD is arranged as shown in the figure. Determine the value and direction of current in 40 Ω resistor.

Or

(b) (i) Explain Phasor diagram of AC. Discuss in detail how it can be used to represent alternating quantities. Explain the theory of a.c. through resistance and inductance in series.

(ii) A coil having a resistance of 6Ω and an inductance of 0.03 H is connected across 50 – V 60 Hz supply. Calculate (i) current (ii) phase angle between the current and applied voltage.

MODULE 2

7. (a) (i) With a neat circuit diagram explain the principle and operation of a transformer. What are the different losses in a transformer.

(ii) A voltage V = 100 sin 314 t is applied to a circuit consisting of a 25Ω resister and an 80 μF capacitor in series. Determine the p.d. across the capacitor at the instant when the current is one half of its maximum value.

Or

(b) (i) Discuss the advantages and disadvantages of 3 phase induction motor.

   (ii) Explain its principles and working with a neat diagram.

(2 × 15 = 30 marks)

Section 2

PART A

*Answer any **four** questions.*
Each question carries 5 marks.

1. What do you mean by distortion in amplifiers ?

2. What are different classes of amplifiers ?

3. What is a tank circuit ? Give its function.

4. Draw the block diagram of a AM transmitter and explain function of each block.

5. Discuss the various application of Radar.

(4 × 5 = 20 marks)

PART B

*Answer any **one** question from each module.*
Each question carries 15 marks.

MODULE 1

6. (a) (i) With help of block diagram of CE amplifier obtain an expression for gain of the amplifier. Discuss its frequency response.

   (ii) Give the concept of differential amplifier.

Or

   (b) (i) With help of blockdiagram explain the principle and operation of a CRO.

   (ii) Give the principle of the ADC and DAC.

MODULE 2

7. (a) (i) With help of block diagram explain the principle and operation of superheterodyne radio receiver.

Turn over

(ii) Explain the principle of RADAR. Write down the RADAR equation and explain its importance.

Or

(b) (i) With help of block diagram give the principle of satellite communication system. Explain its operation.

(ii) Briefly explain the advantages of optical communication.

$(2 \times 15 = 30 \text{ marks})$