

**SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY****ADITYA SILVER OAK INSTITUTE OF TECHNOLOGY****BE - SEMESTER-II • MID SEMESTER-II • EXAMINATION - SUMMER 2019****SUBJECT: BASIC ELECTRICAL ENGINEERING (3110005) (IT/AE/ME/CL)**

DATE: 27-04-2019

TIME: 10:30 am to 12:00 pm

TOTAL MARKS: 40

- Instructions:** 1. All the questions are compulsory.  
 2. Figures to the right indicate full marks.  
 3. Assume suitable data if required.

- Q.1 (a)** A single-phase, 50 Hz transformer has 80 turns on the primary winding and 400 turns on the secondary winding. The net cross-sectional area of the core is  $200 \text{ cm}^2$ . If the primary winding is connected to a 240 V, 50Hz supply, determine: i) The emf induced in the secondary winding. ii) The maximum value of the flux density in the core. **[3]**
- (b)** Differentiate between two winding transformer and auto transformer. **[3]**
- (c)** Draw the hysteresis loop. What is the meaning of saturation, coercive force and residual magnetism? Show them in diagram. **[4]**
- Q.2 (a)** Draw and explain on load Phasor diagram of transformer for resistive, Inductive and capacitive load. **[6]**
- (b)** Explain how rotating magnetic field is produce and derive the equation for resultant flux in 3-phase Induction Motor. **[5]**
- (c)** Derive emf equation of single phase transformer. **[4]**
- OR**
- Q.2 (a)** Describe Auto transformer and Derive the equation for copper saving. **[6]**
- (b)** With suitable diagram, explain the constructional features of a dc machine. **[5]**
- (c)** Explain why single phase induction motor is not self starting? List the methods used for starting it? **[4]**
- Q.3 (a)** What is power factor? What are the causes and problems of low power factor? How power factor can be improved? **[6]**
- (b)** Explain the principle of operation of synchronous generator. **[5]**
- (c)** Compare fuse with MCB in detail. **[4]**
- OR**
- Q.3 (a)** What is earthing? Explain its importance? Explain pipe earthing in detail? **[6]**
- (b)** What is ELCB. Explain its construction and working. **[5]**
- (c)** Torrent power, who cost a tariff of Rs 3.5 per unit, supplies to a consumer who consumes  
 (i) 4 Ceiling Fan rating of 60W for 10 hrs  
 (ii) 3 light bulb rating of 100W for 8 hrs  
 (iii) 1 46 inch LED TV rating of 150W for 3hrs  
 (iv) 1 desktop computer rating of 700W for 2 hrs.

Calculate the annual bill by considering a leap year.

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