

SECTION - A

Roll No. ....

**24007**

**B. Tech. 1st Semester**

**(Common for All Branches)**

**Examination – December, 2017**

**ELECTRICAL TECHNOLOGY**

**Paper : EE-101-F**

**Time : Three Hours ]**

**[ Maximum Marks : 100**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Question No. 1 (Section-A) is compulsory. Attempt four more questions from remaining four Sections : B, C, D & E by selecting one question from each Section. Use of non-programmable scientific calculator is allowed.

**SECTION – A**

1. (a) Define maximum power transfer theorem. 5
- (b) Discuss the physical significance of power factor in AC system. 5
- (c) Derive E.M.F. equation of 1- $\phi$  transformer. 5
- (d) Explain Faraday's law of Electromagnetic Induction in brief. 5

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**SECTION - B**

- 2. (a) State and explain Kirchoff's laws. 10
- (b) Derive the equation for Star to Delta and Delta to Star transformation in DC networks. 10
- 3. State and explain Norton's theorem by taking some suitable example of DC electric network. 20

**SECTION - C**

- 4. (a) Differentiate between acceptor and rejecter circuits. 10
- (b) Define the terms : 10
  - (i) Active power
  - (ii) Reactive power
  - (iii) Apparent power
- 5. Derive the mathematical equation for RMS and Average values of a sinusoidal signal. 20

**SECTION - D**

- 6. Derive the relation between  $V_L$  and  $V_{\text{phase}}$  in 3- $\phi$  star connected AC system and also derive the equation power in 3- $\phi$  star connected AC system. 20
- 7. Draw and explain the phasor diagram of 1- $\phi$  transformer at capacitive load. 20

**SECTION - E**

- 8. (a) Discuss and explain different types of losses present in D. C. machines. 10
- (b) Draw and explain the construction and working principle of D. C. generator. 10
- 9. Write short notes on : 20
  - (a) Induction type Wattmeter.
  - (b) Restoring and Damping in measuring instruments.