Printed Pages: 02 **Sub Code: EE-201**

Paper Id: 120201 **Roll No.** | | | | | | | | | | |

B TECH
(SEM II) THEORY EXAMINATION 2018-19
ELECTRICAL ENGINEERING

Time: 3 Hours **Total Marks: 100**

Note: 1. Attempt all Sections. If you require any missing data, choose suitably.

SECTION A

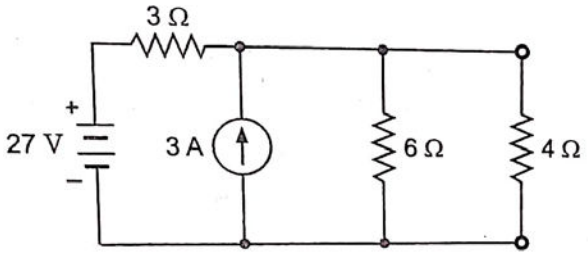
1. Attempt all questions in brief. **2 x10 = 20**

a) What do you mean by active and passive elements?
b) Explain the concept of source transformation with the help of an example
c) Explain form factor and peak factor in a A.C. circuit.
d) What is the significance of power factor?
e) What do you mean by absolute instruments?
f) What is the necessity of a three phase system?
g) Why transformer cannot work on dc supply?
h) Explain the concept of mutual induction.
i) What is the physical significance of back e.m.f. in d.c. motor?
j) Can induction motor runs at synchronous speed? Justify your answer.

SECTION B

2. Attempt any three of the following: **10 x 3 = 30**

a) Explain superposition theorem and find current in 4 ohm resistance of the given circuit.

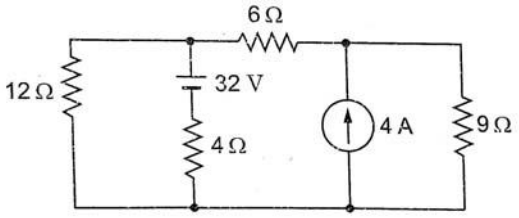


b) Explain resonance in a series R-L-C circuit and derive the relation for resonance frequency , impedance at resonance, and quality factor.
c) Prove that in a three phase system, the sum of three phase power is equal to the sum of powers obtained by two wattmeters from two wattmeter method.
d) Draw the layout of a power system using single line diagram explain in detail.
e) What are the classifications of single phase induction motor based on the method of starting? Also explain why single phase induction motor is not self starting.

SECTION C

3. Attempt any one part of the following: **10 x 1 = 10**

(a) Explain and derive maximum power transfer theorem and find the efficiency in maximum power transfer theorem.
(b) In the given circuit find current in 6 ohm resistance using Thevenin theorem



4. Attempt any one part of the following: 10 x 1 = 10

(a) Draw the phasor diagram of a pure inductive circuit and show that in a pure inductive circuit average power is always zero.

(b) A coil of resistance 100 ohm and inductance of 1 H is connect in series with a condenser of capacitance 200 μf across a 240 v , 50 Hz supply. Determine the following : (i) Impedance (ii) Current (iii) power factor (iv)Voltage across coil (v) voltage across capacitor.

5. Attempt any one part of the following: 10 x 1 = 10

(a) Discuss the principle, construction, operation, advantage disadvantage and application of single phase dynamometer wattmeter.

(b) A balanced star connected load of (10+j20) ohm/phase is connected to 3 phase 400 v supply . Find Line current, phase current, power factor, reactive power, active power and total volt amperes.

6. Attempt any one part of the following: 10 x 1 = 10

(a) What are the difference and similarity between electric circuit and magnetic circuits?

(b) Explain different types of losses in a transformer and derive the relation for maximum efficiency.

7. Attempt any one part of the following: 10 x 1 = 10

(a) Draw and discuss the characteristic of different types of D.C. motor and also give their applications.

(b) Explain the construction and working of 3 phase induction motor.