Roll No .....

EE-111

B.E. (All Branches), First Semester

Examination, December 2016

Choice Based Credit System (CBCS)

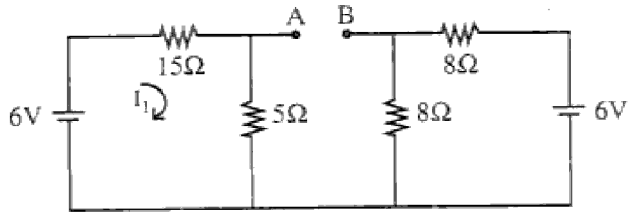
Fundamentals of Electrical Engineering

Time : Three Hours

Maximum Marks : 60

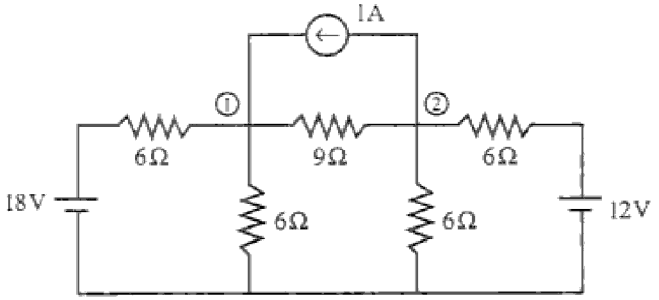
Note : i) Total No. of questions eight. Attempt any five questions.
ii) All questions carry equal marks.

1. a) Find Thevenin's equivalent circuit between terminal A and B for the circuit shown in following figure.



b) A coil of resistance 10Ω and inductance 0.1H is connected in series with 150μf capacitor across a 200V, 50Hz supply. Calculate :
i) Inductive reactance
ii) Capacitive reactance
iii) Impedance
iv) Current
v) Power factor
vi) Voltage across capacitor

2. a) Find current I using nodal analysis.



b) Explain delta/star and star/delta transformations.

3. a) Explain measurement of power and power factor in three phase system with balanced load by using two wattmeter method.

b) Establish the relationship between phase and line voltages in a three-phase star connected circuit.

4. a) Explain the construction and classification of single phase transformer.

b) Describe in detail the losses in transformer.

5. a) The O.C. and S.C. test conducted on 230/460V transformer gave following data :

O.C. test (LV side) = 230V; 1.2A; 85W

S.C test (HV side) = 30V; 14A; 105W

Determine the circuit constant

b) Derive emf equation for a single phase transformer

6. a) A single phase transformer has 350 primary and 1050 secondary turns. The net cross-sectional area of the core is 55cm^2. If the primary winding be connected to a 400V, 50Hz single phase supply, calculate :

i) Maximum value of flux density in the core

ii) Voltage induced in the secondary winding

b) Compare magnetic circuit, with electrical circuit, in detail.

7. a) Describe DC machine with neat sketch in viewing of main parts and constructional details.

b) Develop an emf equation for DC generator.

8. a) Explain construction and working principle of three phase induction motor.

b) Explain lab method to perform open circuit and short circuit test on single phase transformer.

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