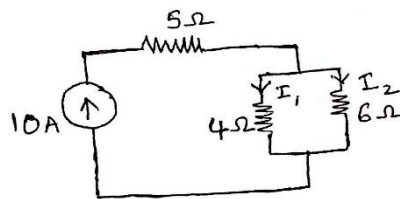


FACULTY OF ENGINEERING**B.E I Semester (ECE/MP/AE/CSE/CME/I.T) (Suppl.) Examination,****December 2020****Subject: Basic Electrical Engineering****Time: 2 Hours****Max. Marks: 70****Note: (Missing data if, any can be assumed suitable).****PART – A****Answer any five questions.****(5 x 2 = 10 MARKS)**

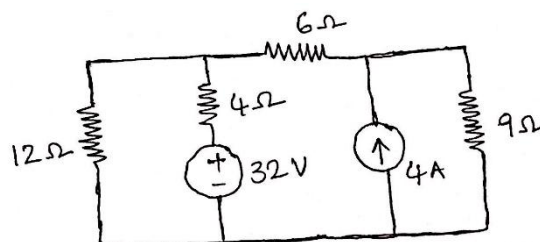
- 1 Write the expressions for stored energy in an inductor and a capacitor.
- 2 Determine the currents I_1 and I_2 .



- 3 Define power factor of alternating circuit and give its value for pure resistive circuit.
- 4 An alternating current is given by $i = 141.4 \sin 314 t$ A. Find (i) the maximum value and (ii) frequency.
- 5 A 100 kVA transformer operating at full load at 0.8 p.f lagging. Its efficiency is 96%. Calculate total losses of transformer.
- 6 List out the types of 3- ϕ induction motor and give one application of each of it.
- 7 Explain Fleming's right hand and left hand rules.
- 8 Classify DC generators based on excitation systems.
- 9 What is earthing? Why earthing is done?
- 10 Write the factors to be considered for deciding size of conductors for domestic wiring.

PART – B**Answer any four questions.****(4 x 15 = 60 MARKS)**

- 11 a) State Thevenin's theorem.
- b) Compute the power dissipated in 9Ω resistor by applying superposition theorem in the circuit.



- 12 a) Show that the current lags the applied voltage by 90° in a pure inductive circuit.
b) A balanced delta connected load of $(12 + j9) \Omega$ /phase is connected to 3- ϕ , 400V supply. Find (i) line current (ii) power factor (iii) power drawn (iv) reactive volt-amperes and (v) total volt-amperes.
- 13 a) Derive the emf equation of 1- ϕ transformer.
b) Explain constructional details and principle of operation of 3- ϕ induction motor.
- 14 a) A 4 pole DC shunt generator with lap connected armature having field and armature resistances of 50Ω and 0.1Ω respectively supplies sixty 100V, 40W lamps. Calculate total armature current, current per armature path and generated emf. Allow a contact drop of 2 volts.
b) Explain capacitor run induction motor with the help of neat circuit diagram.
- 15 a) Describe different types of cables used for domestic wiring.
b) With a neat diagram explain any one method of earthing.
- 16 a) The voltage applied to a circuit is $v = 100 \sin(\omega t + 30^\circ)$ V and current flowing in the circuit is $i = 20 \sin(\omega t + 60^\circ)$ A. Determine (i) impedance (ii) resistance (iii) reactance (iv) power and (v) power factor of the circuit.
b) Write short notes on auto transformer.
- 17 a) Explain the principle of operation of DC generator.
b) What is magnetic hysteresis? Explain with the help of B-H characteristics.
