C14-EE-303

4245

BOARD DIPLOMA EXAMINATION,(C-14)
MARCH /APRIL-2019
DEEE- THIRD SEMESTER EXAMINATION
ELECTRICAL CIRCUITS

Time: 3 Hours Max. Marks:80

PART-A

10x3=30M

Instructions: 1) Answer all the questions and each question carries three marks
2) Answers should be brief and straight to the point and shall not exceed five simple sentences

1) State Kirchoff's laws.

2) Three resistors 15 Ω, 10 Ω and 18Ω are connected in delta. Find their equivalent resistance values in star

3) Define frequency and time period of alternating quantity.

4) If A=5 - j4 and B = 8 + j6, find A-B and express it in polar form.

5) An emf is given by v= 200 sin (314t), and the current lags the voltage by 30^0. Find the frequency and write equation for the current, if its maximum value is 25 amps.

6) For a pure inductive circuit, write the equations for instantaneous voltage and current.

7) Derive an expression for resonance frequency in series RLC circuit

8) Define conductance and admittance in A.C circuit.

9) Draw a 3-phase wave form & write down emf equation for each phase

10) A star connected motor draws a line current of 10 A from the supply of 400 V, 50 Hz at a pf of 0.8 lag. Find the phase voltage, phase current and the power drawn.

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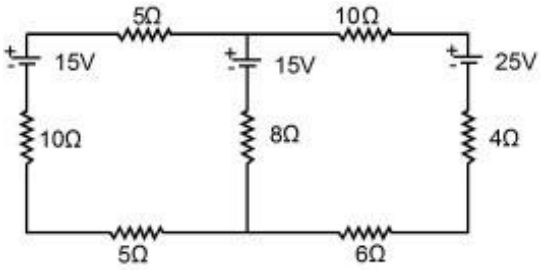
PART-B

5X10=50

Instructions: 1) Answer any Five questions. Each question carries Ten marks.

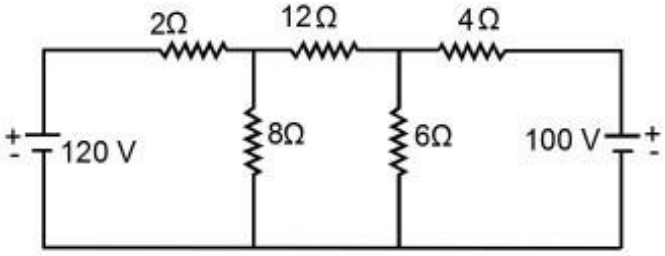
2) Answer should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11) Find the current supplied by three batteries using Kirchoff's laws



12) Derive expression for the conversion of star connected resistors into equivalent delta values.

13) Find the current in 12 Ω resistor using Superposition theorem.



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14) An alternating current varying sinusoidally with a frequency of 50 Hz has an RMS value of 15 A (a) Write the equation for the instantaneous current. (b) Find the value of the instantaneous current at 0.0075 seconds after passing through zero in positive direction. 3+7

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15) An R-L series circuit with R = 50Ω and L = 0.01 H, connected across a single phase supply of 200 V, 50 Hz. Find

(a) impedance of the circuit (b) current

(c) p.f. (d) phase angle

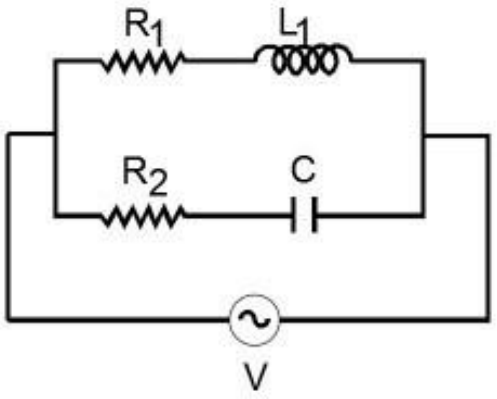
(e) the power consumed in the circuit. 2+2+2+2+2

16) Two impedances Z_1 = 8+j6 and Z_2 = 5 - j8 are connected in series across a 230 V, 50 Hz supply. Find

(a) the current (b) total power drawn

(c) voltage across Z_1 (d) voltage across Z_2 3+3+2+2

17) Find the branch currents and the total current if R_1=15Ω R_2=10Ω, L=0.05 H, C = 100μ F and V = 230V, 50Hz in the circuit shown below. 3+3+4



18) a) Derive relation between I_{ph} and I_L in a 3-Phase delta connected winding. 6M

b) A balanced star connected load of 8 + j6 ohm per phase is conected to a 3-ph, 400 V supply, find the line current and the power factor. 4M

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