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Vivekananda College of Engineering & Technology, Puttur
 [A Unit of Vivekananda Vidyavardhaka Sangha Puttur @]
 Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

CRM08

Rev 1.10

EC

25/02/21

CONTINUOUS INTERNAL EVALUATION - 2

Dept: EC	Sem / Div: 1 st A/B/C	Sub: Basic Electrical Engineering	S Code: 18ELE13
Date: 5/3/21	Time: 3:00-4:30 pm	Max Marks: 50	Elective: N

Note: Answer any 2 full questions, choosing one full question from each part.

QN	Questions	Marks	RBT	CO's
PART A				
1 a	A single phase voltage of 220V at 50Hz is applied to a circuit comprising of a resistance of 20Ω , inductance of 20mH and a capacitance of $150\mu\text{F}$ connected in series. Find (i) Impedance of the circuit. (ii) Current drawn (iii) Power factor, (iv) Power (v) Draw the Phasor diagram.	10	L2	CO1
b	Mention the advantage of three phase over single phase	6	L2	CO1
c	A single phase 20KVA transformer has 1000 primary turns and 2500 secondary turns. The net cross sectional area of the core is 100 cm^2 . When the primary winding is connected to 550V, 50Hz supply. Calculate the maximum value of the flux density in the core (ii) the voltage induced in the secondary winding and (iii) the primary and secondary full load current.	9	L2	CO2
OR				
2 a	A three phase load of 3 equal impedance connected in delta across a balanced 400V supply takes a line current of 10A at a power factor of 0.7 lagging. Calculate the phase current, total power and total reactive volt amperes.	9	L2	CO1
b	A balanced three phase star connected load draws power from 440V supply. The two watt-meter connected	9	L2	CO1

indicate $W_1 = 750W$ and $W_2 = 1.5KW$. Calculate Power, Power factor and current in the circuit. If the W_1 watt-meter is reversed, what would be the phase angle between voltage and current.

c Explain the i) 2 way control of lamp ii) Conduit wiring with neat diagram

7 L2 CO4

PART B

3 a Define efficiency of a transformer. Obtain the expression for efficiency at different load and deduce the condition for maximum efficiency.

9 L2 CO2

b A 40KVA single phase transformer has a core loss of 450W and full load copper loss of 850W. If the power factor of the load is 0.8, Calculate i) full load efficiency, ii) Load for maximum efficiency, iii) Maximum efficiency at UPF.

8 L2 CO2

c Show that two watt-meter is sufficient to measure three phase power for a balanced 3 phase circuit. Also derive the expression for the power factor in terms of watt-meter reading.

8 L2 CO1

OR

4 a With neat diagram explain plate earthing.

8 L2 CO4

b A 400KVA transformer has core loss of 2KW and Maximum efficiency at 0.8 p.f occurs when the load is 240KW. Calculate (i) The maximum efficiency at unity power factor (ii) the efficiency on full load at 0.71 power factor.

8 L2 CO2

c Two impedance $(150-157j)\Omega$ and $(100-110j)\Omega$ are connected in parallel across 200V, 50Hz supply. Find branch current, total current and total power consumed in the circuit. Draw the Phasor diagram.

9 L2 CO1

Sowmya Anil
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Hub
HOD