



C16-AEI-106

6013

BOARD DIPLOMA EXAMINATION, (C-16)

SEPTEMBER/OCTOBER - 2020

DAEI—FIRST YEAR EXAMINATION

BASIC ELECTRICAL ENGINEERING

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

1. Distinguish between active and passive circuits.
2. Define ideal current source.
3. Define power factor.
4. Define resonant frequency.
5. Draw the phasor diagrams of voltage and current in pure capacitive and pure resistive circuit fed with AC supply.
6. State the mechanical equivalent of heat and give its units.
7. Define thermal efficiency.
8. List out the important specifications of transformers.
9. Mention the relation among voltage ratios, current ratios and turn ratios.
10. List the losses present in DC machines.

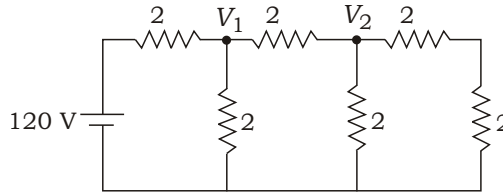
PART—B

10×5=50

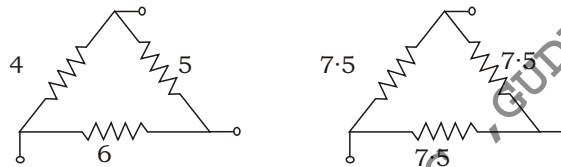
Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

- 11.** Find the current in each resistor by using nodal analysis method : 10



- 12.** Convert the given delta circuits into equivalent star circuit : 5+5



- 13.** (a) Explain the resonance in series $R-L-C$ circuit and derive an expression for resonant frequency. 7

- (b) A series $R-L-C$ circuit fed with a supply of 230 V, 50 Hz supply having resistance, inductance and capacitance values as 10 Ω , 4 H and 100 μF respectively. Calculate Q -factor of the circuit. 3

- 14.** A resistor of 50 Ω is connected in series with 10 mH inductor across 200 V, 50 Hz supply. Determine the impedance, current, phase angle, power factor and power consumed by the circuit. 10

- 15.** With neat sketch, explain the working of electric geyser. 10

- 16.** Describe the construction of a transformer. 10

- 17.** Explain (a) potential transformer and (b) current transformer. 10

- 18.** (a) Define back EMF and give the relation among E_b , V and I_A . 4

- (b) Classify DC machines on the basis of excitation. 6
