C16-EC-106

5030

BOARD DIPLOMA SUPPLEMENTARY (INSTANT) EXAMINATION, (C-16)

JUNE - 2019

DECE - FIRST YEAR EXAMINATION

BASIC ELECTRICAL ENGINEERING

Time : **3** Hours] [Total Marks : **80**

PART - A **2×15=30**

Instructions : *(1) Answer any **15** questions.*
*(2) Each question carries **2** marks.*
(3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

1 Define E.M.F.

2 Define Resistance.

3 Define thermal efficiency.

4 List the 4 effects of Electric current.

5 Define magnetic flux density.

6 Define Time period and Frequency of a sine wave.

7 Define average and R.M.S values for sine wave.

8 Define Q factor of a coil.

9 Convert the following voltages from rectangular to polar form.
(a) (6+j8) volts (b) (3-j4) volts.

10 Define admittance and conductance.

11 Define bandwidth of a resonant circuit.

12 List any 4 types of power plants.

13 Give any 4 advantages of three phase system over single phase system.

14 Write the E.M.F equations for R, Y, B phases and draw the vector diagram.

15 Give the relations between line and phase voltage, line and phase current in star and delta connections.

16 List any four parts of DC generator.

17 Write the E.M.F equation of an alternator and express each term with their units.

18 Show any two safety symbols and write their meaning.

19 List the major hazards of electrical equipments.

20 List 4 types of Portable fire extinguishers.

PART - B 10×5=50

Instructions : *(1) Answer any **FIVE** questions.*
*(2) Each question carries **TEN** marks.*
(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

21 a) State ohm's law and mention its limitations.
b) Derive an expression for temperature coefficient of resistance (α_0) interns of R_o and R_t.

22 a) Compare magnetic circuit with electric circuit.
b) Derive the expression for energy stored in a magnetic field.

23 a) Determine the force between two charges $6\mu C$ and $4\mu C$, when they are spaced at 20 cm apart in air. **5**
b) List any 5 Applications of Li-lon Batteries. **5**

24 Explain constructional details of lead -Acid cells.

25 Explain AC through Resistance and Inductance connected in series.

26 Explain resonance in series RLC circuit.

27 Explain construction and working of 3-point starter with neat sketch.

28 Explain the working principle of capacitor start single phase induction motor and mention its applications.
