C16-EC-106

5030-A

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 State Ohm's law.

2 List the 4 effects of electric current.

3 Define thermal efficiency.

4 Mention the two merits of CFL and LED lamps over incandescent lamps.

5 Define magnetic flux and mention its unit.

6 Define the term phase of an alternating quantity.

7 Define Q factor of a coil.

8 Define form factor for sine wave.

9 Draw the characteristic curve for series resonance.

10 List the 3 methods to solve AC parallel circuits.

11 Perform the following operations and put the result in a polar form.

$A \times B$

where $A = 100\angle 30°, B = \angle -60°$

12 Define power plant.

13 List the two merits of 3 phase system over single phase system.

14 Write the emf equations for R, Y, B phases and draw the vector diagram.

15 Give the relation between line voltages and phase voltages and line currents and phase currents in star configuration.

16 State Lenz's law.

17 Define slip of an induction motor.

18 List 4 types of portable fire extinguishers.

19 What are the major hazards which may arise from the use of electrical equipment ?

20 State two general electrical safety rules.

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 Derive the expressions for equivalent resistance for series and parallel connection of 3 resistances.

22 Explain work law and its application.

23 Explain the chemical reactions that take place during charging and discharging of lead acid cell.

24 (a) State Coulomb's law of electrostatics. **6**

(b) Compare electrostatic and electromagnetic fields. **4**

25 A voltage V = 200 sin $100\pi t$ is applied to a coil having R = 200 Ω and L = 0.38H. Find the expression for current and the power taken by the coil.

26 Explain resonance in RLC series circuit.

27 Explain speed control of DC shunt motor by armature and field control methods.

28 Explain the working principle of synchronous motor.
