C14-EC-306

4241

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH / APRIL - 2019

DECE - III SEMESTER EXAMINATION

ELECTRICAL TECHNOLOGY

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

PART - A **3×10=30**

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

1 Draw the vector diagram of a series R-L circuit.

2 Compare series and parallel resonance.

3 List out various parts of a DC generator.

4 What is the significance of back emf in a DC motor ?

5 List out various lones in a DC machine.

6 What are the advantages of a polyphase system over single phase system ?

7 Define coefficient of coupling.

8 Classify the transformers.

9 Write an emf equation of alternate and mention the units of each parameter.

10 Define slip and slip speed.

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PART - B 10×5=50

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

11 A resistance of $12\,\Omega$, an inductance of 0.15H and a capacitance of $100\,\mu f$ are connected in series across 100V, 50Hz supply. Calculate :-

(i) Impedance

(ii) Current

(iii) Power factor

(iv) Power consumed

12 Derive the expression for resonant frequency in a series RLC circuit.

13 Two impedances $Z_1 = (6 + j8)$ and $Z_2 = (8 - j6)$ are connected in parallel. Calculate the total (a) conductance (b) susceptance (c) admittance and (d) current taken from the supply and its p.f. if the supply voltage is 200V, 50Hz.

14 Derive an emf equation of a DC generator.

15 Explain with a circuit the working of a three point starter.

16 A balanced three phase delta connected load has per phase impedance of $(25 + j40)\,\Omega$. If 400V 3-phase supply is connected to this load, find

(i) Phase current

(ii) Line current

(iii) power supplied to the load.

17 Explain the construction and working of an auto transformer.

18 Explain the working principle of a synchronous motor.

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