4242

BOARD DIPLOMA EXAMINATION, (C-14)
JUNE-2019
DECE - THIRD SEMESTER EXAMINATION
ELECTRICAL TECHNOLOGY

Time: 3 Hours] [**Max. Marks: 80**

PART - A

3x10=30M

Instructions: 1) Answer **all** the questions. Each question carries **Three** marks.

2) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1) State the conditions for series resonance.

2) Define bandwidth of a resonant circuit.

3) Classify DC generators based on their excitation.

4) State the functions of yoke of a DC machine.

5) Explain the basic principle of a thermal power plant.

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6) Define efficiency and voltage regulation of a transformer.

7) Write the principle of working of transformer.

8) Write six applications of an induction motor.

9) Give the relation between line voltage, phase volatage in star and delta configuration.

10) Compare induction motor and synchronous motor.

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PART - B

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

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

3) Answers should be comprehensive and the critertion for valuation is the content but not the length of answer.

11) Claculate the current, power factor and voltage across each element, when a resistance of 20 ohm, an inductance of 0.2 Henry and condenser of 200 micro farad capacitance are connected in series across 220V, 50Hz supply mains.

12) Two impedances Z_1= (6+J6) and Z_2=(6-J6) areconnected in parallel. Calculate (i) Conductance (ii) Susceptance (iii) Total current (iv) Admittance, if the supply voltage is 200V, 50Hz.

13) (a) Derive the Torgue equation of DC motor. (5M)

(b) Explain the principle of DC motor. (5M)

14) (a) A 4-pole DC generator having a wave wound armature conductors has 51 slots with each slot containing 20 conductors. Find the EMF generated when the machine is driven at 1500 rpm assuming flux per pole to be 7.0 milli weber. (6M)

(b) Explain the necessity of a starter for a DC motor. (4M)

15) (a) Obtain the relation between line voltage, phase voltage and Line currents, phase currents in star configuration. (5M)

(b) Explain the significance of back EMF in a DC motor. (5M)

16) (a) Derive condition for maximum efficiency in a transformer. (5M)

(b) Derive the expressions for self and mutual Inductances. (5M)

17) Explain the working principle of a synchronous motor with a neat sketch.

18) (a) Explain the construction and working of an auto transformer. (5M)

(b) Explain the production of rotating magnetic filed and working principle of 3-phase induction motor. (5M)

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