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C14-EC-306

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BOARD DIPLOMA EXAMINATION, (C-14)  
MARCH/APRIL—2021  
DECE - THIRD SEMESTER EXAMINATION  
ELECTRICAL TECHNOLOGY

Time : 3 hours ]

[ Total Marks : 80

**PART—A**

4×5=20

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

1. State the condition for resonance in RLC Circuits.
2. A pure inductance coil having an inductance of 8H is connected in series with a capacitor of 50  $\mu$ F capacitance across 230 V 50 Hz. Find the net reactance.
3. State Faraday's laws of electromagnetic induction.
4. What is need for a Starter?
5. Define a power plant.
6. Write the e.m.f. equation of a Transformer.
7. What are the different losses of a Transformer?

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8. Define coefficient of coupling.
  9. Define synchronous speed of an Induction Motor.
  10. What are the applications of Servo Motor?

### PART—B

15×4=60

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

11. The two given vectors are  $Z_1 = 5 - j2$  and  $Z_2 = 3 - j8$ . Find  $Z_1 + Z_2$  and  $Z_1 - Z_2$ .
12. In a series RLC circuit having resistance of  $12\Omega$ , inductance  $0.15\text{ H}$  and capacitance of  $100\ \mu\text{F}$  with a  $100\text{ V}$   $50\text{ Hz}$  supply. Calculate the value of impedance current, power factor and power consumed.
13. Explain the dynamically and statically induced EMF.
14. Explain the characteristics of DC Shut motor.
15. A symmetrical  $3\phi$   $400\text{ V}$  system supplied a balanced delta connected load, the current in each branch circuit is  $30\text{ A}$  and phase angle is  $30^\circ$  lag. Find (i) The line current and (ii) The total power consumed.
16. Explain the construction and working of Auto Transformer.
17. With a neat waveform and vector diagram explain the principle of production of rotating magnetic field in  $3\phi$  induction machines.
18. Explain the working of an Alternator.

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