4242

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 μF 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?

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 12Ω, inductance 0·15 H and capacitance of 100 μF with a 100 V 50 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 3ϕ 400 V system supplied a balanced delta connected load, the current in each branch circuit is 30 A and phase angle is 30° 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 3ϕ induction machines.

18. Explain the working of an Alternator.

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