



C14-EC-306

4242

BOARD DIPLOMA EXAMINATION, (C-14)
OCT/NOV—2015
DECE—THIRD 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. State the conditions for series resonance.
2. Draw graphical representation of parallel resonance and indicate (a) resonance frequency, (b) net susceptance and (c) admittance in it.
3. Define dynamically and statically induced EMFs.
4. Define speed regulation of DC motor.
5. List three merits of 3-phase system over single phase system.
6. Give the relation between line voltage, phase voltage and line currents, phase currents in star configuration.

7. Mention the applications of 3-phase transformer.
8. Explain the working principle of a transformer.
9. Classify AC motors based on principle of operation.
10. Define slip and synchronous speed of an induction motor.

PART—B

10×5=50

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

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

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

11. (a) Derive the expression for impedance and current of an AC circuit consisting resistance and capacitance in series. 5
(b) Compare series and parallel resonance circuit. 5
12. When a resistance of 12 ohms, inductance of 0.1 H and capacitor of 100 F are connected in series across 220 V, 50 Hz supply, then calculate (a) impedance, (b) total current, (c) power factor (d) voltage across resistor, capacitor and inductor (e) also find power dissipated in the circuit. 10
13. (a) State Faraday's laws of electromagnetic induction. 6
(b) Compare DC series and shunt motor. 4
14. (a) Explain power stages in DC motor. 5
(b) Explain the characteristics of DC shunt generator. 5
15. Obtain the relation between line voltage, phase voltage, line current and phase current in delta connected circuit. 10
16. (a) Explain construction and working of autotransformer. 6
(b) List the applications of autotransformer. 4

17. (a) The no-load current of a transformer is 5A at 0.3 pf when supplied at 230 V, 50Hz. The number of turns on primary winding is 200 Find (i) the maximum value of flux, (ii) magnetizing current and (iii) iron losses in the transformer. 6
- (b) Explain losses occur in a transformer. 4
18. Explain the working principle of synchronous motor with neat sketch.
