# 4242

## BOARD DIPLOMA EXAMINATION, (C–14)
## OCT/NOV—2018
## 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) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

**1.** State the conditions for parallel resonance.

**2.** Define bandwidth of a resonant circuit.

**3.** List the two types of winding used in DC generators and state their use.

**4.** Explain the need for starter.

**5.** List the merits of 3-phase system over single-phase.

**6.** What are the reasons for using laminations in transformer core?

**7.** Define regulation of transformer.

8. Define slip of an induction motor.

9. List the applications of synchronous motors.

10. List the applications of stepper 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 coil of resistance 50 ohms and inductance of 0·1 Henry is connected in series with a capacitance of 150 microfarads. Find *(a)* total impedance, *(b)* current, and *(c)* power factor of the circuit when the supply voltage is 220 V at 50 Hz.

12. *(a)* Derive the equation for resonant frequency in RLC series circuit.

   *(b)* A coil of resistance 40 ohms and inductance of 0·75 Henry is connected in series with a capacitor of *C* farads. The circuit is connected across 250 V, 50 Hz a.c. supply. Calculate the value of capacitance at resonant condition.

13. *(a)* State Fleming's right-hand rule.                              4

   *(b)* State Faraday's laws of electromagnetic induction.            6

14. Explain speed control of DC shunt motor by armature, field control and armature resistance control.

15. *(a)* Give the relation between line voltage and phase voltage and line current and phase current in star configuration.    3

   *(b)* Explain how power from a power plant reaches the consumer with a line sketch.                                        7

**16.** *(a)* Explain the working principle of transformer.          5

   *(b)* A single-phase transformer has 400 turns on primary winding and 1200 turns on secondary winding. If it is operating at 50 Hz supply with a maximum flux of 0·04 webers, find the primary and secondary induced e.m.f.          5

**17.** Explain the production of rotating magnetic field.

**18.** *(a)* Explain the effect of resistance on bandwidth.          5

   *(b)* Explain power stages in DC motor.          5

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