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C14–EC–105

4038

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2015

DECE—FIRST YEAR EXAMINATION

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

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

1. Explain the effects of temperature on resistance.

2. State Laplace's law.

3. Define *(a)* dielectric strength and *(b)* dielectric constant.

4. Compare primary cell and secondary cell.

5. Define *(a)* active power and *(b)* reactive power.

6. List the specifications of inductors.

7. What is fuse and what is the need of it?

8. What is soldering? List the materials used in soldering.

9. What is meant by doping? Write majority and minority carriers in *P* type and *N* type materials.

10. Define voltage regulation.

PART—B

10×5=50

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

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

11. *(a)* Derive the expression for conversion of electrical energy into equivalent heat energy in kilocalories. 5

(b) Three resistors 5 , 10 , 15 are connected in series across a supply of 240 V. Find *(i)* total resistance and *(ii)* current drawn from the supply. 5

12. *(a)* Compare electric circuit and magnetic circuit. 5

(b) Explain the constant current system of charging lead acid battery. 5

13. *(a)* State and explain Coloumb's laws of electrostatics. 5

(b) A capacitor of 100 F is connected across 230 V supply. Calculate the charge accumulated on the capacitor and the energy stored in the capacitor. 5

14. Explain AC through RC series circuit. 10

15. *(a)* Explain different types of variable capacitors. 5

(b) Describe the constructional features of inductors. 5

16. *(a)* Explain the need of connector and write different types of connectors. 7

(b) Define an electromagnetic relay. 3

17. *(a)* Explain the process of screen printing in the fabrication of PCB. 5

(b) Distinguish between Zener and Avalanche breakdown. 5

18. *(a)* Explain the working of half-wave rectifier with a neat circuit and draw its input and output waveforms. 7

(b) Write the RMS value, average value and ripple factor for the HWR output. 3

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