* 4038 *

C14–EC–105

4038

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2018

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.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define Ohm's law and write the limitations of Ohm's law.

2. Define magnetomotive force (MMF) and permeability.

3. Define Coulomb's laws of electrostatics.

4. Write any three applications of lead-acid batteries.

5. Define phase and phase difference.

6. What are meant by PTC and NTC of resistance?

7. Draw the ISI symbols of SPST, SPDT, DPST and DPDT switches.

8. What are different materials used in screen printing?

9. Write the differences between Zener breakdown and avalanche breakdown.

10. State the need of filter circuit in DC power supply.

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)* Define temperature coefficient of resistance. 3

(b) Derive an expression for temperature coefficient of resistance. 7

12. *(a)* Give the relation among flux density (B), magnetic force (H) and permeability. 5

(b) Compare primary and secondary cells. 5

13. Three capacitors of value 5 F, 10 F and 15 F are connected in parallel across 150 V supply. Calculate total capacitance and also determine charge on each capacitor.

14. Derive an expression for instantaneous power and average power of a capacitor connected across an AC source.

15. Explain the constructional details of a wire-wound resistor and carbon potentiometer. 5+5

16. *(a)* Explain the working of a toggle switch with a neat sketch. 5

(b) Explain the working of a push button switch with a neat sketch. 5

17. *(a)* Explain the photo processing technique in PCB preparation. 5

(b) Explain the formation of N-type semiconductor. 5

18. Explain the working of a full-wave bridge rectifier with a neat diagram.

★ ★ ★