* 4038 *

C14-EC–105

4038

BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—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 electric current and state its unit.

2. Define *(a)* magnetomotive force and *(b)* reluctance.

3. Derive an expression for the equivalent capacitance of two capacitors connected in parallel.

4. What are the active materials of lead acid cell?

5. Define *(a)* cycle and *(b)* time period of an alternating quantity.

6. Find the colour code for resistance of 39KΩ ± 5%.

7. What is a fuse? Also state its need.

8. State the electrical specifications of PCBs.

9. List the specifications of PN diode.

10. What is a ripple factor? Also mention its value for half-wave and full-wave rectifiers.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criteria for evaluation is the content but not the length of the answer.

11. *(a)* State Ohm's law and write its limitations. 5

(b) Three resistors of 5Ω, 10Ω and 15Ω are connected in series across a supply of 240 volts. Find current drawn from the supply and voltage drop across each resistor. 3+2

12. *(a)* Derive an expression for the force between two parallel current-carrying conductors. 5

(b) Distinguish between primary cells and secondary cells. 5

13. *(a)* Define *(i)* dielectric strength and *(ii)* dielectric constant. 4

(b) A capacitor of capacitance 150 μF is connected in series with a parallel combination of two capacitors of capacitances 25 μF and 75 μF. Find the equivalent capacitance of given arrangement of capacitors. 6

14. Explain AC response of series RL circuit.

15. Explain the colour coding used in resistors.

16. Explain the working of push-button switch with a neat sketch. Also write its specifications and applications.

17. *(a)* Explain briefly the steps involved in the preparation of PCB. 5

(b) Distinguish between P-type and N-type semiconductors. 5

18. Explain the working of half-wave rectifier with a neat circuit diagram and draw its input and output wave-forms.

* * *