



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 $39K\Omega \pm 5\%$.
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.

- * **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 $150\ \mu\text{F}$ is connected in series with a parallel combination of two capacitors of capacitances $25\ \mu\text{F}$ and $75\ \mu\text{F}$. 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.

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