



C14-EC-105

4038

BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—2016
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. Define Joule's law.
2. Define the terms magnetic potential, flux and flux density.
3. Define absolute permittivity and relative permittivity.
4. Write the need for trickle charging.
5. Define (a) average value and (b) peak factor.
6. Differentiate between potentiometer and rheostat.
7. What is MCB? Mention its use.
8. What are the advantages of PCBs?
9. List the application of P-N junction diode.
10. Draw the circuit of a full-wave bridge rectifier.

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PART—B

12×5=60

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

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

- 11.** (a) Two resistors of 5 Ω and 20 Ω are connected in series across 240 V supply. Calculate the (i) total current and (ii) voltage across each resistor. 5
- (b) A copper wire has a resistance of 30 Ω at 0 °C. Calculate its resistance at 40 °C given that α at 0 °C is 0.0036543/°C. Also calculate α at 25 °C. 5
- 12.** (a) Obtain the expression for magnitude of the force on a conductor in magnetic field. 5
- (b) Explain the two efficiencies of the cell. 5
- 13.** Three capacitors of capacitances 10 μ F, 25 μ F and 50 μ F are connected in parallel across 200 V supply. Calculate (a) total capacitance, (b) charge on each capacitor and (c) energy stored in each capacitor. 4+3+3=10
- 14.** A resistor of 1000 Ω is connected in series with a 56 μ F capacitor to a supply of 230 V and 50 Hz. Find (a) total impedance, (b) current through the circuit, (c) phase angle and (d) voltage across resistor. 3+2+3+2=10
- 15.** (a) Classify capacitors. 5
- (b) Explain color coding of resistors. 5
- 16.** List the applications of relays and explain the construction and working of electromagnetic relay.
- 17.** (a) Explain briefly the soldering methods of PCBs. 5
- (b) Draw *V-I* characteristics of *P-N* junction diode in reverse bias and explain. 5
- 18.** Explain the working of simple Zener-regulated DC power supply.
