



C-14-AEI-106

4048

BOARD DIPLOMA EXAMINATION, (C-14)

APRIL/MAY—2015

DAEI—FIRST YEAR EXAMINATION

BASIC ELECTRICAL ENGINEERING

Time : 3 hours]

[*Total Marks* : 80

PART—A

3×10=30

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

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

1. Classify conductors, insulators and semiconductors with reference to valance electrons.
2. State Ohm's law.
3. Define electrical work and power.
4. State the practical application of heat generated using electricity.
5. Draw lines of force around a magnet.
6. State work law and its application.
7. Write Lenz's law.
8. Define mutual inductance.
9. Define capacitance and state its units.
10. List the parts of lead acid battery.

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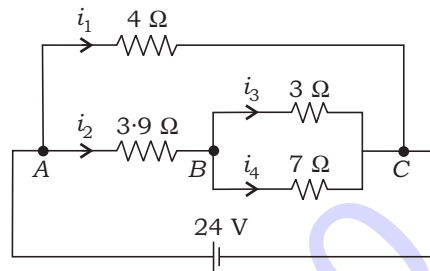
PART—B

10×5=50

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

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

- 11.** In the circuit shown in the figure below find the total resistance of the circuit, total current from the source, branch currents and voltage drop across each resistance : 10



- 12.** A house has the following load :
- (a) An immersion heater 1000 W working for 2 hour a day
 - (b) 2 kW heater working for 3 hours a day
 - (c) 10 lamps 100 W each working for 10 hours a day
 - (d) 5 ceiling fans 60 W each working for 10 hours a day
- Calculate the monthly energy charges for the month of January, charges being ₹ 3 per unit with a monthly rent of ₹ 100. 10
- 13.** Explain with neat figure, the construction and working of electric geyser. 10
- 14.** Explain with neat figure, the mechanical force on a current carrying conductor in a magnetic field. 10
- 15.** (a) Derive an expression for energy stored in a magnetic field. 5
- (b) State Faraday's laws of electromagnetic induction. 5

- 16.** ^{*} (a) State Coulomb's laws of electrostatics. 5
(b) Determine the force between two charges $8\ \mu\text{c}$ and $6\ \mu\text{c}$, when they are spaced at 10 cm apart in air. 5
- 17.** Explain the charging methods of batteries by constant current method and constant voltage method. 10
- 18.** (a) Derive the expression for energy stored in a capacitor. 5
(b) Compare magnetic circuit with electric circuit. 5
