4048

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2017

DAEIE—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.

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

1. State the parameters affecting the resistance of a material.

2. Define conductance and mention its SI unit.

3. Define work in electrical circuit and mention its SI unit.

4. List any three electrical appliances in which heat is produced due to flow of electric current.

5. State Fleming's left hand rule.

6. Define magnetizing force.

7. State Faraday's law of electromagnetic induction.

8. Define mutual inductance.

9. Define capacitance and mention its unit.

10. List the parts of lead-acid battery.

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. Three resistors connected in series 4 , 6 , 10 and voltage applied to the circuit is 24 V. Find the total current in the circuit, voltage drop across each resistor and power consumed in the circuit.

12. Two lamps of rating 150 W, 230 V and 250 W, 250 V are connected in parallel across 200 V supply. Calculate the following :

(a) The resistance of each lamp

(b) Total current

(c) The power drawn from the supply

(d) The electrical energy taken from the supply in 8 hours

13. *(a)* Explain the mechanical equivalent of heat. 5

(b) A heat engine gives out 400 J of heat energy as the useful work. Calculate the energy given to it as input if its efficiency is 40%. 5

14. Derive an expression for force between two parallel current carrying conductors.

15. Derive an expression for energy stored in a magnetic field.

16. *(a)* Derive the formula for capacitance of a parallel plate capacitor. 5

(b) A parallel plate capacitor has its plates separated by 0·5 m of air. The area of plates is 2 m^2. Find its capacitance. 5

17. *(a)* Explain work law. 5

(b) Explain electric potential and potential difference. 5

18. *(a)* Explain trickle charging. 5

(b) Write the chemical reactions during charging and discharging of lead-acid cell. 5

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