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C14-AEI-106

4048

BOARD DIPLOMA EXAMINATION, (C-14)

OCT/NOV—2016

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

1. Define electric charge and write its SI unit.
2. State Ohm's law.
3. Define efficiency.
4. List the practical applications of heat produced due to electricity.
5. Draw the lines of force around a magnet.
6. State Biot-Savart law.
7. State the coefficient of coupling.

- * 8. State Fleming's right-hand rule.
9. Define absolute and relative permittivity.
10. List the parts of nickel-iron cells.

PART—B

10×5=50

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. A circuit consisting of three resistances of 12 Ω , 18 Ω and 36 Ω respectively joined in parallel is connected in series with fourth resistance R . The whole circuit is supplied at 60 V and it is found that power dissipated in 12 Ω resistance is 36 W. Determine the value of R and power absorbed in the parallel group. 10

12. The following are the details of load on circuit connected through a supply meter :

(i) Five lights of 60 W each working for 6 hr/day

(ii) Two fluorescent tubes of 125 W each working for 3 hr/day

(iii) One 1000 W heater working for 3 hr/day

* If each unit of electrical energy costs 60 paise, what will be the electricity bill for the month of September? The meter rent is ₹ 5 per month. 10

13. Explain, with neat diagram, the construction and working of an electric iron. 10

- * 14. Derive an expression for the magnitude of force on a conductor in a magnetic field. 10
15. (a) Derive an expression for the lifting power of a magnet. 5
 (b) A coil has 5000 turns. A current of 5 A causes flux of 6 mWb to link the coil. Calculate the energy stored in the magnetic field. 5
16. (a) Plot the electrostatic field due to (i) isolated positive charge, (ii) isolated negative charge, (iii) unlike charges side-by-side and (iv) like charges side-by-side. 6
 (b) Define capacitance and state its unit. 4
17. (a) Explain charging of a battery by constant current method. 6
 (b) State the precautions to be taken during charging. 4
18. (a) Compare magnetic circuit with electrical circuit. 4
 (b) Write about electric flux, flux density and field intensity. 6
