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C14–EC–105

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BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2017

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. State the limitations of Ohm's law.

2. Define leakage flux and leakage coefficient.

3. State Gauss theorem.

4. List the applications of lead acid batteries.

5. Define the terms 'impedance' and 'admittance'.

6. State the factors affecting the capacitance of a capacitor.

7. Sketch the ISI symbols of SPST, SPDT, DPST switches.

8. List the materials used in soldering.

9. Distinguish between Zener breakdown and avalanche breakdown.

10. What is the need for bleeder resistance in power supply circuits?

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)* Derive the expression for conversion of electrical energy into heat energy. 8

(b) Define thermal efficiency. 2

12. *(a)* Develop the expression of force on a current carrying conductor placed in a magnetic field. 5

(b) Write about active materials of lead acid cell. 5

13. *(a)* Obtain the expression for a capacitance of a parallel plate capacitor. 5

(b) Two capacitors of C1 (47 pF) and C2 (100 pF) are connected in parallel with C3 (150 pF). Calculate the equivalent capacitance. 5

14. Explain the effect of AC through pure inductance with a neat sketch.

15. Explain with neat sketch, the constructional details of the carbon and wire-wound potentiometers.

16. *(a)* Explain the need of connectors in electronic circuits and list various types of connectors. 6

(b) Mention the use of MCB in domestic power circuits. 4

17. *(a)* Classify the PCBs. 5

(b) Distinguish between *p*-type and *n*-type semi-conductors. 5

18. *(a)* Explain the working of simple Zener diode voltage regulator. 6

(b) What is the need for regulated power supply? 4

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