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C14–EC–105

4038

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—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. What are the factors affecting the resistance of a resistor?

2. State work law.

3. Three capacitors of capacitance 10 F, 20 F and 50 F are connected in parallel. Find the resultant capacitance.

4. What is the need for trickle charging of a battery?

5. Define *(a)* RMS value and *(b)* form factor of an alternating current.

6. Find the colour code for resistance of 22 k 5%.

7. What are the applications of relays?

8. List various solder materials used for the soldering of components mounted on a PCB.

9. State any three specifications of *P-N* diode.

10. State the advantages of bridge rectifier.

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)* State Joules law. 3

(b) Three resistors of 5 , 10 and 15 are connected in parallel across 300 volt supply. Find total current drawn from the supply and current in each resistor. 4+3=7

12. *(a)* Derive an expression for the energy stored in a magnetic field. 5

(b) List the applications of lead-acid cells. 5

13. *(a)* State and explain Coulomb's laws of electrostatics. 5

(b) Derive the formula for capacitance of parallel plate capacitor. 5

14. *(a)* Define phase and phase difference of alternating quantities. 4

(b) Explain AC response of a pure inductive circuit. 6

15. *(a)* Give the comparison between carbon potentiometers and wire wound potentiometers. 4

(b) Give the properties and applications of ceramic capacitors and paper capacitor. 6

16. Explain the working of general purpose relay.

17. *(a)* Explain briefly the process of photo printing in the fabrication of PCB. 5

(b) Explain the *V-I* characteristics of *P-N* diode.

18. Explain the working of full-wave bridge rectifier with a neat circuit diagram and draw its input and output waveforms.

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