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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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