



C-14-EC-105

**4038**

**BOARD DIPLOMA EXAMINATION, (C-14)**

**APRIL/MAY—2015**

**DECE—FIRST YEAR EXAMINATION**

**BASIC ELECTRONICS AND 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 Ohm's law and write any two of its limitations.
2. Define (a) flux density and (b) field intensity.
3. State Gauss theorem.
4. What is the need for trickle charging?
5. Define (a) RMS value and (b) Form factor.
6. State losses in capacitor.
7. Draw the ISI symbols for SPST, SPDT, DPST, DPDT switches.
8. List the advantages of PCBs.
9. Distinguish between drift current and diffusion current.
10. Define peak inverse voltage and write its value for full-wave and half-wave rectifiers.

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**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) Define thermal efficiency. 3  
(b) Two resistors of 5  $\Omega$  and 20  $\Omega$  are connected in parallel across 240 V supply. Calculate—  
(i) total current;  
(ii) current through each resistor;  
(iii) voltage across 5  $\Omega$  resistor. 3+2+2
- 12.** (a) Derive the expression for energy stored in magnetic field. 5  
(b) Explain Faraday's laws of electrolysis. 5
- 13.** (a) Define dielectric strength and dielectric constant. 4  
(b) Find the equivalent capacitance of capacitors connected in series. 6
- 14.** Explain the AC response of series RC circuit.
- 15.** (a) Explain PTC and NTC resistors and list their applications. 5  
(b) Classify inductors. 5
- 16.** Explain the working of push button switch and write its applications.
- 17.** (a) Explain briefly the photoprocessing techniques in the fabrication of PCB. 5  
(b) Draw VI characteristics of PN junction diode in forward bias and explain. 5
- 18.** Explain the working of full-wave rectifier with circuit diagram and draw its input and output waveforms.

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