



C09-CM-303

3229

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2014

DCM—THIRD SEMESTER 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. Explain the law of resistance.
2. Distinguish between active and passive circuits.
3. Discuss star and delta circuits.
4. Explain briefly Faraday's laws of electromagnetic induction.
5. Define RMS value and average value.
6. What are NTC and PTC resistors? List any two applications.
7. Distinguish between conductor, semiconductor and insulator on basis of electrical properties.
8. Draw the atomic structure of silicon and germanium semiconductor materials.
9. Distinguish between intrinsic and extrinsic semiconductor materials.
10. Classify the stabilizers.

\*

**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 an expression for total resistance when three resistances  $R_1$ ,  $R_2$  and  $R_3$  are connected in series.  
(b) The resistance of a conductor at 500 °C is 4 236 and 900 °C is 4 986 . Find the temperature coefficient of resistance at 0 °C and at 50 °C.
- 12.** (a) State the limitations of Ohm's law.  
(b) Derive the transformation equations of star-delta.
- 13.** (a) Derive the equation for energy stored in a magnetic field.  
(b) Derive the equation for resonance frequency in an RLC series circuit.
- 14.** (a) Classify different resistors.  
(b) State the specifications and mention the applications of the AF transformers.
- 15.** Explain the operation of  $P-N$  junction with forward bias, reverse bias and no bias.
- 16.** Draw and explain the input, output characteristics of transistors in CE mode.
- 17.** (a) Derive the relation between  $\alpha$  and  $\beta$  .  
(b) State the applications of transistor.
- 18.** Draw and explain the working principle of stabilizer.

\*\*\*