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C09-CM-303

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BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2013

DCM—THIRD SEMESTER EXAMINATION

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Time : 3 hours]

[Total Marks : 80

PART—A

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State and explain Ohm's law. 2+1

2. State Kirchhoff's current and voltage laws.

3. Define junction, branch and loop in a circuit. 1+1+1

4. State Lenz's law.

5. State and explain the coefficient of coupling. 1+2

6. State the applications of PTC and NTC.

7. List the specifications of a junction diode.

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8. Define alpha, beta and gamma. 1+1+1
9. Compare the performances of CB, CE and CC configurations.
10. List the specifications and rates of stabilizers.

PART—B

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) Explain the effects of temperature on resistance. 4
(b) Derive an equation for equivalent resistance in parallel circuits. 6
12. Define delta resistance in terms of star equivalent resistance.
13. (a) State and explain Fleming's right-hand rule. 6
(b) Define (i) self-inductance and (ii) mutual inductance. 2+2
14. (a) Classify different electronic passive components. 3
(b) Differentiate between rheostat and potentiometer. 4
(c) List the different types of transformers. 3
15. (a) Distinguish among conductors, semiconductors and insulators based on electrical properties. 6
(b) Describe the formation of N-type materials. 4

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- 16.** (a) Differentiate between *N*-type and *P*-type semiconductors. 5
(b) Derive the expressions for the collector current in CE mode in terms of I_E , I_C and I_{CBO} . 5
- 17.** (a) Draw and explain the volt ampere characteristics of *P-N* junction diode. 2+3
(b) Draw and explain the input and output characteristics of CE configuration. 2+3
- 18.** (a) Briefly explain about spike buffers and suppressors. 4
(b) Explain the working of stabilizer with a neat diagram. 3+3

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