



C09-EC-105

**3031**

**BOARD DIPLOMA EXAMINATION, (C-09)**  
**MARCH/APRIL—2014**  
**DECE—FIRST YEAR EXAMINATION**  
**BASIC ELECTRONICS**

*Time : 3 hours ]*

*[ Total Marks : 80*

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**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 Coulomb's law.
2. What is the need for tapering in potentiometer?
3. Derive an expression for equivalent inductance when two inductors are connected in series.
4. List the different types of fuses.
5. List the specifications of loudspeakers.
6. Distinguish between drift current and diffusion current.
7. What are the specifications of *p-n* junction diode?
8. Define alpha, beta and gamma of a transistor.
9. State the advantages of secondary cells over the primary cells.
10. State the various losses in a DC machine.

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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) With a neat sketch, explain the working of a rheostat.  
(b) Mention the specifications of a resistor and define them.
- 12.** (a) Two coils each having an inductance of 250 H have combined inductance of 550 H when connected in series aiding and 450 H when connected in series opposing. Calculate—  
(i) their mutual inductance;  
(ii) coefficient of coupling.  
(b) Derive the expression for energy stored in a capacitor.
- 13.** (a) With a neat sketch, explain the operation of push to ON switch.  
(b) List the various steps involved in the PCB preparation.
- 14.** (a) With a neat sketch, explain the operation of PMMC loudspeaker.  
(b) Mention the uses of woofers and tweeters.
- 15.** (a) Explain the formation of *p-n* junction diode.  
(b) Distinguish between Zener and Avalanche breakdown.
- 16.** (a) Draw the input and output characteristics of a transistor in CE configuration and explain.  
(b) Determine the value of beta if alpha of the transistor is 0.99.
- 17.** (a) Derive the e.m.f. equation of a transformer.  
(b) Explain the various losses that occur in a transformer.
- 18.** Explain the principle of operation of stepper motor.

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