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C14–AEI–303

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2017

DAEI—THIRD SEMESTER EXAMINATION

ELECTRONIC DEVICES AND APPLICATIONS

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. List any three electrical properties of solid semiconductor materials.

2. List any three applications of diode.

3. State the need of filters.

4. Draw the symbols of *n-p-n* and *p-n-p* transistors.

5. Draw the CB transistor configuration.

6. List any three applications of UJT.

7. Draw the drain characteristics of JFET.

8. Draw the volt-ampere characteristics of SCR.

9. Draw circuit diagram of simple zener regulator.

10. List any three specifications of ICs.

PART—B

10×5=50

Instructions : (1) Answer any **five** questions.

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

(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

11. *(a)* Explain the formation of *P*-type material and sketch the energy band diagram. 5

(b) Distinguish between zener breakdown and avalanche breakdown. 5

12. Explain the working of centre-tap full wave rectifier circuit with waveforms.

13. Explain the working of *P-N-P* transistor with diagram.

14. *(a)* Derive the relationships between alpha and beta factors. 5

(b) Explain the working of CE transistor as an amplifier. 5

15. Explain the working principle of UJT transistor as an amplifier.

16. Explain the battery charger circuit using SCR with diagram.

17. Explain the battery charger circuit using SCR with diagram.

18. *(a)* Compare ICs with discrete component circuits. 5

(b) Give the expression for efficiency peak inverse value and ripper factor of half wave rectifier. 5

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