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C14–AEI–304

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2018

DAEIE—THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS

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. Compare between weighted and unweighted codes in any three aspects.

2. Convert $(123)_2$ into decimal and octal number systems.

3. Draw half-adder circuit using exclusive OR gate and an AND gate.

4. List any three applications of decoders.

5. Draw the diagram of T flip-flop and write its truth table.

6. List any three applications of ring counter.

7. Define modulo-N counter.

8. Draw the diagram of shift right register.

9. List any three types of memory.

10. Define the terms resolution and settling time of D/A converter.

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)* Subtract $(1101)_2$ from $(1000)_2$ using 2's complement method. 5

(b) Simplify $\overline{A}BC \quad \overline{A}B\overline{C} \quad A\overline{B}\overline{C} \quad A\overline{B}C$ using K-map. 5

12. Explain the working of NAND and NOR gates using truth tables.

13. *(a)* Explain the working of 1×4 demultiplexer. 5

(b) Draw and explain 4-bit parallel adder using full adders. 5

14. Explain two-bit digital comparator.

15. Explain J-K master-slave flip-flop with its truth table.

16. Explain asynchronous ripple counter with the help of flip-flops and draw waveforms.

17. *(a)* Explain the basic principle of working of ROM. 5

(b) Explain the working of serial in serial out register. 5

18. Explain D/A converter using R-2R ladder network.

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