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C14–AEI–304

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BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2017

DAEI—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 weighted and unweighted codes.

2. Subtract $1100_{(2)}$ from $1000_{(2)}$ using 2's complement, subtraction method.

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

4. What is a combinational logic circuit?

5. Draw the truth table T-flipflop.

6. State the need of preset and clear inputs.

7. What are synchronous and asynchronous counters?

8. List the types of data transfer in registers.

9. Distinguish between RAM and ROM in any three aspects.

10. State the need for D/A conversion.

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. Simplify the following expression using K-map :

$$ABC \quad \overline{A}BC \quad AB\overline{C} \quad A\overline{BC} \quad AC$$

12. *(a)* State Demorgan's laws. 6

(b) Convert $96_{(10)}$ into octal and hexadecimal number. 4

13. Draw a full-adder circuit an explain its working with truth table.

14. *(a)* Explain 4×1 multiplexer with a neat sketch. 5

(b) Explain 2×4 decoder and draw its truth table. 5

15. Explain the operation of decade counter with diagram and truth table.

16. Draw and explain edge triggered D flip-flop with truth table and timing diagram.

17. Explain ring counter with a neat diagram and truth table.

18. Explain A/D conversion using successive approximation method and mention its advantages.

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