C14–AEI–304

4217

BOARD DIPLOMA EXAMINATION, (C–14)
OCT/NOV—2016
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. Convert the $(306 \cdot 28)_8$ into decimal number system.

2. Draw and explain the operation of Ex-OR gate with the help of truth table.

3. Compare between performance of serial and parallel adder in any three aspects.

4. List any three applications of decoders.

5. State the race-around condition in *J-K* flip-flop.

6. Draw T flip-flop diagram with truth table.

7. Draw the circuit of SR flip-flop using NAND gates.

8. Define a register.

9. Define volatile and non-volatile memories.

10. State the need for A/D converters.

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. Perform the following subtraction of a binary numbers in 2's complement method of subtraction : 10

(a) $(10101)_2$ $(10001)_2$

(b) $(1110)_2$ $(0101)_2$

12. (a) Simplify the following expression by using Karnaugh map : 7

$\overline{A}\overline{B}\overline{C}$ $A\overline{B}\overline{C}$ $A\overline{B}C$ $AB\overline{C}$ ABC $\overline{A}BC$

(b) Draw and explain the operation of NAND gate with truth table. 3

13. Draw and explain the operation of 2-bit digital comparator. 10

14. Draw and explain the working of 4-bit parallel adder, and explain it. 10

15. (a) State the need for preset and clear inputs of *J-K* flip-flop. 5

(b) Draw and explain the working of a *J-K* flip-flop with the help of truth table. 5

16. Explain the operation of asynchronous ripple counter with a neat diagram. 10

17. (a) Explain the working of shift right register with the truth table. 5

(b) Draw and explain working of ring counter. 5

18. Draw and explain D/A conversion using *R*-2*R* ladder network. 10

★ ★ ★