



C14-EC-305

4241

BOARD DIPLOMA EXAMINATION, (C-14)
OCT/NOV—2016
DECE—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 un-weighted codes.
2. Draw the symbols and truth tables of AND, OR and NOT gates.
3. Subtract 1110·11 from 101·101 using 2's complement method.
4. Define the terms (a) propagation delay, (b) power dissipation and (c) fan-out.
5. What is race condition? How is race condition avoided in *J-K* master-slave flip-flops?
6. State the need for a tristate buffer.
7. Draw the circuit diagram of half-adder using only NOR gates.
8. What is meant by toggling? Draw the symbol of *T* flip-flop.

- * 9. List the applications of shift register.
10. Distinguish between NVRAM and flash ROM.

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) Reduce the following expression using Karnaugh map : 4

$$Y = \overline{A}\overline{B}\overline{C} + \overline{A}B\overline{C} + \overline{A}BC + A\overline{B}\overline{C} + A\overline{B}C + AB\overline{C} + ABC$$
- (b) Convert $(1001101)_2$ in to gray code. 3
- (c) Convert $(7892)_8$ in to decimal number. 3
12. (a) Develop the truth table for the following expression : 4

$$Y = (A \oplus B)(\overline{A} \oplus C)$$
- (b) Draw the equivalent circuit, symbol and truth table of EX-OR gate and explain. 6
13. Draw a CMOS NAND gate circuit and explain its operation.
14. Explain the working of 4-bit parallel adder circuit using full adders.
15. Draw the circuit diagram of BCD to decimal decoder and explain its working.
16. Explain the working of 4-bit shift-left register with a circuit and timing diagram.
17. (a) Explain the operation of clocked *D* Flip-flop with circuit diagram and truth table. 7
- (b) Explain the need for preset and clear inputs in flip-flops. 3
18. Explain the working of asynchronous decade counter with a circuit and timing diagram.
