



C14-EC-305

4241

BOARD DIPLOMA EXAMINATION, (C-14)
OCT/NOV—2017
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. Convert the following numbers :

(a) $(FE7)_{16}$ ()₁₀

(b) $(753)_{10}$ ()₈

2. Compare weighted and unweighted codes.

3. Develop AND and NOT gates using NAND gates only.

4. List any three IC numbers of two-input digital logic gates.

5. Develop half-adder using NAND gates.

6. Draw logic circuit digital comparator.

7. State the necessity of clock.

8. What is race around condition? How can it be avoided?

- * 9. List any three applications for (a) flip-flops and (b) registers.
10. Write any three differences between static RAM and dynamic RAM.

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) Perform subtraction of a given binary number using 1's complement method : 3+3=6
 (i) 1110-1001
 (ii) 0101-1101
- (b) State any four postulates in Boolean algebra. 4
12. (a) State and prove De Morgan theorems. 5
 (b) Write Boolean expression of sum of min terms from the following truth table and simplify : 5

<i>Input</i>			<i>Output</i>
<i>A</i>	<i>B</i>	<i>C</i>	<i>Y</i>
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

- * 13. (a) Define propagation delay and noise margin. 4
 (b) Draw and explain the working of TTL NAND gate with open collector output with circuit. 6
14. (a) Explain the working of 'serial adder' with a block diagram. 5
 (b) Draw and explain the operation '4 1 MUX'. 5
15. (a) Explain the working of decimal to BCD encoder circuit. 7
 (b) State the need for a tristate buffer. 3
16. Explain the operation of 'master-slave *J-K* flip-flop' with neat sketch.
17. Draw and explain the working of 4-bit bidirectional shift register with timing diagram.
18. (a) Distinguish between synchronous and asynchronous counters. 4
 (b) Explain the working of basic dynamic MOS RAM cell. 6

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