



C09-EC-305

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BOARD DIPLOMA EXAMINATION, (C-09)
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. Convert the following hex numbers into decimal :

(a) $2B8_{16}$

(b) $1C_{16}$

(c) $3CA_{16}$

2. Draw the symbols of NAND, NOR and Ex-OR gates.

3. List different digital logic families.

4. Realize a half-adder circuit using NOR gates only.

5. Draw the logic circuit of 3×8 decoder.

6. Draw a level clocked *T* flip-flop.

7. Draw a four-bit shift left register.

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8. State the need for preset and clear inputs in flip-flops.
9. Draw the circuit of A/D converter using counter method.
10. Write any three differences between ROM and 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) Use Karnaugh map to simplify the following boolean expression : 5

$$Y = \bar{A}\bar{B}\bar{C} + A\bar{B}\bar{C} + \bar{A}B\bar{C} + AB\bar{C}$$

- (b) Write boolean expressions of product of max. terms from the following truth table : 5

Inputs			Output
A	B	C	X
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0

12. (a) Subtract decimal number 45 from 87 using 2's complement method. 4

(b) Compare between weighted and unweighted codes. 3

(c) Explain the use of parity bit. 3

13. Draw and explain 2's compliment parallel adder/subtractor circuit with one example. 10

14. (a) ^{*} Draw and explain a simple tristate buffer. 5
(b) Draw and explain one-bit digital comparator. 5
15. (a) Draw and explain the operation of NAND latch. 5
(b) Write about level triggering and edge triggering. 5
16. Draw and explain master-slave JK flip-flop. 10
17. (a) Explain the terms resolution, accuracy and monotonicity of D/A converter. 5
(b) Draw R-2R ladder network D/A converter. 5
18. (a) Explain the working of dynamic MOS RAM cell. 5
(b) Compare static RAM with dynamic RAM in any five aspects. 5
