



C14-EC-305

**4240**

**BOARD DIPLOMA EXAMINATION, (C-14)**

MARCH / APRIL - 2019

**DECE - III SEMESTER EXAMINATION**

**DIGITAL ELECTRONICS**

Time : 3 Hours]

[Total Marks : 80

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**PART - A**

**3×10=30**

- Instructions :**
- (1) Answer **ALL** questions.
  - (2) Each question carries **THREE** marks.
  - (3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

- 1 State De-Morgan's Theorems.
- 2 Draw the symbols of universal logic gates with Truth Tables.
- 3 Convert the hexadecimal number (AB6.13) into equivalent octal number.
- 4 List the important characteristics of digital IC's.
- 5 Draw the Half-adder circuit with NAND gates and give output functions.
- 6 List any 3 applications of multiplexer circuit.
- 7 Define Race around Condition.
- 8 State the need for a Register.
- 9 List any 3 applications of shift registers.
- 10 Write the differences between ROM and RAM.

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## PART - B

10×5=50

- Instructions :**
- (1) Answer any **FIVE** questions.
  - (2) Each question carries **TEN** marks.
  - (3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11 (a) Write the difference between weighted codes and Un-weighted codes. 4
- (b) (i) Subtract 1101 from 1000 using 2's complement method. 2
- (ii) Convert 87 to Excess-3 code. 2
- (iii) Convert  $(1001101)_2$  into gray code. 2
- 12 (a) Develop the basic gates AND, OR NOT using NAND and NOR gates. 6
- (b) Simplify the Boolean Expression using K-map techniques. 4
- $$Y = \overline{A}BC + A\overline{B}C + \overline{A}BC + ABC + \overline{A}B\overline{C}$$
- 13 Explain the working of open collector TTL NAND gate with a circuit diagram.
- 14 (a) Explain 2's complement parallel adder/subtractor circuit. 6
- (b) Comparison between serial adder and parallel adder. 4
- 15 Explain the working of BCD to Decimal decoder circuit.
- 16 Draw and explain the working of clocked SR flip-flop using NAND gates with Truth Table.
- 17 Explain the working of (a) 4 bit shift left register (b) 4-bit shift right register with circuit diagrams.
- 18 Explain the working of 4-bit asynchronous counter with a circuit and timing diagram.