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**4217****BOARD DIPLOMA EXAMINATION, (C-14)****MARCH /APRIL-2019****DAEIE - THIRD SEMESTER EXAMINATION****DIGITAL ELECTRONICS**

Time: 3 Hours ]

[Max. Marks : 80

**PART-A****10x3=30M**

**Instructions:** 1) Answer **all** the questions. Each question carries **three** marks.

2) Answers should be brief and straight to the point and shall not exceed five simple sentences.

- 1) State De- Morgan's theorems.
- 2) Add  $(1101)_2$  and  $(1001)_2$
- 3) Draw the circuit of 3x8 decoder.
- 4) List any three applications of multiplexer.
- 5) Draw the diagram of D flip flop and write its truth table.
- 6) Define sequential logic circuit.
- 7) Differentiate between synchronous and asynchronous counters in any three aspects.
- 8) State the use of shift register as memory.
- 9) Compare static RAM and dynamic RAM in any three aspects.
- 10) State the need for A/D converter.

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**PART-B**

**5x10=50M**

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**Instructions:** 1) Answer any **five** questions. Each question carries **ten** marks.

2) Answers should be comprehensive and the criterion for valuation is the content but not the length of answer.

- 11) a) Convert  $(10010)_2$  into decimal and hexadecimal number. (4M)  
b) Simplify the Boolean expression  $Y = \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}C + ABC + ABC\bar{C}$  using Boolean laws. (6M)
- 12) a) State any five postulates of Boolean algebra. (5M)  
b) Explain the working of Exclusive- OR gate with its truth table. (5M)
- 13) a) Explain the working of serial adder with a block diagram. (6M)  
b) Compare the performance of Serial and parallel adder. (4M)
- 14) Realise a half adder using NAND Gates and NOR Gates only.
- 15) (a) Explain JK flip flop with the help of truth table. (6M)  
(b) State the need for preset and clear inputs. (4M)
- 16) Explain the Working of Ring counter and list its any two applications.
- 17) Explain the working of the Universal shift register.
- 18) Explain the working of A/D converter using successive approximation method.

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