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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (EE) (2012 Onwards) / (Electrical & Electronics Engg.) (2011 Onwards)
B.Tech. (Electronics & Electrical Engg./ Electrical Engineering & Industrial Control) (2012 to 2017) (Sem.-4)

DIGITAL ELECTRONICS

Subject Code : BTEC-404

M.Code : 57103

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A**Answer briefly :**

- 1) Convert the following numbers to octal :
 - i) $(365)_{16}$
 - ii) $(22.64)_{10}$
 - iii) $(11011.1100)_2$
 - iv) $(101)_2$
- 2) Convert the following gray code to binary, i) 100101 ii) 11111
- 3) State DeMorgan's First theorem
- 4) What is meant by Latch?
- 5) Define the following terms regarding a logic family :
 - i) Noise Margin
 - ii) Propagation delay
- 6) Draw the truth table of T Flip flop.

- 7) Which of the following language can describe the hardware?
- 8) Why do we need HDL?
- 9) What are the facts of behavioral description?
- 10) What are the file processing tasks in VHDL? Name them.

SECTION-B

- 11) What are the different types of codes used in digital systems? Explain them.
- 12) Implement the following Boolean function using 8:1 multiplexer.

$$f(A, B, C, D) = \overline{A}\overline{B}\overline{D} + ABC + \overline{B}CD + \overline{A}CD$$

- 13) Compare the flash type, successive approximation and dual slope A/D converters.
- 14) How does an edge triggered JK FF avoid race around condition?
- 15) What is the difference between synchronous and asynchronous counter?

SECTION-C

- 16) Find the minimal expression for the following function using Quine-McCluskey method.

$$f(A, B, C, D) = \sum m(0, 1, 4, 6, 8, 9, 10, 12) + d(5, 7, 14)$$

- 17) A combinational circuit is defined by the function

$$F_1(A, B, C,) = \sum m(4, 5, 7) \qquad F_2(A, B, C,) = \sum m(3, 5, 7)$$

Implement this circuit with a PLA having 3 inputs, 3 product terms and 2 outputs.

- 18) Compare the performance of TTL, CMOs and ECL logic.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.