Total No. of Questions – [8]

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G.R. No.	

Paper code - U219-145(BE-FEFS)

DECEMBER 2019/ENDSEM - backlog Exam

S. Y. B. TECH. (Information Technology) (SEMESTER - I)

COURSE NAME: DIGITAL ELECTRONICS AND LOGIC DESIGN

COURSE CODE: ITUA21175

(PATTERN 2017)

Time: [**2 Hours**] [Max. Marks: **50**]

(*) Instructions to candidates:

1) **Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) a) Construct Hamming Code for the following 8-bits word. Use Even Parity. [6 marks]
i. 10101010
ii. 00000000
iii.11111111

OR

b) Perform following arithmetic using 2's Complement: [6 marks]
i) $(7)_{10} - (11)_{10}$
ii) $(-7)_{10} - (11)_{10}$
iii) $(-7)_{10} + (11)_{10}$

Q.2) a) Define Digital Comparators. Draw and discuss n-bit comparator. [6 marks]

OR

b) Design (Truth Table, K-map, Boolean expressions, Circuit Diagram) and draw the 4-bit Code Converter circuit for converting Excess-3 Code to BCD Code. [6 marks]

Q.3) a) Design a Sequence Generator using Shift Register IC 741 to generate the sequence 10110. [6 marks]

OR

b) Design the circuit for 3-bit Synchronous Up-Counter. [6 marks]

Q.4) a) Explain the basic architecture of FPGA with suitable diagram. [4 marks]

OR

b) Draw ASM chart for a 2 bit up counter with output 'Q1Q0' and Enable Signal X is to be designed. If X=0, counter changes the state as '00-01-10-11'. If X=1, counter should remain in present state. [4 marks]

Q.5) a) Write VHDL code for 4:1 MUX using any modeling. [6 marks]

b) Compare Dataflow and Behavioral modelling style. [4 marks]

c) In the structure of VHDL module, what is Library, Entity and, Architecture. [4 marks]

OR

Q.6) a) Write VHDL code for 3:8 Decoder using any modeling. [6 marks]

b) Define Concurrent and Sequential Statements, Data Objects (Variable, signal & constant) & Data Types in VHDL module. [4 marks]

c) Compare Behavioral and Structural modelling style. [4 marks]

OR

Q.7) a) Draw and explain the Programmers model of 8086 microprocessor. [6 marks]

b) List main features of 8086 Microprocessor. [4 marks]

c) Discuss Von Neuman architecture in detail. [4 marks]

OR

Q.8) a) Explain Segment Registers of 8086 Microprocessor. [6 marks]

b) Discuss Harvard architecture in detail. [4 marks]

c) List main features of 8051 Microcontroller. [4 marks]