Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5668]-135

S.E. (E&TC/Electronics) (First Semester) EXAMINATION, 2019

DIGITAL ELECTRONICS

(2015 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Answer Q. No. **1** or Q. No. **2**, Q. No. **3** or Q. No. **4**, Q. No. **5** or Q. No. **6** and Q. No. **7** or Q. No. **8**.

(*ii*) Figures to the right indicate full marks.

(*iii*) Neat diagram must be drawn wherever necessary.

(*iv*) Use of non-programmable calculator is allowed.

(*v*) Assume suitable data, if necessary.

1. (*a*) Draw and explain Master-Slave JK flip-flop. [6]

(*b*) Design Mod 8 synchronous counter using T flip-flop. [6]

Or

2. (*a*) Convert SR flip-flop to JK flip-flop. [6]

(*b*) Implement a full adder using 8 : 1 multiplexer. [6]

3. (*a*) Design the sequence generator using JK flip-flop

$$0 \rightarrow 2 \rightarrow 4 \rightarrow 6 \rightarrow 0$$ [6]

(*b*) Explain working of 2 input TTL Nand gate with totem pole. [6]

P.T.O.

Or

4. (*a*) Compare TTL and CMOS logic family. [6]

(*b*) Draw circuit diagram of 3-bit SIPO shift register using D flip-flop. Explain its working. [6]

5. (*a*) A combinational circuit defined by $f_1 = m\ (0, 3, 4, 7)$ and $f_2 = m\ (1, 2, 5, 7)$. Implement using PLA. [6]

(*b*) Compare SRAM and DRAM. [3]

(*c*) Explain PAL with the help of neat a diagram. [4]

Or

6. (*a*) Implement the following using PAL

$$F(A, B, C, D) = \Sigma m(0, 1, 3, 15)$$ [6]

(*b*) Draw and explain structural diagram of CPLD. [4]

(*c*) Compare CPLD with FPGA. [3]

7. (*a*) Write a program for subtraction of 8-bit binary numbers. [3]

(*b*) Explain any *two* addressing modes of 8051. [4]

(*c*) Explain the following instructions with examples : [6]

(*i*) CJNE

(*ii*) SUBB A, R0

(*iii*) JMP @ A + DPTR

(*iv*) LCALL code addr

Or

8. (*a*) Draw the pin diagram of 8051 microcontroller and explain its port structure. [6]

(*b*) Explain the function of the following pins of 8051 : [3]

(*i*) EA

(*ii*) $\overline{\text{PSEN}}$

(*iii*) RST

(*c*) List the features of 8051. [4]