

Total No. of Questions : 8]

SEAT No. :

PA-1191

[Total No. of Pages : 2

[5925]-213

S.E. (Electronics/E & T.C/Electronics & Computer)

DIGITAL CIRCUITS

(2019 Pattern) (Semester-III) (204182)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.


- Q1) a) Draw the logic diagram of full-adder and its truth table. [7]
- b) Implement a full-adder using Demultiplexer. [5]
- c) Implement the given logic function using a 4:1 multiplexer [5]

$$f(A, B, C) = \sum m(0, 2, 4, 6)$$

OR

- Q2) a) Explain the working of a half-adder? Draw its logic diagram. [7]
- b) Implement the full subtractor using a 1:8 demultiplexer. [5]
- c) Implement the following function using multiplexer [5]

$$f(A, B, C) = \sum m(0, 2, 4, 6)$$

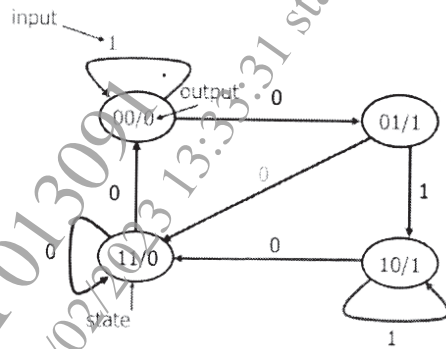
- Q3) a) Design a sequence generator using T FFs.  [8]
- b) Explain the types of shift register. [5]
- c) Explain with diagram the working of D type Flip-flop. Give its truth table. [5]

OR

- Q4) a) Design a 3-Bit synchronous counter using JK FF. [8]
- b) With the neat diagram, explain the working operation of 4-bit SISO. [5]
- c) Explain S-R flip-flop using NOR gates. [5]

P.T.O.

- Q5) a)** Design the clocked sequential circuit for the state diagram using JK flip flop. [9]



- b) Draw ASM chart for 2 bit binary counter having one enable line E such that: $E=1$, [8]
 c) Count Enable and $E=0$, Count Disable.

OR

- Q6) a)** Design a sequence detector to detect a sequence 1101 using D FF [9]
 (Use Moore machine).

- b) Explain in short: [8]
 i) State Assignment
 ii) ASM chart

- Q7) a)** Explain the classification based on their physical characteristics. [8]
 b) Explain the concept of PLA with the help of a block diagram. [10]

OR

- Q8) a)** Explain the meaning of static and dynamic memories. State their applications. [8]
 b) Describe with neat diagram AND-OR structure of PLA and PAL. [10]

