

**POSSESSION OF MOBILE IN EXAMINATION IS UFM PRACTICE**

Name of Student -----

Enrolment No. -----

Department -----

**BENNETT UNIVERSITY, GREATER NOIDA**

Supplementary Examination, July 2019

COURSE CODE: **ECSE104L**

MAX. DURATION: **TWO HOUR**

COURSE NAME: **DIGITAL DESIGN**

COURSE CREDIT: **5**

MAX. MARKS: **50**

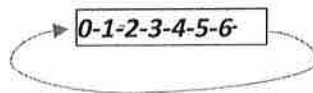
**Note:**

- All the questions are compulsory.
- Please write precisely and neatly. Please make clear diagram wherever required.

1. Design a circuit which can convert BCD to excess-3. (10 Marks)
  - a. Make truth table
  - b. Derive equations using K-map.
  - c. Draw the circuit diagram

2. Design a 8-to-1 mux using 2-to-1 mux. (5 Marks)

3. Design the asynchronous counter using T flip flop which count numbers as follows: (10 Marks)



4. Design a combined register which have capability of serial in serial out(SISO) and parallel in and serial out (PISO) together. (5 marks)

5. Simply the following Boolean expressions using the Boolean algebra. (10 marks)

- a)  $F = AB'C + A'BC' + AB'CD' + A'B'C'D$
- b)  $F = C'D + A'BC'D + A'BC'D + AB'C'D' + AB'CD'$

6. Multiple choice questions. (5\*2=10 marks)

- i. What is the result when a decimal 5238 is converted to base 16?
  - a. 1388
  - b. 12166
  - c. 327.375
  - d. 1476

- ii. Convert the binary number 1001.0010 to decimal. (1 Mark)
  - a. 12.5
  - b. 125
  - c. 90.125
  - d. 9.125

- iii. Consider the following Boolean expression for F:

$$F(P, Q, R, S) = PQ + P'QR + P'QR'S$$

The minimal sum-of-products form of F is

- a.  $PQ + QR + QS$
  - b.  $P + Q + R + S$
  - c.  $P' + Q' + R' + S'$
  - d.  $P'R + P'R'S + P$
- iv. In an SR latch made by cross-coupling two NAND gates, if both S and R inputs are set to 1, then it will result in
- a.  $Q = 0, Q' = 1$
  - b.  $Q = 1, Q' = 0$
  - c. Memory
  - d. Not allowed
- v. Equation of carry in full adder is (a, b are inputs, and c is carry input).
- a.  $\text{carry} = ab + bc + ca$
  - b.  $\text{carry} = ab + (a \oplus b) c$
  - c. Both a and b
  - d. None of the above