POSSESSION OF MOBILE IN EXAMINATION IS UFM PRACTICE

Name of Student ---------- Enrolment No. ----------
Department ----------

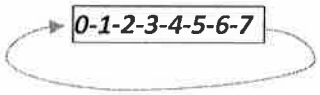
BENNETT UNIVERSITY, GREATER NOIDA
Supplementary Examination, August 2018

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 Decimal to seven-segment display decoder. Prepare the truth table and also the minimized Boolean expression for one of the output using K-Map for this problem. (10 Marks)
2. Design a 4-to-16-line decoder with 2-to-4-line decoders with enable. (5 Marks)
3. Design the synchronous counter using T flip flop which count numbers as follows: (10 Marks)



Please give details of the following steps:
   a. Develop state diagram
   b. Create excitation table
   c. Identify function using k maps
   d. Design counter circuit

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'CD+A'BC'D+AB'CD'+A'B'C'D
   b) F=A'B'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. carry = ab + bc +ca
b. carry = ab + (a $\oplus$ b) c
c. Both a and b
d. None of the above