SEAT No. :

F.Y. B.Sc. (Computer Science)
ELECTRONICS SCIENCE
ELC 112: Principles of Digital Electronics
(Backlog)
(2019 Pattern) (CBCS) (New) (Paper - II) (Semester - I)

[Time: 2 Hours]   *[Max. Marks: 35]*

Instructions to the candidates:
1) *Q. 1 is compulsory.*
2) *Solve any three questions from Q.2 to Q.5.*
3) *Questions 2 to 5 carry equal marks.*

Q.1) Solve any Five of the following: [5 × 1 = 5]

     a) Define fan out terms.

     b) Draw symbol and truth table of OR logic.

     c) What is Non-weighted code?

     d) How many select lines are required to design 1:4 Demultiplexer?

     e) What is base of hexadecimal number system?

     f) State the function of IC 7447.

Q.2) A) Attempt the following:

     i) Simplify the following expression using k-map.   [3]

$$Y = \overline{A}B C + A\overline{B}\overline{C} + A B C + A B\overline{C}$$

     ii) Write a short note on multiplexer.   [3]

   B) Design Gray to Binary converter using k- map technique.   [4]

P.T.O.

Q.3) **A)** **Attempt the following:**

i) Write a short note on karnaugh map technique. [3]

ii) Explain Half adder with neat logic diagram and truth table. [3]

B) Draw the logic diagram for the given Boolean expression and write the truth table for it. [4]

$$Y = (A + \overline{B}) + (BD) + (\overline{A}\,\overline{B}\,\overline{C})$$

Q.4) **A)** **Attempt the following:**

i) Perform the following: [3]
   1) $(1010)_2 = (?)_{Gray}$
   2) $(101010110)_2 = (?)_{BCD}$
   3) $(AF)_{16} = (?)_{BCD}$

ii) Convert the following expression into standard SOP form. [3]
   $$Y = AB + A\overline{C} + BC$$

B) Draw and explain the logic diagram of 1:4 demultiplexer and explain it. [4]

Q.5) **Attempt any Four of the following:** [4 × 2½ = 10]

a) Write a short note on ASCII.

b) Design AND, OR and NOT logic using NOR gate.

c) What is Binary number? Where is it used?

d) Write a short note on Basic gates.

e) Explain the concept of parity bits and where it is used?

f) Write a short note on encoder?

❄ ❄ ❄