F.Y.B.Sc. (Comp. Science) Semester - I
Regular Semester-End Examination
Session : Nov. 2022

Subject : Principles of Digital Electronics **Subject Code : USCSEL-112**

Time : 2 Hrs. **Total Marks 35**

Instructions : (1) All questions are compulsory.
(2) Figures to the right indicate full marks.
(3) Draw neat labelled diagram wherever necessary.
(4) Use of non programmable calculators are allowed.

Q.1 Attempt any Five of the following. **(5*1=5)**

(a) Write truth table of XOR gate.
(b) Compute $(110101)_2 = (?)_{10}$.
(c) Negate the number : 0111.
(d) Write full form of ASCII.
(e) Calculate $(1AC)_{16} = (?)_2$.
(f) Name the universal logic gates.
(g) Find the number of select inputs required for 16:1 multiplexer.

Q.2 Attempt any Five of the following. **(5*3=15)**

(a) Give the characteristic of a gray code and convert the following binary number to gray code
(i) 1110 (ii) 0110
(b) Draw logic diagram of 1:2 demultiplexer. Also write its truth table.
(c) Convert the following Boolean expression to standard SOP form.
$y = AB + AC + \overline{C}$
(d) Explain the parameter voltage level of a TTL logic family.
(e) What do you mean by weighted and non-weighted code? Give one example of each.
(f) Draw diagram of Half adder and also write its truth table.
(g) Define the term :- (i) Encoder (ii) Parity bit

Q.3 Attempt any three of the following. **(5*3=15)**

(a) Draw diagram of parity generator circuit and explain its working.
(b) Design the binary to gray converter circuit using K map.
(c) State, draw symbol and prove any one DeMorgan's Theorem.
(d) Draw diagram of OR gate constructed using NAND gates only.
(e) Simplify the following expression using boolean laws and also draw the simplified diagram.
$y = A(AB + AC) + \bar{A}(AB + \bar{A}B)$

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