Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
End Semester Examination: Jan.2023
Faculty: Science and Technology

Semester: I

Program: BScComp05 **SET: A**
Program (Specific): B.Sc.(Computer Science) **Course Type: CC**
Class: F.Y. B.Sc. (Comp. Sc.) **Max. Marks: 35**
Name of the Course: Principles of Digital Electronics
Course Code: 22-ELC-112 **Time: 2Hr**
Paper: II

Instructions to the candidate:

1) ***There are 4 sections in the question paper. Write each section on separate page.***
2) ***All Sections are compulsory.***
3) ***Figures to the right indicate full marks.***
4) ***Draw a well labelled diagram wherever necessary.***

SECTION: A

Q1) Define **5**

I) Encoder .
II) Base of a number system. What is the base of (i) decimal number system and (ii) hexadecimal number system.
III) Propagation delay.
IV) Weighted code. Give one example.
V) Define Combinational circuit. Give one example.

Q2) Very short answer questions (Attempt any 4/6) **4**

I) Write the difference between Gray code and BCD code.
II) Draw logic diagram of half subtractor.
III) "Multiplexer circuit can be built by using OR-OR combination of logic gate", state whether this statement is true or false.
IV) Give any 2 uses of De-multiplexer.
V) Draw the truth table of half adder.
VI) Write a full form of ASCII code.

SECTION: B

Q3) Short answer questions (Attempt any 2/3) **8**

I) State and verify De-Morgan's 1^{St} and 2^{nd} theorems.
II) Summarize working of 1:4 de-multiplexers. Draw its logic diagram.
III) Write a short note on BCD code. Convert $(125)_{10\ to}$ BCD.

SECTION: C

Q4) Short answer questions (Attempt any 2/3) **8**

I) Explain 2's complement subtraction method. Solve $(57)_{10} - (89)_{10}$ using 2's complement techniques

II) Write a short note on Universal Gates. Build OR gate using only NAND gates.

III) Solve the Boolean expression using k-map $\overline{A}\,\overline{B}\,\overline{C} + \overline{A}\,B\,\overline{C} + A\,B\,C + \overline{A}\,\overline{B}\,C + A\,\overline{B}\,\overline{C} + A\,B\,C$. Draw the simplified diagram.

SECTION: D

Q5) Attempt any two of the following (2/4) **10**

I) Draw neat logic diagram of 4 bit Universal adder/subtractor. Explain its working.

II) Solve the following.
i) $(111011)_2 = (?)_{10}$ ii) $(376.15)_{10} = (?)_2$

III) Compare POS and SOP at any 2 point. Convert give expression into its standard POS (A+B+C+D).(A+B+C).(A+B+D)

IV) Discuss the working of decimal to BCD encoder and also draw the logic diagram.
