Time: 3 hours

Answer any five Questions from the followings. Parts of the same question should be answered consecutively.   Marks: 60

1. a) What is data processing? Differentiate between data and information. Which one is more useful   [4]
       to people and why?

    b) Write down the important characteristics of a computer. "Computer have no IQ", describe the   [4]
       terminology.

    c) Classify computer on the basis of capacity.   [4]

2. a) Describe the key components of a computer.   [4]

    b) Explain the concept of cache memory. How does cache memory improve the performance of the   [4]
       computer?

    c) Is ROM a non-volatile memory? Why or why not? Differentiate between RAM and ROM.   [4]

3. a) What do you mean by parity bit? Where it is used?   [2]

    b) Convert the following numbers: [6]

        i. $(109.78125)_{10}$ to binary

        ii. $(25F761)_{16}$ to decimal

        iii. $(38.A4B)_{16}$ to binary

    c) Perform the binary subtraction of the following using 2's complement method.   [2]

       $(-64)_{10} - (128)_{10} = (?)_2$

    d) Why are binary codes used by computer systems?   [2]

4. a) What is universal gate? Prove that NAND and NOR gates are universal gate.   [4]

    b) A logic circuit has three inputs A, B and C. It generates an output 1 only when A=0, B=1,   [3]
       C=0 or A=1, B=1, C=0. Design a combinational circuit for this system.

    c) Consider the following Boolean function.   [5]

       $F = \bar{X}.Y.Z + \bar{X}.\bar{Y}.Z$

       (i) Find out the complement of the function F

       (ii) Prove that the complement of the function F is equal to the Dual of F.

       (iii) Construct a logic circuit of the function F.

5. a) What is LCD? Write the advantages and disadvantages of LCD?   [4]

    b) Write down the name of five pointing devices. What are the differences between Mechanical and   [4]
       Optical mouse?

    c) Explain briefly the basic function of an MICR device.   [2]

    d) Write down the differences between hard disk and floppy disk.   [2]

6. a) What is a debugger? Differentiate among a compiler, an assembler and an interpreter.   [4]

    b) What is pseudo code? Describe the major steps that you need to follow for solving a problem.   [4]

c) What is operating system? Write some properties of an operating system. [4]

7. a) What is a process state? Explain the various states of a process with the help of a figure. [4]

b) What is a PCB and what information is contained in it? [2]

c) Differentiate between structured and Non-structured language. [2]

d) Give the output of the following code: [2]

```
float c=34.78650;
printf("%6.2f",c);
```

e) Explain the term syntax and semantics. [2]

8. a) What are the different types of computer networks? Explain CSN architecture. [4]

b) Briefly describe various types of network topologies with proper example. [4]

c) Write the features of E-mail. [2]

d) What are the differences between internet and intranet? [2]