Department of Computer Science & Engineering, NIT Hamirpur (HP)

Mid Semester Examination Jan 2021 (I^{st} Sem)

Subject: Computer Programming **Max Marks:** 30

Code: CS-101 **Max. Time:** 1 Hr & 30 Mts

Note: Attempt all the questions.

Q1. Draw the block diagram of a computer system and discuss about its components. [6]

Q2. Convert the following numbers from one number system to another [3x2=6]

(i) $(2B9.8A)_{16}$ to Base-5 **(ii)** $(5642.432)_{7}$ to Base-9 **(iii)** $(765.765)_{8}$ to Base-12

Q3. Perform the following arithmetic operations on binary number system [2x3=6]

(i) Multiply 111011 by 1101 **(ii)** Divide 10101110 by 111 **(iii)** subtract 1111 from 10010

Q4. Draw flow chart and write the algorithm to find whether a given user input number is prime or not? [3+3=6]

Q5. Draw flow chart and write the pseudo code to convert a user input octal number to binary number system. [3+3=6]

********** The End**********

National Institute of Technology Hamirpur

Computer Science & Engineering

Computer Programming (CS – 101)
B. Tech., 1st Semester (1st Year)
Mid-Term Examination (January 2023)

Max Marks: 30 Time: 1.5 Hours

Note: Attempt all the questions.

1. a Draw the block diagram of a computer system and discuss about its components. (5)

   b Show step-wise solution for subtraction using 2's complement method for **28-55** and show the result in decimal. (3)

2. a Given one hundred pairs of length and breadth of rectangles, obtain an algorithm to find all the rectangles whose area is greater than their perimeters. (For example the area of the rectangle with length = 5 and breadth = 4 is greater than its perimeter.) (5)

   b Extend the algorithm to find the average area of the rectangles found in part (a). (3)

3. i. Define and differentiate the following terms (6)
   Compiler, assembler, interpreter
   ii. Define and differentiate the following terms
   Hardware, software and firmware
   iii. Convert the following
   a) $(110.101)_2 = (\ )_{10}$?
   b) $(10010011110110)_2 = (\ )_{16}$?
   c) $(152)_8 = (\ )_{10}$?

4. Write a C program to find sum of the individual digits in a five-digit positive integer entered by the user. For example, if the given number is 96785, the required sum is 9+6+7+8+5 = 35. (4)

5. Write a C program to count number of digit after decimal with the help of loop. For eg. 84.4567 the output is 4 (4)