Shahjalal University of Science & Technology

Department of Physics

B.Sc. (Hons.) 2nd Year 2nd Semester Examination-2022

Course No: CSE 203N Credits: 2

Course title: Introduction to Computer Language

Full Marks: 60, Time: 2 hours

(Answer any five questions. The figures on the right margin indicate full marks)

1. (a) Determine which of the following are valid identifiers. If invalid, explain why. [2]

(a)recd-1 (b)$tax (c) name-and-address (d) array (e) char

(f) 5hk (g) yy_9is (h) break (i)_34flower (j) case

(b) Summarize the rules for naming identifiers. Are uppercase letters equivalent to lowercase letters in C? Determine which of the following are invalid identifiers in C? If invalid, explain why. *marks, return, for, roll#, $money, Break, _file1* [5]

(c) Convert the following program in if-else [5]

```
#include <stdio.h>
int main () {
   char grade;
   scanf("%c", &grade);
   switch(grade) {
      case 'A' :
         printf("Excellent!\n" );
         break;
      case 'B' :
      case 'C' :
         printf("Well done\n" );
         break;
      case 'F' :
         printf("Better try again\n" );
         break;
      default :
         printf("Invalid grade\n" );
   }
   return 0;
}
```

2. (a) Name four different types of data and mention their size. How do you scan and print those types of data? [5]

(b) Write a program that can calculate minimum among three numbers and identify whether number is odd or even. [5]

(c) State the compile-time error and run-time error with proper examples. [2]

3. (a) Write a program to display the following pattern: [6]

1 2 3 4
1 2 3
1 2
1

(b) What is the difference between a++ and ++a. [2]

(c) Write the output of the following program [4]

```
#include<stdio.h>
void main() {
    int a = 2 ;
       int b = 6 ;
       a++ ;
    printf("%d \n",a);
       b-- ;
    printf("%d \n",b);
  }
```

4. (a) Declare an integer pointer variable then assign 33 to the variable and at last print it. [2]

(b) Explain the meaning of each of the following function prototype. [4.5]

i. double f (double a, int b) ;
ii. void f(1ong a, short b, unsigned c) ;
iii. char f (void);

(c) Write a C program to add two square matrices. [5.5]

5. (a) Fill in the boxes with expressions or statements so that for the following program print all the even numbers from 1 to n: [3]

```
#include <stdio.h>
int main() {
  int i, n;
scanf("%d", &n); //n would be a positive integer
for(          ;          ) {
      if(          )
          
      else if(          )
          
printf("%d ", i);
  }
  return 0;
}
```

(b) Write a program to store the roll no. (starting from 1), name and age of 5 students and then print the details of the student with roll no. 2 [4]

(c) Write a program that takes array as an argument along with another argument and based passed argument it returns the average of the number passed. [5]

6. (a) What are function prototypes? What is their purpose? Where within a program are function prototypes normally placed? Give an example. [6]

(b) What is the output [4]

```
#include <stdio. h>
 int a = 3;
int functl ( int count);
int main ( )
{
int count;
for (count = 1; count <= 5; ++count)
{ a = functl ( count ) ;
  printf ( " % d ", a ) ; }
 return 0; }
 int functl ( int x )
{ a += x; return a ; }
```

(c) When should Structure use? Give an example with a small program. [2]

7. (a) Rewrite the following program code using switch statement: [5]

```
char result;
float gpa;

if(result=='*')
        gpa=4.00;
else if(result=='G')
        gpa=3.25;
else if(result=='C')
        gpa=2.00;
else
        gpa=0.00
printf("%f", gpa);
```

Which technique is better? Why?

(b) Write a program to read two integer numbers and their average value. Define AVG function to calculate the average value of these two numbers and call it to your main program. [5]

(c) What is the purpose of using return statement in a function? [2]

8. (a) Write a function to calculate the factorial of a positive integer N. Also write the code to read the value of N from user, call the function and show the calculated result. [6]

(b) What are the benefits of pointers over the use of arrays? Why should the programmer have to initialize any pointer-type variable prior to use it. [4]

(c) Define a structure for course to store information like dept, code, title, credit. [2]