COMPUTER ASSIGNMENT

Name- Avni yadav

Section – AU 1

COMPUTER ASSIGNMENT

Q1. Write a C program for calculating the price of a product after adding the sales tax to its original price. Where rate of tax and price is inputted by user.

Ans-

```
#include <stdio.h>

int main()

{

 double price, tax_rate, sales_tax;

 printf("Enter price of product: ");

 scanf("%lf", &price);

 printf("Enter tax rate: ");

 scanf("%lf", &tax_rate);

 sales_tax =  price*(tax_rate/100);

 printf("Sales tax: %.2lf\n", sales_tax);

return 0;

}
```

Q2. Write a C program to calculate the weekly wages of an employee. The pay depends on wages per hour and number of hours worked. Moreover, if the employee has worked for more than 30 hours, then he or she gets twice the wages per hour, for every extra hour that he or she has worked .

Ans-

```
#include <stdio.h>
 int main()
 {  float initWage=50, hours, tempHour, tempWage, totalWage;
    char name[10];
    printf("Enter Name of Employee: ");
    gets(name);
    printf("Enter total hours worked: ");
    scanf("%f", &hours);
    if(hours<=8)
       totalWage = initWage;
    else if(hours>8 && hours<=12)
    { tempHour = hours-8;
       tempWage = tempHour*10;
       totalWage = tempWage + initWage;
    }
    else if(hours>12 && hours<=16)
    {  tempHour = hours-12;
       tempWage = 4*10;
       totalWage = initWage + tempWage + (tempHour*20);
    }
    else if(hours>16 && hours<=20)
```

```
{  tempHour = hours-16;
   tempWage = (4*10) + (4*20);
   totalWage = initWage + tempWage + (tempHour*25);
}
else if(hours>20 && hours<=24)
{  tempHour = hours-20;
   tempWage = (4*10) + (4*20) + (4*25);
   totalWage = initWage + tempWage + (tempHour*40);
}
else
{ printf("A single day only has 24 hours.");
 return 0;
}
printf("Total Wage: \t%0.2f", totalWage);
 return 0;
}
```

Q.3 Mr. X goes to market for buying some fruits and vegetables. He is having a currency of Rs 500 with him for marketing. From a shop, he purchases 2.0 kg Apple priced Rs. 50.0 per kg, 1.5 kg Mango priced Rs.35.0 per kg, 2.5 kg Potato priced Rs.10.0 per kg, and 1.0 kg Tomato priced Rs.15 per kg. He gives the currency of Rs. 500 to the shopkeeper. Find out the amount shopkeeper will return to X by writing a C program.

Ans-

```
#include <stdio.h>

int main() {

   float applePricePerKg = 50.0;

   float mangoPricePerKg = 35.0;

   float potatoPricePerKg = 10.0;

   float tomatoPricePerKg = 15.0;

   float totalAmount = 500.0;


   float appleQuantity = 2.0;

   float mangoQuantity = 1.5;

   float potatoQuantity = 2.5;

   float tomatoQuantity = 1.0;


   float appleCost = applePricePerKg * appleQuantity;

   float mangoCost = mangoPricePerKg * mangoQuantity;

   float potatoCost = potatoPricePerKg * potatoQuantity;

   float tomatoCost = tomatoPricePerKg * tomatoQuantity;


 float totalCost = appleCost + mangoCost + potatoCost + tomatoCost;

 float amountToReturn = totalAmount - totalCost;
```

```
 if (amountToReturn >= 0) {
      printf("Mr. X has enough money. The shopkeeper will return Rs. %.2f\n",
amountToReturn);
   } else {
      printf("Mr. X does not have enough money to make the purchase.\n");
   }
 return 0;
}
```

Q4.Write a C program to print your name, date of birth and mobile number in 3 different lines

Soln-

```
#include <stdio.h>
int main()
{
    printf("Name   : Kartik Sharma\n");
    printf("DOB    : 19 November 2001\n");
    printf("Mobile : 9539872456\n");
    return 0;
}
```

Q5.Write a program to read an integer, a character and a float value from keyboard and display the same in different lines on the screen.

Soln- #include <stdio.h>

```
int main()
{
  int Integer;
  char Character;
  float InputFloat;
  printf(" Please Enter a Character :  ");
  scanf("%c", &Character);
   printf(" Please Enter an Integer Value :  ");
  scanf("%d", &Integer);
  printf(" Please Enter Float Value :  ");
  scanf("%f", &InputFloat);
   printf(" \n The Integer Value that you Entered is :  %d", Integer);
  printf(" \n The Character that you Entered is :  %c", Character);
  printf(" \n The Float Value that you Entered is :  %f", InputFloat);
 return 0;
}
```

Q6.Write a program to print the following line (Assume the total value is contained in a variable named cost) The sales total is : $ 172.53

Soln –

```
#include <stdio.h>

int main() {

   float cost = 123.45;

   printf("The total cost is Rs. %.2f\n", cost);

 return 0;

}
```

Q7.Raju got 6 and half apples from each of Raghu, Sheenu and Akash. He wants to know how many apples he has in total without adding them. Write a program which could help Raju in doing this.

Soln-

```
#include <stdio.h>

int main() {

   float applesFromRaghu = 6.5;

   float applesFromSheenu = 6.5;

   float applesFromAkash = 6.5;

 float totalApples = applesFromRaghu + applesFromSheenu + applesFromAkash;

 printf("Raju has a total of %.1f apples.\n", totalApples);

  return 0;

}
```

Q8.Write a program that prints the floating point value in exponential format correct to two decimal places.

Soln-

```
#include <stdio.h>

int main()

{ float value=123456.456f;

        printf("value: %f (using %%f format specifier)\n",value);

        printf("value: %e (using %%e format specifier)\n",value);

        return 0;

}
```

Q9.Write a program to input and print your mobile number (i.e. of 10 digits).

```
#include <stdio.h>

int main()

 {

 int mob;

 printf("Enter your mobile number:");

 scanf("%d",&mob);

 if(mob>=10)

   { printf("Mobile number is %d ",mob); }

 else

 {printf("mobile number is invalid");
```

```
 }
 return 0;
}
```

Q10.The population of a city is 30000. It increases by 20 % during first year and 30% during the second year. Write a program to find the population after two years? (Ans: 46800)

Soln-

```
#include <stdio.h>
int main()
{ int population;
  printf("total population of city =30000 \n");
  population = 30000*12*13;
  printf("population after two years = %d");
  scanf("%d",&population);
        return 0;
}
```

Q11. Write a program to find the ASCII value of a character.

```
#include <stdio.h>
int main()
{ char a;
printf("enter a character :");
```

```
scanf("%c",&a);

printf("%d",a);

return 0;

}
```

Q12. Write a program to calculate salary of an employee, given his basic pay (entered by user), HRA=15% of the basic pay and TA=20% of the basic pay.

```
#include <stdio.h>

int main()

{  float basic, hra, ta ;

        float salary;

       printf("Enter Basic Salary : ");

        scanf("%f",&basic);

        hra= basic*(15*100)/100;

        ta=basic * (20*100)/100;

        salary = basic  + hra + ta ;

        printf("Net Salary is: $ %.02f\n",salary);

        return 0;

}
```

Q13. Write a program to find the slope of a line and angle of inclination that passes through two points P and Q with coordinates (xp, yp) and (xq, yq) respectively.

Soln-

```
#include <stdio.h>
#include <math.h>
int main() {
  float xp, yp, xq, yq;
 printf("Enter the coordinates of point P (xp yp): ");
   scanf("%f %f", &xp, &yp);
  printf("Enter the coordinates of point Q (xq yq): ");
   scanf("%f %f", &xq, &yq);
  float slope = (yq - yp) / (xq - xp);
  float angle = atan(slope) * 180.0 / M_PI;
 printf("The slope of the line is: %.2f\n", slope);
   printf("The angle of inclination is: %.2f degrees\n", angle);
return 0;
}
```

Q14. The SPI (Semester Performance Index) is a weighted average of the grade points earned by a student in all the courses he registered for in a semester. If the grade points associated with the letter grades awarded to a student are

g1, g2, g3,…….gk etc. and the corresponding credits are c1, c2, c3,……ck, the SPI is given by:

$$SPI = \frac{\sum_{i=1}^{k} c_i g_i}{\sum_{i=1}^{k} c_i}$$

Where, k is the number of courses for which the candidate remains registered for during the semester/ trimester. Write a program in C to calculate SPI for k =5.

Soln-

```
#include <stdio.h>

int main() {

   float gradePoints[] = {3.5, 4.0, 3.0, 3.7, 3.2};

   float credits[] = {4.0, 3.0, 2.0, 3.5, 2.5};

 float numerator = 0.0;

   float denominator = 0.0;

   int k = 5;

   for (int i = 0; i < k; i++) {

      numerator += credits[i] * gradePoints[i];

      denominator += credits[i];

   }

 float spi = numerator / denominator;

 printf("SPI for k = 5 is: %.2f\n", spi);

 return 0;  }
```

Q 15. Write a program to calculate the frequency (f) of a given wave with wavelength (λ) and speed (c), where c=λ*f.

```
#include <stdio.h>

int main()

{int f, lambda,c;

printf("enter frequency of wave :");

scanf("%d",&f);

printf("enter wavelength of wave:");

scanf("%d",&lambda);

c=lambda*f;

printf("%d",c);

scanf("%d",&c);

return 0;

}
```

Q 16. A car travelling at 30 m/s accelerates steadily at 5 m/s2 for a distance of 70 m. What is the final velocity of the car? [Hint: v2 = u2 + 2as]

```
#include <stdio.h>

#include <math.h>

int main ()

{ int u=5,a=30,s=70,v;
```

```
  v= pow (v,2);
  u=pow(u,2);
  v=u + 2*a*s ;
  printf("%d",v);
  scanf("%d",&v);
  return 0;
}
```

Q 17.A horse accelerates steadily from rest at 4 m/s2 for 3s. (a) What is its final velocity? (b) How far has it travelled? [Hint: (a) v = u + at (b) s = ut + ½at2]

```
#include <stdio.h>
#include<math.h>
int main ()
{ int u=0,a=4,t=3,v,s;
  v=u+a*t ;
  printf("%d",v);
  scanf("%d",&v);
    t=pow(t,2);
  s=u*t+(1/2)*a*t;
  printf("%d",s);
  scanf("%d",&s);
```

```
  return 0;
}
```

Q 18. Write a program to find the sum of your four last digit of your university roll number.

Soln-

```
#include <stdio.h>
int print ( int n );
int main()
{ int n ,x ,i ,r=0 ;
printf("enter 4 digit no.");
scanf ("%d",&n);
for (i=1;i<5;i++) // for 4 digit only
{ x = n%10;
n=n/10;
r=r+x;
}
printf ("sum of given no. is %d",r);
return 0;
}
```

Q19. Write a program to initialize your height and weight in cm. and kgs respectively demonstrating compile time initialization and convert them

in feets and pounds respectively. Note :- 1 cm = 0.393701inch , 1 Kg = 2.20462.

Soln- #include <stdio.h>

```
int main ()

{ int h , feet ,w , pounds;

 printf("enter your height in cm:");

 scanf("%d",&h);

 printf("enter your weight in kg:");

 scanf("%d",&w);

  feet= h*0.393701;

 printf("height in feet %d",feet);

 scanf(" %d",&feet);

 pounds= w* 2.20462;

 printf("weight in pounds %d ",pounds);

 scanf(" %d",&pounds);

 return 0;

 }
```

Q 20 . Code the variable declarations for each of following:

a) A character variable named option.
b) An integer variable sum initialized to 0
c) A floating point variable, product, initialized to 1

Ans- (a) char option;

(b) int sum = 0;

(c) float product = 1.0;

Q21. Write a program that reads nine integers. Display these numbers by printing three numbers in a line separated by commas.

Ans-

```
#include <stdio.h>
int main() {
   int numbers[9];
   printf("Enter nine integers:\n");
   for (int i = 0; i < 9; i++) {
      scanf("%d", &numbers[i]);
   }
   printf("The numbers in sets of three per line:\n");
   for (int i = 0; i < 9; i++) {
      printf("%d", numbers[i]);
       if ((i + 1) % 3 != 0) {
         printf(", ");
      } else {
         printf("\n");
      }
```

```
    }
 return 0;
}
```

Q22. What are header files and what are its uses in C programming?

Ans - Header files are also known as library files. They contain two essential things: the definitions and prototypes of functions being used in a program. commands that you use in C programming are actually functions that are defined from within each header files. Each header file contains a set of functions. For example: stdio.h is a header file that contains definition and prototypes of commands like printf and scanf.

Q23. What will be the output of following program?

```
#include<stdio.h>
int main()
{   int num=070;
printf("%d\t%o\t%x",num,num,num);
}
```

Ans- 56 70 38

Q 24. What will be the output of following program?

```
#include <stdio.h>
void main()
{
int x = printf("GLA UNIVERSITY");
printf("%d", x);
 }
```

Ans-

Q25. What are library functions? List any four library functions.

Ans- Library functions are built in functions that are grouped together and placed in a common location called library. Some library function : printf() , scan() , gets().

Q26. What will be the output of following program?

```
#include <stdio.h>
void main()
{
  int x = printf("C is placement oriented Language") – printf(“Hi”);
  printf("%d %o %x", x,x,x);
}
```

Ans-

Q27. What is the meaning of following statement? printf(“%d”,scanf(“%d%d”,&a,&b));

Ans- The statement printf(“%d”,scanf(“%d%d”,&a,&b)); combines both the printf and scanf function in one line.

Q28. What will be the output of following program?

```
#include <stdio.h>
void main()
{
  printf(" \"C %% FOR %% PLACEMENT\"");
}
```

Ans – OUTPUT - "C % FOR % PLACEMENT"

Q29. Suppose distance between GLA University and Delhi is m km (to be entered by user), by BUS you can reach Delhi in 4 hours. Develop a ‘C’ program to calculate speed of bus.

Ans-

```
# include<stdio.h>

int main()

{ int d , speed , t=4;

 printf("Enter distance b/w GLA and delhi :");

 scanf("%d",&d);


 speed = d/t ;

 printf("%d",speed);

 scanf("%d",&speed);

  return 0;

}
```

Q30. In an exam Satyam got 50 marks, Suman got 70 marks and Shyam got 80 marks, Write a 'C' program to find average marks of these three participants.

Ans-

```
# include<stdio.h>

int main()

{ int a=50, b=70,c=80 ,avg;

avg = (a+b+c)/3 ;

 printf("average marks of three participants are %d");

 scanf("%d",avg);

  return 0;
```

}

Q31. One day, Mohan called Saurav and Sajal and gave some money to them, later he realized that money that was given to Saurav should be given to Sajal and vice-versa. Develop a 'C' program to help Mohan so that he can rectify his mistake.

Ans- #include <stdio.h>

```
int main() {
   double sauravMoney = 100.0;
    double sajalMoney = 150.0;
      printf("Before rectification:\n");
    printf("Saurav has Rs. %.2lf\n", sauravMoney);
    printf("Sajal has Rs. %.2lf\n", sajalMoney);
 double temp = sauravMoney;
    sauravMoney = sajalMoney;
    sajalMoney = temp;
    printf("\nAfter rectification:\n");
    printf("Saurav now has Rs. %.2lf\n", sauravMoney);
    printf("Sajal now has Rs. %.2lf\n", sajalMoney);
return 0;
}
```

Q32. One day when I was going for a lunch, suddenly rain started, I was very hungry so started running with speed of 4km/h and it took 3 min to reach mess. Help me to develop a 'C' program to calculate distance travelled by me.

Ans- #include<stdio.h>

```
int main()
{ int s=4 , t= 3*60 , d ;
  d=s*t;
  printf("Distance travelled %d",d);
  scanf("%d",&d);
  return 0;
}
```

Q33. Can two or more escape sequences such as \n and \t be combined in a single line of program code?

Ans- yes, it's a perfectly valid to combine two operators. For ex- you have a code like "printf("hello\n\n\'world\' ") " for output of text in first line and "world" enclosed in single quotes to appear on the nesxt two lines.

Q34. What are comments and how do you insert it in a C program?

Ans- Comments are used to put remarks in a code or a function .it can serve as a reminder on what about the program is . comments begins with /* and ends with */ characters.

Q35. What is wrong in this statement? scanf("%d",number);

Ans- An ampersand (&) symbol must beplaced before number.

Q36. What will be the output?

```
#include <stdio.h>
    int main()
{
   if (sizeof(int) > -1)
      printf("Yes");
   else
      printf("No");
   return 0;
}
```

Ans- No

Q37. Point out which of the following variable names are invalid:

gross-salary INTEREST, salary of emp, avg., thereisbookinmysoup

Ans-invalid variables – gross-salary ,salary of emp , avg

Q38. Tom works at an aquarium shop on Saturdays. One Saturday, when Tom gets to work, he is asked to clean a 175-gallon reef tank. His first job is to drain the tank. He puts a hose into the tank and starts a siphon. Tom wonders if the tank will finish draining before he leaves work. He measures the amount of water that is draining out and finds that 12.5 gallons drain out in 30 minutes. So, he figures that the rate is 25 gallons per hour. Develop a 'C' program to help Tom to calculate time required to completely clean tank.

Ans-#include <stdio.h>

```
int main() {

    int tankCapacity = 175;

   int drainageRate = 25;

   int timeInHours = tankCapacity / drainageRate;

   printf("To completely drain a %d-gallon tank at a rate of %d gallons per hour,\n", tankCapacity, drainageRate);

   printf("it will take approximately %d hours.\n", timeInHours);

 return 0;

}
```

Q39. The percent y (in decimal form) of battery power remaining x hours after you turn on a laptop computer is y = −0.2 x + 1. Develop a 'C' program to calculate after how many hours the battery power is at 75%?

Ans-

```
#include <stdio.h>

int main() {

   double desiredBatteryPower = 0.75;

   double slope = -0.2;

   double intercept = 1.0;

   double hours = (desiredBatteryPower - intercept) / slope;

   printf("The battery power will be at 75%% after approximately %.2f hours.\n", hours);

  return 0;

}
```

Q40.Which of the following is used to convert the high level language in machine language in a single go?

a. Compiler b.Interpreter

c. Linker d.Assembler

Ans- (a)compiler

Q 41. What is the format specifier for an Octal Number?

a.%0 b.%d

c. %o d. %e

Ans- (b) %d

Q 42. Which format specifier is used to print the exponent value upto 2 decimal places.

a. %e b.%.2f c. %f d.%.2e

Ans- (b) %.2f

Q 43. Which of the following is not a basic data type?

a. char

b. array

c. float

d. int

Ans- (b) array

Q 44. What is the output of following code?

```
#include<stdio.h>
void main()
{
  int x=0;
  x= printf("\"hello\b\"");
  printf("%d",x);
}
```

a. hello7 b. “hello”7 c. “hell”8 d. hell8

Ans- (d)“hell” 8

Q 45. What is the output of following code?

```
#include<stdio.h>
void main()
{
  int b,c=5 ;
  int(“%d , %d”, b,c);
}
```

a. 5, 5 b. 5, 5.000000

c. Garbage, 5.000000 d. Garbage, 5

Ans- (d) Garbage , 5

Q46. Which of the following is an identifier?

a. &fact b. Basic_pay c. enum d. 1sum

Ans- (d) 1sum

Q 47. What is the output of the following program?

```
#include<stdio.h>
void main()
{
   char x, a=’c’;
   x=printf("%c",a);
   printf(“%d”,x);
}
```

a. c1 b. cgarbage

c. 1 c. c

Ans- (a) c1

Q48. Perform the following conversion from Decimal to other number as directed-

a) $(365.55)_{10} = (?)_2$

   Ans - 101101101.101

b) $(453.65)_{10} = (?)_8$

   Ans- 705.51

c) $(5164.12)_{10} = (?)_{16}$

   Ans- 142C.1E

d) $(23.65)_{10} = (?)_5$

   Ans - 43.31

e) $(772)_{10} = (?)_7$

   Ans-2152

Q49. Covert the following numbers to decimal number system-

a) $(325.54)_6 = (?)_{10}$

   Ans – 125.833

b) $(1001010110101.1110101)_2 = (?)_{10}$

   Ans- 4957.820

c) $(742.72)_8 = (?)_{10}$

   Ans- 482.875

d) $(AC94.C5)_{16} = (?)_{10}$

   Ans – 43988.773

Q50. Perform the following conversion from Hexadecimal to other number as directed-

$(DB56.CD4)_{16} = (?)_2, \ (?)_8, \ (?)_4$

1. ***Convert into binary :- 110110110110.101101000100***

2. ***Convert into octal :- 6666.540***
3. ***Convert into quatenary :- 3333.2102***

Q51. Perform the following conversion from octal to other number as directed-

$(473.42)_8 = (?)_2, \quad (?)_{10}, \quad (?)_{16}, \quad (?)_5$

1. convert into binary- 100111011.100010

2. convert into decimal – 315.28125

3. convert into hexadecimal – 1B3.48

4. convert into base-5 – 2230.1200

Q52. Find the value of A?

a) $(23)_{10} = (17)_A$

b) $(21)_{16} = (41)_A$

c) $(32)_8 = (101)_A$

Ans – (a) 1/5

(b)1/39

(c)1/49

Q53: What will be the output of following program? Assume integer is of 2 bytes

```
void main(){

int  a=32770;

printf("%d",a);

}
```

ANS-

Q54: #include <stdio.h>

```
 int main()
{
 float c = 5.0;
 printf ("Temperature in Fahrenheit is %.2f", (9/5)*c + 32);
 return 0;
}
```

Soln- Temperature in Fahrenheit is 37.00.