ASSIGNMENT 1 :-

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 inputed by user.

A1.
```c
#include <studio.h>
int main ()
{
    float tax, price;
    printf ("Enter the rate of tax:");
    scanf ("%f", & tax);
    price = (tax + (tax * 0.18));
    printf ("Amount after adding tax = %f", price);
    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 the twice the wages per hour, for every extra hour that he or she has worked.

A2.
```c
#include <studio.h>
int main ()
{
    double private double wags per hour;
    double hours;
    double overtime hours = 0;
    double overtime charges = 0;
```

If if (hours > 30)
overtime hours = hours - 30;
overtime charges = overtime hours * (2 * wage per hour)
hours = hours - overtime hours;
double salary = (hours * wage per hour) + overtime charges;

```c
printf("Salary = %d", salary);
return 0;
}
```

Q3 Mr. X goes to market for buying some fruits and vegetables. He is having a currency of Rs 500 with him. fa marketing from a shop, he purchase 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 15.0 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.

A3.
```c
#include <studio.h>
int main()
{
    float total = 0.0;
    total = 500 - (2*50.0 + 1.5*35.0 + 2.5*10.0
                   + 1.0 * 15.0);

    printf("Total Amount = %f", total);
    return 0;
}
```

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

A4.
```c
#include <stdio.h>
int main()
{
    printf("Name : Anubhav Pandey\n");
    printf("DOB : August 21, 2001\n");
    printf("Mobile : 91-9532961739\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 line on the screen.

A5.
```c
#include <stdio.h>
int main()
{
    int Integer;
    char Character;
    float Input_Float;
    printf("Please, Enter a Character: ");
    scanf("%c", &Character);
    printf("Please Enter an Integer Value: ");
    scanf("%d", &Integer);
    printf("Please Enter Float Value: ");
    scanf("%f", &Input_Float);
    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", Input_Float);
    printf("\n The Float Value with precision 2 is: %.2f", Input_Float);
    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 : $ 192.53

A6.
```
#include <stdio.h>

int main ()
{
    float cost=0.0, total value=0.0;
    cost = input ("The sales total is : $192.53");
    totalvalue = float (cost);
    printf (" Total Value = " + t
    printf ( total value);
    return 0;
}
```

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

A7.
```
#include <stdio.h>

int main ()
{
    double total = 0.0;
    total = (6.5 * 3);
    printf (" Total = %.1d", total );
    return 0;
}
```

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

A8.
```
#include <stdio.h>

int main ()
{
```

float value = 123456.456 f;
printf ("value : %.f (using %.f float specifier)", value);
printf ("value : %.e (using %.e float specifier)", value);
return 0;
}

Q9. Write a program to input and print your mobile number.

A9.
```
#include <stdio.h>

int main ()
{
    long int n;
    scanf (" %ld", &n);
    printf (" %ld", &n);
    return 0;
}
```

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

A10.
```
#include <stdio.h>

int main ()
{
    double P = 30000;
    float R1, R2;
    printf (" Increased Rate after 1st Year:");
    scanf (" %f", &R1);
    printf (" Increased Rate after 2nd Year:");
    scanf (" %f", &R2);
    P = P * (1 + R1/100) * (1 + R2/100);
    printf (" Population after two years = %d", P);
    return 0;
}
```

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

A11.
```c
#include <stdio.h>
int main()
{ char c;
  printf("Enter a character:");
  scanf("%c", &c);
  printf("ASCII value of %c = %d", c, c);
  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.

A12.
```c
#include <stdio.h>
int main()
{ float net_salary;
  float basic, hra, ta;
  printf("Enter Basic Salary ($):");
  scanf("%f", &basic);
  printf("Enter HRA ($):");
  scanf("%f", &hra);
  printf("Enter TA ($):");
  scanf("%f", &ta);
  hra = (basic * 15)/100;
  ta = (basic * 20)/100;
  net_salary = basic + hra + ta;
  printf("Net Salary is: $%.02f\n", net_salary);
  return 0;
}
```

Q13 Write a program to find the slope of a line and angle of inclination that passes through points P and Q with coordinates (x_1, y_1) and (x_2, y_2) respectively.

A13.
```c
#include <stdio.h>
#include <math.h>
int main()
{
  float x1, y1, x2, y2, s, θ;
  printf("Enter the coordinates:");
  scanf("%f%f%f%f", &x1, &y1, &x2, &y2);
  if (x2 - x1 != 0)
  s = (y2 - y1)/(x2 - x1);
  printf("Slope of line= %f", s);
  θ = atan(s);
  printf("Inclination of line = %f", θ);
  return 0;
}
```

Q14.
$$SPI = \frac{\sum_{i=1}^{k} c_i g_i}{\sum_{i=1}^{k} c_i}$$

A14.
```c
#include <stdio.h>
{
  int main()
  {
    float c1, c2, c3, g1, g2, g3, SPI;
    printf("Enter:");
    scanf("%f%f%f%f%f%f", &c1, &g1, &c2, &g2, &c3, &g3, &SPI);
    SPI = (c1 * g1 + c2 * g2 + c3 * g3)/(c1 + c2 + c3);
    printf("Semester Performance Index = %f", SPI);
    return 0;
  }
}
```

Q15 Write a program to calculate the frequency (f) of a given wave with wavelength (λ) and speed (c), where c = f·λ

A15
```c
# include <stdio.h>
int main()
{   float f=0.0; float l, c;
    printf("Enter the wavelength and speed:");
    scanf("%f %f", &l, &c);
    f = (c/l);
    printf("frequency of wave =%f", f);
    return 0;
}
```

Q16 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?

A16 $u = 30 \text{ m/s}$ $v = ?$ $S = 70 \text{ m}$ $a = 5 \text{ m/s}^2$

$$v^2 = u^2 + 2aS \quad \Rightarrow v^2 = (30)^2 + 2\times5\times70$$
$$S = \frac{v^2 - u^2}{2a} \qquad v = \sqrt{900 + 700}$$
$$v = \sqrt{1600} = 40 \text{ m/s}$$

Q17 A horse accelerates steadily from rest at 4 m/s² for 3s.

(a) what is its final velocity?

(b) How far it travelled?

A17 (a) $a = 4 \text{ m/s}^2$ $t = 3s$ $u = 0 \text{ (rest)}$

$$v = u + at \quad \Rightarrow v = 0 + 4\times3 = 12 \text{ m/s}^2$$

(b)
$$S = ut + \frac{1}{2}at^2 = 0\times3 + \frac{1}{2}\times4\times(3)^2$$
$$= 18 \text{ m}$$

Q18 Write a program to find the sum of your 4 last digit of your university roll number.

A18
```c
# include <stdio.h>
int main ()
{
    int n, f, x, s, y, t, l, sum;
    printf("Enter 4-digit number");
    scanf("%d", &n);
    f = n/1000;
    x = n%1000;
    s = x/100;
    y = x%100;
    t = y/10;
    l = y%10;
    printf("\n First Digit =%d \n Second Digit=%d\n Third Digit =%d\n Last Digit=%d\n", f, s, t, l);
    sum = f + s + t + l;
    printf("\n Sum of All 4-Digits=%d", sum);
    return 0;
}
```

Q19 Height/Weight

A19
```c
# include <stdio.h>
int main ()
{
    float height, weight;
    printf("Enter height and weight:");
    scanf("%f %f", &height, &weight);
    heigl
```

Q19. Height / Weight

A19.
```c
#include <stdio.h>
int main()
{
    float height = 178.0cm;
    float weight = 84.7 kg;
    height = (inch) 178.0 * 0.39701;
    weight = (pounds) 84.7 * 2.20462;
    printf ("Height weight gets = %.f kg", height);
    printf ("Weight = %.f", weight);
    return 0;
}
```

Q20. (a.) char option;

  (b.) int sum = 0;

  (c.) float product = 1.0;

Q21.
```c
#include <stdio.h>
int main()
{
    int n1, n2, n3, n4, n5, n6, n7, n8, n9;
    printf ("Print nine Integers: ");
    scanf ("%d %d %d %d %d %d %d %d %d", &n1, &n2, &n3,
           &n4, &n5, &n6, &n7, &n8, &n9);
    printf ("n3 exile First three numbers = %d", n1, n2, n3 \n");
    printf ("Next three numbers = %d", n4, n5, n6 \n");
    printf ("Next three numbers = %d", n7, n8, n9 \n");
    return 0;
}
```

Q22. A header file is a file with extension .h which contains C function declarations and macro definitions to be shared between several source files. Header file serves for two purposes:-

• System header files declare the interface to parts of the operating system.

• Your own header files contain declarations for interface between the source files of your program.

Q23. 56   70   38

Q24. GLA UNIVERSITY 14

Q25. Library Functions:- Library functions in C are also inbuilt functions in C language. These inbuilt functions are located in some common location, and it is known as the library. All the functions are used to execute a particular operation.

Four Library Functions:-

1.) math.h   fmod

2.) stdio.h   fopen

3.)   fprintf

4.)   fputc

Q26. C is placement oriented language Hi 30 36 1e

Q 27. This statement is used as a control statement for a while loop. It is used to repeatedly execute a block of code as long as the condition in parenthesis is true.

Q 28. "C % FOR % PLACEMENT"

Q 29.
```
# include <stdio.h>
int main ()
{
    double distance m; double t = 4; double speed;
    printf (" Enter distance between GLA UNIVERSITY
            and DELHI in km : ");
    scaf (" %.d " &m);
    speed = (m / t);
    printf (" Speed of bus = %.d ", speed);
    return 0;
}
```

Q 30.
```
# include <stdio.h>
int main ()
{
    int Satyam = 50;
    int Suman = 70;
    int Shyam = 90;
    int avg = ( Satyam + Suman + Shyam) / 3;
    printf (" Average Marks = %.d ", avg);
    return 0;
}
```

Q 31.
```
# include <stdio.h>
int main ()
```

```
{
    int Saurav, Sajal;
    printf (" Enter the money given to Saurav");
    scanf (" %.d ", &Saurav);
    printf (" Enter the money given to Sajal");
    scanf (" %.d ", &Sajal);
    int temp = Saurav;
    Saurav = Sajal;
    Sajal = temp;
    printf (" Money now after: Saurav = %.d, Sajal = %.d",
            Saurav, Sajal);
    return 0;
}
```

Q 32.
```
# include <stdio.h>
int main ()
{
    int s = 4;
    int t = 3;
    int d = (s * t);
    printf (" Distance = %.d", d);
    return 0;
}
```

Q 33. Yes. They are just characters. You can have newlines and tabs in any position and as many of them as you need.

Q 34. A comment is basically a text code note that gives an explanation about the source code.

For inserting comment in a program, we use
// for a single line.

Q35. An ampersand and symbol must be placed
before the variable name whatnumber.

Q36. Yes

Q37. gross-salary INTEREST, salary of emp

Q38.
```
#include <stdio.h>
int main()
{
    float gallons = 12.5;
    int t = 30;
    double r = (gallons / (time * 60));
    printf("Rate = %d", rate);
    return 0;
}
```

Q39.
```
#include <stdio.h>
int main()
{
    int x double x=00;float h;
    printf("Enter no. of hours = %f", hours);
    scanf("%f", &h);
    double y = ((-0.2 * x) + 1);
    h = ((-0.2 * 75) + 1;
    printf("Hours = ", h);
    return 0;
}
```

Q40. a. Compiler

Q41. c. %0

Q42. b. %.2f

Q43. b. array

Q44. c. "hell"8

Q45. a. 5,5

Q46. c. Enum

Q47. a. c1

Q48. a) $(365.55)_{10}$ = $(101101101.1000110011001100101)_2$

b) $(453.65)_{10}$ = $(705.514)_8$

c) $(5164.12)_{10}$ = $(142C.33)_{16}$

d) $(23.65)_{10}$ = $(23.53)_8$

e) $(72)_{10}$ =

Q49. a) $(325.54)_6$ = $(213.6875)_{10}$

b) $(1001010110101.110101)_2$ = $(4789.914)_{10}$

(c) $(742.78)_8 = (92.75)_{10}$

(d) $(A04.C5)_{16} = (4180.78532125)_{10}$

Q50. $(DB56.D4)_{16} = (55526.6324)_8$

$= (1101101101010110.11001101010)_2$

Q51. $(473.42)_8 = (100111011.10001)_2$

$= (315.53125)_{10}$

$= (13B.88)_{16}$

Q52. (a) $(23)_{10} = (17)_A$; $A = 16$

(b) $(21)_{16} = (41)_A$; $A = 8$

(c) $(32)_8 = (101)_A$; $A = 2$

Q53. 32770

Q54. 41.0