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.

Ans1.

```
#include<stdio.h>

int main(){

        float price,tax,newprice;

        printf("write the price of product :");

        scanf("%f",&price);

        printf("write the value of tax :");

        scanf("%f",&tax);

        newprice=price + (price * (tax / 100));

        printf("the new price of after including tax is %.2f",newprice);

        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.

Ans2.

```
 #include <stdio.h>
int main() {
   float wagesPerHour, weeklyWages;
   int hoursWorked;
   printf("Enter the wages per hour: $");
   scanf("%f", &wagesPerHour);
   printf("Enter the number of hours worked: ");
   scanf("%d", &hoursWorked);
   if (hoursWorked <= 30) {
      weeklyWages = wagesPerHour * hoursWorked;
   } else {
      int regularHours = 30;
      int overtimeHours = hoursWorked - regularHours;
```

```
        weeklyWages = (wagesPerHour * regularHours) + (2 * wagesPerHour * overtimeHours);
    }
    printf("Weekly wages: $%.2f\n", weeklyWages);

    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.

Ans3.

```
#include <stdio.h>
int main() {
    float appleKg = 2.0, mangoKg = 1.5, potatoKg = 2.5, tomatoKg = 1.0;
    float applePricePerKg = 50.0, mangoPricePerKg = 35.0, potatoPricePerKg = 10.0, tomatoPricePerKg = 15.0;

    float totalCost = (appleKg * applePricePerKg) + (mangoKg * mangoPricePerKg) + (potatoKg * potatoPricePerKg) + (tomatoKg * tomatoPricePerKg);
    float amountGivenByX = 500.0;
    float amountToReturn = amountGivenByX - totalCost;
    printf("Amount to return to Mr. X: Rs. %.2f\n", amountToReturn);
    return 0;
}
```

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

Ans4.

```
#include <stdio.h>
int main() {
    char name[] = "Your Name";
    char dob[] = "Date of Birth: Your DOB";
```

```
    char mobile[] = "Mobile Number: Your Mobile Number";
    printf("%s\n", name);
    printf("%s\n", dob);
    printf("%s\n", mobile);
    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.

Ans5.

```
#include <stdio.h>
int main() {
    int intValue;
    char charValue;
    float floatValue;
    printf("Enter an integer: ");
    scanf("%d", &intValue);
    printf("Enter a character: ");
    scanf(" %c", &charValue);
    printf("Enter a float value: ");
    scanf("%f", &floatValue);
    printf("Integer: %d\n", intValue);
    printf("Character: %c\n", charValue);
    printf("Float: %f\n", floatValue);
    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

Ans6.

```
#include <stdio.h>
int main() {
   float cost = 172.53;
   printf("The sales total is : $ %.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

Ans7.

```
#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 without adding them.\n", totalApples);
   return 0;
}
```

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

Ans8.

```
#include <stdio.h>
int main() {
   float floatValue = 1234.56789;
   printf("Floating-point value in exponential format: %.2e\n", floatValue);
   return 0;
```

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

Ans9.

```
#include <stdio.h>
int main() {
   long long int mobileNumber;
   printf("Enter your 10-digit mobile number: ");
   scanf("%lld", &mobileNumber);
   printf("your mobile number is %lld",mobileNumber);
   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).

Ans10.

```
#include <stdio.h>
int main() {
   int initialPopulation = 30000;
   float growthPercentageYear1 = 20.0;  // 20% growth during the first year
   float growthPercentageYear2 = 30.0;  // 30% growth during the second year
   float populationYear1 = initialPopulation + (initialPopulation * (growthPercentageYear1 / 100));
   float populationYear2 = populationYear1 + (populationYear1 * (growthPercentageYear2 / 100));
   printf("Population after two years: %d\n", (int)populationYear2); // Cast to int for whole number population
   return 0;
}
```

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

Ans11.

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

Ans12.

```
#include <stdio.h>
int main() {
   float basicPay, hra, ta, totalSalary;
   printf("Enter the basic pay: ");
   scanf("%f", &basicPay);
   hra = 0.15 * basicPay;
   ta = 0.20 * basicPay;y
   totalSalary = basicPay + hra + ta;
   printf("Total Salary: %.2f\n", totalSalary);
   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.

Ans13.
```
#include <stdio.h>
#include <math.h>
int main() {
   double xp, yp, xq, yq;
   printf("Enter the coordinates of point P (xp yp): ");
   scanf("%lf %lf", &xp, &yp);
   printf("Enter the coordinates of point Q (xq yq): ");
   scanf("%lf %lf", &xq, &yq);
   double slope = (yq - yp) / (xq - xp);
   double angleInDegrees = atan(slope) * (180.0 / M_PI);
   printf("Slope of the line: %.2lf\n", slope);
   printf("Angle of inclination (degrees): %.2lf\n", angleInDegrees);
   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:

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

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.

Ans14.
```
#include <stdio.h>
int main() {
   float g1, g2, g3, g4, g5; // Grade points for 5 courses
   int c1, c2, c3, c4, c5;  // Credits for 5 courses
   printf("Enter grade points and credits for 5 courses:\n");
   printf("Course 1 - Grade Point: ");
   scanf("%f", &g1);
   printf("Course 1 - Credits: ");
   scanf("%d", &c1);
   printf("Course 2 - Grade Point: ");
   scanf("%f", &g2);
   printf("Course 2 - Credits: ");
```

```
    scanf("%d", &c2);
    printf("Course 3 - Grade Point: ");
    scanf("%f", &g3);
    printf("Course 3 - Credits: ");
    scanf("%d", &c3);
    printf("Course 4 - Grade Point: ");
    scanf("%f", &g4);
    printf("Course 4 - Credits: ");
    scanf("%d", &c4);
    printf("Course 5 - Grade Point: ");
    scanf("%f", &g5);
    printf("Course 5 - Credits: ");
    scanf("%d", &c5);
    float spi = (c1 * g1 + c2 * g2 + c3 * g3 + c4 * g4 + c5 * g5) / (c1 + c2 + c3 + c4 + c5);
    printf("SPI for 5 courses: %.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.

Ans15.

```
#include <stdio.h>
int main() {
    double wavelength, speed, frequency;
    printf("Enter the wavelength (in meters): ");
    scanf("%lf", &wavelength);
    printf("Enter the speed of the wave (in meters per second): ");
    scanf("%lf", &speed);
    frequency = speed / wavelength;
    printf("The frequency of the wave is %.2lf Hz\n", frequency);
    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]

Ans16.

```
#include <stdio.h>
#include <math.h>
int main() {
    double u = 30.0;
```

```
    double a = 5.0;
    double s = 70.0;
    double v;
    v = sqrt(u * u + 2 * a * s);
    printf("The final velocity of the car is %.2lf m/s\n", 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]

Ans17.
```
#include <stdio.h>
int main() {
    double u = 0.0;
    double a = 4.0;
    double v;
    double s;
    v = u + a * t;
    s = u * t + 0.5 * a * t * t;
    printf("(a) The final velocity of the horse is %.2lf m/s\n", v);
    printf("(b) The horse has traveled a distance of %.2lf meters\n", s);
    return 0;
}
```

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

Ans18.
```
#include <stdio.h>

int main() {

    unsigned long long int rollNumber;

    printf("Enter your university roll number: ");

    scanf("%llu", &rollNumber);

    unsigned int lastFourDigits = (unsigned int)(rollNumber % 10000);

    unsigned int sum = 0;

    while (lastFourDigits > 0) {

        sum += lastFourDigits % 10;
```

```
    lastFourDigits /= 10;
  }
  printf("Sum of the last four digits of your university roll number: %u\n", sum);
  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.

Ans19.

```
#include <stdio.h>
int main() {
  double heightInCm = 175.0;
  double weightInKg = 70.0;
  double cmToFeet = 0.0328084;
  double kgToPounds = 2.20462;
  double heightInFeet = heightInCm * cmToFeet;
  double weightInPounds = weightInKg * kgToPounds;
  printf("Height: %.2f cm (%.2f feet)\n", heightInCm, heightInFeet);
  printf("Weight: %.2f kg (%.2f pounds)\n", weightInKg, weightInPounds);
  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

Ans20. 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.

Ans21.
```
#include <stdio.h>

int main() {
   int numbers[9];
   printf("Enter nine integers:\n");
   for (int i = 0; i < 9; i++) {
      scanf("%d", &numbers[i]);
   }
   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?

Ans22. Header files in C programming are files that contain declarations and sometimes definitions of functions, variables, and other constructs used in your program.

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);
```

```
}
```

Ans23. 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);

 }
```

Ans24. GLA UNIVERSITY13

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

Ans25. Library functions in programming are pre-defined functions that are provided by libraries or modules in a programming language to perform common and often-used tasks. These functions are written by other developers and included in libraries, making them available for use in your programs. They help simplify programming tasks and promote code reuse. Here are four commonly used library functions in C programming:

1. **printf**
2. **scanf**
3. **strlen**
4. **sqrt**.

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);

}
```

Ans26. #include <stdio.h>

```
int main()

{

   int x = printf("C is placement oriented Language") - printf("Hi");

   printf("%d %o %x", x, x, x);
```

```
   return 0;
}
```

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

Ans27. 29 35 1d

Q28. What will be the output of following program?

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

Ans28. "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.

Ans29.

```
#include <stdio.h>

int main()
{
   double distance;
   double time;
   double speed;
   printf("Enter the distance between GLA University and Delhi (in kilometers): ");
   scanf("%lf", &distance);

   time = 4.0;

   speed = distance / time;
```

```
    printf("The speed of the bus is %.2lf km/h\n", 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.

Ans30.

```
#include <stdio.h>


int main()
{
    int satyamMarks = 50;
    int sumanMarks = 70;
    int shyamMarks = 80;
    int totalMarks = satyamMarks + sumanMarks + shyamMarks;
    int numberOfParticipants = 3;
    double averageMarks = (double)totalMarks / numberOfParticipants;
    printf("The average marks of Satyam, Suman, and Shyam are: %.2lf\n", averageMarks);


    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.

Ans31.

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

```
int main()
{
   int sauravMoney, sajalMoney, temp;
   printf("Enter the money given to Saurav (in Rupees): ");
   scanf("%d", &sauravMoney);

   printf("Enter the money given to Sajal (in Rupees): ");
   scanf("%d", &sajalMoney);
   temp = sauravMoney;
   sauravMoney = sajalMoney;
   sajalMoney = temp;
   printf("After rectifying the mistake:\n");
   printf("Saurav now has %d Rupees\n", sauravMoney);
   printf("Sajal now has %d Rupees\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.

Ans32.

```
#include <stdio.h>
int main()
{
   double speed = 4.0; // Speed in km/h
   double time = 0.05; // Time in hours
```

```
    double distance;


    distance = speed * time;
    printf("The distance traveled by you is %.2lf kilometers\n", distance);


    return 0;
}
```

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

Ans33. printf("This is a line with\na newline and\ta tab.");

This is a line with

a newline and a tab.

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

Ans34. Comments in a programming language are non-executable lines or blocks of text that are included in the source code solely for the purpose of providing explanations, descriptions, or notes to human readers. Comments are ignored by the compiler or interpreter and have no effect on the program's execution. They are used to make the code more understandable, document its functionality, and provide information for other developers (including your future self)

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

Ans34. scanf("%d", &number);

Q36. What will be the output?

```
#include <stdio.h>
    int main()
{
   if (sizeof(int) > -1)
printf("Yes");
   else
```

```
printf("No");
   return 0;
}
```

Ans36. NO

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

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

Ans37.

1. `gross-salary`: This variable name is invalid because it contains a hyphen ("-"). In C and many other programming languages, variable names cannot include hyphens. You can use underscores (_) instead if you need to separate words in a variable name, like `gross_salary`.
2. `INTEREST`: This variable name is valid. Variable names can consist of letters (both uppercase and lowercase), digits, and underscores, but they cannot start with a digit. `INTEREST` follows these rules and is a valid variable name.
3. `salary of emp`: This variable name is invalid because it contains spaces. Variable names in C cannot contain spaces or special characters other than underscores. You can use underscores to represent spaces if needed, like `salary_of_emp`.
4. `avg.`: This variable name is invalid because it contains a period (dot). Variable names cannot contain special characters like periods. You can replace the period with an underscore or remove it entirely, depending on your naming convention, like `avg` or `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.

Ans38.

```
#include <stdio.h>


int main()
{
   int totalGallons = 175;
   double rate = 25.0;
 double timeRequired;
 timeRequired = (double)totalGallons / rate;
   printf("The time required to completely clean the tank is %.2lf hours\n", timeRequired);
```

```
    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%?

Ans39.
```
#include <stdio.h>

int main()
{
    double batteryPowerPercentage = 0.75; // 75% in decimal form
    double hours;
    hours = (1.0 - batteryPowerPercentage) / (-0.2);
    printf("The battery power is at 75%% after %.2lf 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

ans40.a compiler

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

a.%0 b.%d

c. %o d. %e

ans41.c %o

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

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

ans42. b %.2f

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

a. char

b. array

c. float

d. int

ans43. 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

ans44. D hell8

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

ans45. D Garbage, 5

Q46. Which of the following is an identifier?

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

ans46. A &fact

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

ans47. C 1

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

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

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

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

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

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

Ans48. a) Decimal to Binary (base-2): To convert 365.55 (base 10) to binary (base 2), you can use the following steps:

- Convert the integer part (365) to binary: 365 (decimal) = 101101101 (binary).
- Convert the fractional part (0.55) to binary:
  - 0.55 * 2 = 1.10 (1 as the first binary digit)
  - 0.10 * 2 = 0.20 (0 as the second binary digit)
  - 0.20 * 2 = 0.40 (0 as the third binary digit)
  - 0.40 * 2 = 0.80 (0 as the fourth binary digit)
  - 0.80 * 2 = 1.60 (1 as the fifth binary digit)
  - 0.60 * 2 = 1.20 (1 as the sixth binary digit)
  - 0.20 * 2 = 0.40 (0 as the seventh binary digit)
  - ...
  - Continue this process until you get the desired precision.
- Combine the binary integer and fractional parts: 101101101.1000110011...

So, (365.55)10 is approximately (101101101.1000110011...)2 in binary.

b) Decimal to Octal (base-8): To convert 453.65 (base 10) to octal (base 8), you can follow similar steps as above. Convert the integer and fractional parts separately to octal and then combine them.

c) Decimal to Hexadecimal (base-16): To convert 5164.12 (base 10) to hexadecimal (base 16), you can convert the integer and fractional parts separately to hexadecimal and then combine them.

d) Decimal to Base-5: To convert 23.65 (base 10) to base-5, you can convert the integer and fractional parts separately to base-5 and then combine them.

e) Decimal to Base-7: To convert 772 (base 10) to base-7, you can convert the integer part to base-7.

The specific conversion process for each base depends on the base itself, but the general idea is to convert the integer and fractional parts separately and then combine them in the target base format

Q49. Covert the following numbers to decimal number system-

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

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

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

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

Ans49. a) Convert (325.54)6 to decimal (base-10):

(325.54)6 = (3 * 6^2) + (2 * 6^1) + (5 * 6^0) + (5 * 6^(-1)) + (4 * 6^(-2))

= (3 * 36) + (2 * 6) + 5 + (5 / 6) + (4 / 36)

= 108 + 12 + 5 + 0.8333 + 0.1111

≈ 126.9444 (decimal)

So, (325.54)6 is approximately (126.9444)10 in decimal

b) Convert (1001010110101.1110101)2 to decimal (base-10)

(1001010110101.1110101)2 = (1 * 2^12) + (0 * 2^11) + (0 * 2^10) + ... + (1 * 2^(-1)) + (0 * 2^(-2)) + (1 * 2^(-3)) + (1 * 2^(-4))

= 4096 + 0 + 0 + ... + 0.5 + 0 + 0.125 + 0.0625

= 4096 + 0.5 + 0.125 + 0.0625

= 4096 + 0.6875

≈ 4096.6875 (decimal)

So, (1001010110101.1110101)2 is approximately (4096.6875)10 in decimal.

C . Convert (742.72)8 to decimal (base-10):

(742.72)8 = (7 * 8^2) + (4 * 8^1) + (2 * 8^0) + (7 * 8^(-1)) + (2 * 8^(-2))

= (7 * 64) + (4 * 8) + 2 + (7 / 8) + (2 / 64)

= 448 + 32 + 2 + 0.875 + 0.03125

= 482.90625 (decimal)

So, (742.72)8 is (482.90625)10 in decimal.

D .Convert (AC94.C5)16 to decimal (base-10)

(AC94.C5)16 = (A * 16^3) + (C * 16^2) + (9 * 16^1) + (4 * 16^0) + (C * 16^(-1)) + (5 * 16^(-2))

= (10 * 4096) + (12 * 256) + (9 * 16) + (4 * 1) + (12 / 16) + (5 / 256)

= 40960 + 3072 + 144 + 4 + 0.75 + 0.01953125

= 44180.76953125 (decimal)

So, (AC94.C5)16 is approximately (44180.76953125)10 in decimal.

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

$(DB56.CD4)_{16} = (?)_{2,}\ \ (?)_{8,}\ \ (?)_{4}$

Ans50. a) Convert (DB56.CD4)16 to binary (base-2): To convert a hexadecimal number to binary, you can replace each hexadecimal digit with its equivalent binary representation:

D = 1101 B = 1011 5 = 0101 6 = 0110 C = 1100 D = 1101 4 = 0100

So, (DB56.CD4)16 is equivalent to (110110111011010100110011 0100)2 in binary.

b) Convert (DB56.CD4)16 to octal (base-8): To convert from binary to octal, group the binary digits into sets of three from the right (adding leading zeros if necessary) and then convert each group to its octal equivalent:

(110110111011010100110011 0100)2 = (011 011 011 011 010 100 110 011 010 0)2

Now, convert each group to octal: 011 = 3 011 = 3 011 = 3 011 = 3 010 = 2 100 = 4 110 = 6 011 = 3 010 = 2 0 = 0

So, (DB56.CD4)16 is equivalent to (33332246320)8 in octal.

c) Convert (DB56.CD4)16 to base-4: To convert from binary to base-4, group the binary digits into sets of two from the right (adding leading zeros if necessary) and then convert each group to its base-4 equivalent:

(110110111011010100110011 0100)2 = (11 01 10 11 01 10 10 01 10 01 10 01 10 0)2

Now, convert each group to base-4: 11 = 3 01 = 1 10 = 2 11 = 3 01 = 1 10 = 2 10 = 2 01 = 1 10 = 2 01 = 1 10 = 2 01 = 1 10 = 2 0 = 0

So, (DB56.CD4)16 is equivalent to (3123212102122010)4 in base-4

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

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

Ans51. a) Convert (473.42)8 to binary (base-2): To convert an octal number to binary, replace each octal digit with its equivalent binary representation:

4 = 100 7 = 111 3 = 011 4 = 100 . = (decimal point) 4 = 100 2 = 010

So, (473.42)8 is equivalent to (100111001100.010010)2 in binary.

b) Convert (473.42)8 to decimal (base-10): To convert an octal number to decimal, you can use the following calculation:

(473.42)8 = (4 * 8^2) + (7 * 8^1) + (3 * 8^0) + (4 * 8^(-1)) + (2 * 8^(-2)) = (4 * 64) + (7 * 8) + (3 * 1) + (4 * 1/8) + (2 * 1/64) = 256 + 56 + 3 + 0.5 + 0.03125 = 315.53125 (decimal)

So, (473.42)8 is equivalent to (315.53125)10 in decimal.

c) Convert (473.42)8 to hexadecimal (base-16): To convert an octal number to hexadecimal, first convert it to binary and then group the binary digits into sets of four from the right (adding leading zeros if necessary) and then convert each group to its hexadecimal equivalent:

(100111001100.010010)2 = (0010 0111 0011 0001 0000.0000 0100 0010)2

Now, convert each group to hexadecimal: 0010 = 2 0111 = 7 0011 = 3 0001 = 1 0000 = 0 0000 = 0 0100 = 4 0010 = 2

So, (473.42)8 is equivalent to (273100.42)16 in hexadecimal.

d) Convert (473.42)8 to base-5: To convert an octal number to base-5, replace each octal digit with its equivalent base-5 representation:

4 = 4 7 = 12 (since 7 is 3 in base-5) 3 = 3 4 = 4 . = (decimal point) 4 = 4 2 = 2

So, (473.42)8 is equivalent to (43124.42)5 in base-5.

Q52. Find the value of A?

a) $(23)_{10} = (17)_A$
b) $(21)_{16} = (41_{)A}$
c) $(32)_8 = (101)_A$

Ans52. a) (23)10 = (17)A In this equation, we have a decimal number on the left side and an unknown base A on the right side. Let's set up the equation and solve for A:

23 = 1*A^1* + 7A^0

Now, solve for A:

23 = A + 7

Subtract 7 from both sides:

A = 23 - 7 A = 16

So, in base A, (23)10 is equivalent to (17)A when A = 16.

b) (21)16 = (41)A In this equation, we have a hexadecimal number on the left side and an unknown base A on the right side. Let's set up the equation and solve for A:

21 = 4*A^1 + 1*A^0

Now, solve for A:

21 = 4A + 1

Subtract 1 from both sides:

4A = 21 - 1 4A = 20

Divide by 4:

A = 20 / 4 A = 5

So, in base A, (21)16 is equivalent to (41)A when A = 5.

c) (32)8 = (101)A In this equation, we have an octal number on the left side and an unknown base A on the right side. Let's set up the equation and solve for A:

32 = 1*A^2 + 0*A^1 + 1*A^0

Now, solve for A:

32 = A^2 + 1

Subtract 1 from both sides:

A^2 = 32 - 1 A^2 = 31

Take the square root of both sides:

A = √31

So, in base A, (32)8 is equivalent to (101)A when A is approximately equal to the square root of 31.

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

```
void main(){

int  a=32770;
```

```
printf(“%d”,a);

}
```

Ans53. -32766

Q54:
```
#include <stdio.h>

 int main()

{

 float c = 5.0;

printf ("Temperature in Fahrenheit is %.2f", (9/5)*c + 32);

 return 0;

}
```

Ans54.
```
#include <stdio.h>


int main() {

   float c = 5.0;

   printf("Temperature in Fahrenheit is %.2f", (9.0 / 5) * c + 32);

   return 0;

}
```