

Name-Harishchandra

BtechCS

Section-AL-1

CprogrammingAssignment.

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.

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

```
int main(){
```

```
    //Declare variables
```

```
    float originalPrice, taxRate, totalPrice;
```

```
    // Input the original price and tax
```

```
    rate printf("Enter the original price of the product:");
```

```
    scanf("%f",&originalPrice);
```

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.

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

```

int main(){
    //Declare variables
    float wagesPerHour, hoursWorked, weeklyWages;

    //Input the wages per hour and hours worked
    printf("Enter the wages per hour:");
    scanf("%f", &wagesPerHour);

    printf("Enter the number of hours worked:");
    scanf("%f", &hoursWorked);

    //Calculate weekly wages
    if(hoursWorked <= 30){
        weeklyWages = wagesPerHour * hoursWorked;
    }else{
        weeklyWages = (wagesPerHour * 30) + (wagesPerHour * 2 * (hoursWorked - 30));
    }

    //Display the weekly wages
    printf("The weekly wages of the employee is: %.2f\n", weeklyWages);

    return 0;
}

```

}

Q3.Mr.Xgoestomarketforbuyingsomefruitsandvegetables. HeishavingacurrencyofRs500withhimformarketing.From ashop,hepurchases2.0kgApple priced Rs. 50.0 per kg, 1.5 kg Mango pricedRs.35.0perkg,2.5kgPotatopricedRs.10.0perkg,and 1.0 kg Tomato priced Rs.15 per kg. He gives thecurrency of Rs. 500 to the shopkeeper. Find out theamountshopkeeperwillreturntoXbywritingaCprogr am.

:

#include<stdio.h>

intmain(){

//Declarevariables

floatcurrencyWithMrX=500.0;float

t applePricePerKg = 50.0;float

mangoPricePerKg = 35.0;float

potatoPricePerKg = 10.0;float

tomatoPricePerKg = 15.0;float

totalAmountSpent;

//Calculatethetotalamountspent

float appleCost = 2.0 *

applePricePerKg;floatmangoCost=1.5*mango

PricePerKg;float potatoCost = 2.5 *

potatoPricePerKg;floattomatoCost=1.0*tomat

oPricePerKg;

```
totalAmountSpent=appleCost+mangoCost+potatoCost+tomatoCost;
```

```
//Calculate the amount to be returned
```

```
float amountToReturn=currencyWithMrX-totalAmountSpent;
```

```
//Display the amount to be returned
```

```
printf("The shopkeeper will return Rs. %.2f to Mr. X\n", amountToReturn);
```

```
return 0;
```

```
}
```

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

:

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

```
int main(){
```

```
//Declare variables
```

```
char name[]="Your Name";
```

```
char dateOfBirth[]="Your Date of Birth";
```

```
char mobileNumber[]="Your Mobile Number";
```

```
//Print name
```

```
printf("Name: %s\n", name);
```

```
//Printdateofbirth
```

```
printf("DateofBirth:%s\n",dateOfBirth);
```

```
//Printmobilenumber
```

```
printf("MobileNumber:%s\n",mobileNumber);
```

```
return 0;
```

```
}
```

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

```
:
```

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

```
int main(){
```

```
    // Declare
```

```
    variables int intValue
```

```
    ;
```

```
    char charValue; float
```

```
    floatValue;
```

```
    //Input
```

```
    an integer printf("Enter an integer
```

```
    r:");
```

```
scanf("%d",&intValue);
```

```
//Input a character  
printf("Enter a character:");
```

```
scanf("%c",&charValue); //Note the space before  
%c to consume any newline characters.
```

```
//Input a float  
printf("Enter a float value:");  
scanf("%f",&floatValue);
```

```
//Display the values on separate lines  
printf("Integer: %d\n",intValue);  
printf("Character: %c\n",charValue);  
printf("Float: %.2f\n",floatValue);
```

```
return 0;
```

```
}
```

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

:

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

```
int main(){
```

```

//Declareandinitializethecostvariable
floatcost=100.50;//Youcanreplacethiswithyourdesiredvalue

//Printthelinewiththecostvariableembeddedprintf("Thetot
alcostis:$%.2f\n",cost);

return 0;
}

```

Q7.Raju got 6and halfapples fromeach of Raghu,SheenuandAkash.Hewantstoknowhowmanyapple shehasintotalwithoutaddingthem.WriteaprogramwhicouldhelpRajuindoeingthis.

:

```

#include<stdio.h>

```

```

intmain(){
    //NumberofapplesreceivedfromeachpersonfloatapplesFromRaghu=6.5;
    floatapplesFromSheenu=6.5;floatapplesFromAkash=6.5;

    //Calculatethetotalnumberofappleswithoutaddingthem

```

```
float totalApples = applesFromRaghu  
+applesFromSheenu+applesFromAkash;
```

```
//Displaythetotalnumberofapples
```

```
printf("Rajuhas%.1fapplesintotalwithoutaddingthem.\n"  
,totalApples);
```

```
return 0;
```

```
}
```

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

```
:
```

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

```
intmain(){
```

```
//Declareandinitializeafloating-
```

```
pointvaluefloatfloatValue=1234.56789;
```

```
//Printthefloating-
```

```
pointvalueinexponentialformatwithtwodecimalplaces
```

```
printf("Valueinexponentialformat:%.2e\n",floatValue);
```

```
return0;
```

```
}
```


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

:

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

```
int main(){
```

```
    //Declare a variable to store the mobile number long long int  
    mobileNumber;
```

```
    //Input the mobile number
```

```
    printf("Enter your 10-
```

```
digit mobile number:"); scanf("%lld",&mobileNumber);
```

```
    // Check if the mobile number has exactly 10
```

```
    digits if (mobileNumber >= 1000000000LL &&  
    mobileNumber <= 9999999999LL){
```

```
        //Display the mobile number printf("Your m  
        obile number is: %lld\n",  
    mobileNumber);
```

```
    }else{
```

```
        printf("Invalid input. Please enter a 10-  
        digit mobile number.\n");
```

```
    }
```

```
    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)

:

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

```
int main(){
```

```
    //Initial population
```

```
    int initialPopulation= 30000;
```

```
    //Calculate the population after the first year (20% increase)
```

```
    int populationAfterFirstYear=initialPopulation+(initialPopulation*20 /100);
```

```
    //Calculate the population after the second year (30% increase)
```

```
    int  
    populationAfterSecondYear=populationAfterFirstYear+(  
    populationAfterFirstYear  
    *30/100);
```

```
    //Display the population after two years printf("Population after  
    two years:%d\n",  
    populationAfterSecondYear);
```

```
    return 0;
```

}

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

:

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

```
int main(){
```

```
    //Declare a variable to store the character character;
    
```

```
    //Input a character from the user printf("Enter a character:");scanf("%c",&character)
    ;
    
```

```
    // Calculate and display the ASCII value of the 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.

:

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

```
intmain(){
```

```
    //Declarevariables
```

```
    floatbasicPay,HRA,TA,salary;
```

```
    //Inputthebasic payfrom
```

```
    theuserprintf("Enterthebasicpay:");scanf
```

```
    ("%f",&basicPay);
```

```
    //CalculateHRAandTA
```

```
    HRA=0.15*basicPay;//15%ofbasicpayTA=0.20
```

```
    *basicPay;//20%ofbasicpay
```

```
    //Calculatethetotalsalarysalary=
```

```
    basicPay+HRA+TA;
```

```
    //Displaythetotalsalary
```

```
    printf("Salaryoftheemployeeis:%.2f\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.

:

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

```
ude<math.h>
```

```
intmain(){
```

```
    //DeclarevariablesforthecoordinatesofpointsPandQ
```

```
    doublexp,yp,xq,yq;
```

```
    //Inputcoordinatesfromtheuser
```

```
    printf("EnterthecoordinatesofpointP(xpyp):");scanf("%l  
f %lf",&xp, &yp);
```

```
    printf("EnterthecoordinatesofpointQ(xqyq):");scanf("%l  
f %lf",&xq, &yq);
```

```
    //Calculatetheslope
```

```
    doubleslope=(yq-yp)/(xq-xp);
```

```
    //Calculatetheangleofinclination(indegrees)doubleangleI
```

```
    nDegrees=atan(slope)*180/M_PI;
```

```
    //Displaytheresults
```

```
printf("TheslopeofthelinepassingthroughPandQis:%.2lf\n",slope);
```

```
printf("Theangleofinclination(indegrees)is:%.2lf\n",angleInDegrees);
```

```
return 0;
```

```
}
```

Q14. The SPI (Semester Performance Index) is a weighted average of the grade point 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 $g_1, g_2, g_3, \dots, g_k$ etc. and the corresponding credits are $c_1, c_2, c_3, \dots, c_k$, the SPI is given by:

:

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

```
int main(){
```

```
//Define the number of courses(k=5) int k=5;
```

```
//Define arrays for grade points and credits for each course
```

```
double gradePoints[k]={3.5,4.0,3.7,3.2,3.9};
```

```
int credits[k]={3,4,3,2,4};
```

```
//Calculate SPI
```

```
double totalGradePoints=0.0;int totalCredits=0;
```

```
for(int i=0;i<k;i++){  
    totalGradePoints+=gradePoints[i]*credits[i];totalCredits += credits[i];  
}
```

```
double spi=totalGradePoints/totalCredits;
```

```
//Display SPI
```

```
printf("The Semester Performance Index (SPI) for  
%d courses is: %.2lf\n",k,spi);
```

```
return 0;
```

```
}
```

Q15. Write a program to calculate the frequency (f) of a given wave with wavelength (λ) and speed (c), where $c = \lambda * f$.

:

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

```
int main(){
```

```
    //Declare variables for speed (c) and wavelength ( $\lambda$ )  
    double speedOfWave, wavelengthOfWave;
```

```
//Inputthespeedofthewaveprintf("Enterthespe  
edofthewave(c:");scanf("%lf",&speedOfWav  
e);
```

```
//Inputthewavelengthofthewaveprintf("Enterthewa  
velengthofthewave( $\lambda$ ):");scanf("%lf",&wavelength  
OfWave);
```

```
//Calculatethefrequency(f)  
doublefrequencyOfWave=speedOfWave/wavelengthOfW  
ave;
```

```
//Displaythefrequency  
printf("Thefrequencyofthewave(f)is:%.2lf\n",frequency  
OfWave);
```

```
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?
[Hint: $v^2 = u^2 + 2as$]

:

```
#include<stdio.h>#incl  
ude<math.h>
```



```

intmain(){
    //Declarevariables
    doubleinitialVelocity=30.0;//initialvelocityinm/sdoubleacce
    ration=5.0;//accelerationinm/s^2doubledistance=70.0;//dista
    nceinmeters
    doublefinalVelocity;

    //Calculatethefinalvelocityusingthekinematicequation
    finalVelocity = sqrt(pow(initialVelocity, 2) + 2
    *acceleration* distance);

    //Displaythefinalvelocity
    printf("Thefinalvelocityofthecaris%.2fm/s\n",finalVelocit
    y);

    return 0;
}

```

Q17..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) $s = ut + \frac{1}{2}at^2$]

:

```

#include<stdio.h>

```

```

intmain(){
    //Givenvalues

```

```

double acceleration=4.0;//Acceleration in m/s^2
double time=3.0;//Time in seconds
double initialVelocity=0.0;//Initial velocity (at rest)

//(a) Calculate the final velocity using the formula v = u + at
double finalVelocity=initialVelocity+(acceleration*time);

//(b) Calculate the distance traveled using the formula s = ut + 0.5*at^2
double distanceTraveled=(initialVelocity*time)+(0.5*acceleration*time*time);

//Display the results
printf("(a) The final velocity of the horse is %.2f m/s\n", finalVelocity);
printf("(b) The horse has traveled a distance of %.2f meters\n", distanceTraveled);

return 0;
}

```

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

:

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

```

int main(){
    //Declare a variable to store the integer (roll number)
    int rollNumber;

    //Input the integer (roll
    number) printf("Enter your university roll number
    :"); scanf("%d",&rollNumber);

    //Extract and sum the last four digits
    int lastFourDigits = rollNumber % 10000; // Get
    the remainder when divided by 10,000
    int sum=0;

    while(lastFourDigits>0){
        sum+=lastFourDigits%10; //Add the last digit to the sum
        lastFourDigits/=10; //Remove the last digit
    }

    // Display the sum of the last four
    digits printf("The sum of the last four digits of your roll
    number is: %d\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 feet and pounds respectively. Note:- 1cm=0.393701inch, 1Kg=2.20462

:

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

```
int main(){
```

```
    //Initialize height in centimeters and weight in kilograms
```

```
    double heightInCm = 175.0; // Replace with  
your height in cm
```

```
    double weightInKg = 70.0; // Replace with your weight  
in kg
```

```
    //Conversion factors
```

```
    double cmToInch=0.393701; double
```

```
    kgToPound=2.20462;
```

```
    //Convert height from cm to feet
```

```
    double heightInFeet=heightInCm*cmToInch/12.0;
```

```
    //Convert weight from kg to pounds
```

```
    double weightInPounds=weightInKg*kgToPound;
```

```

//Displaytheconvertedvalues
printf("Height: %.2f cm is equivalent to %.2f
feet\n",heightInCm, heightInFeet);

printf("Weight: %.2fkgisequivalentto%.2fpounds\n",
weightInKg,weightInPounds);

return 0;
}

```

Q20. Codethevariabledeclarationsforeachoffollowing:

- A. Acharactervariablenamedoption.**
- B. Anintegervariablesuminitializedto0**
- C. Afloatingpointvariable,product,initializedto1**

:

- A. Acharactervariablenamedoption:charoption;**
- B. Anintegervariablesuminitializedto0:intsum=0;**
- C. Afloating-point variable product initialized to1:floatproduct=1.0;**

Q21. Writeaprogramthatreadsnineintegers.Displaythesenumbersbyprintingthreenumbersinalineseparatedby commas.

:

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

```
intmain(){
```

```
int numbers[9]; // Array to store the nine integers
```

```
// Input nine integers
```

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

```
// Display the numbers in sets of
```

```
three printf("Numbers in sets of  
three: \n"); for(int i=0; i<9; i++){  
    printf(" %d", numbers[i]);
```

```
// Print a comma and new line every three numbers
```

```
if((i+1)%3==0){  
    printf(" \n");  
}else{  
    printf(" ,");  
}  
}
```

```
return 0;
```

```
}
```

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

:

Header files in C programming are files that contain declarations and definitions needed for a program to interact with certain features or functions provided by the C standard library or other libraries. These files typically have a .h extension and contain information about functions, data types, macros, and other symbols. Header files serve several important purposes in C programming:

Q23. What will be the output of the following program? #include <stdio.h>

int main()

{ int

num=070; printf(“%d\t%o\t%x”, num, num, num);

}

:

So, the corrected output of the program will be: 567046

Q24. What will be the output of the following program? #include <stdio.h>

void main()

{

int x=printf("GLA UNIVERSITY"); printf("%d", x);

}

:

GLA UNIVERSITY 14

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

:

Library functions, also known as standard library functions or built-in functions, are predefined functions that are part of the C standard library or other libraries and can be used in C programs to perform common tasks without the need for writing custom code. These functions are designed to provide a wider range of functionality, from input/output operations to mathematical calculations and more.

Printf()sc

anf()star

ken()

Q26. What will be the output of the following program? #include <stdio.h>

void main()

{

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

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

}

:

So, the output of the corrected program will be: 29351d

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

:

`scanf("%d%d", &a, &b);` This part of the statement uses the `scanf` function to read two integer values from the standard input (usually the keyboard). The format specifier `"%d%d"` specifies that it expects two integers separated by whitespace. The values are read into the variables `a` and `b`.

`printf("%d", ...);` This part of the statement uses the `printf` function to print a value. In this case, it's trying to print the return value of the `scanf` function.

Q28. What will be the output of the following program?
`#include <stdio.h>`

```
void main()
```

```
{
```

```
    printf("\nC%%FOR%%PLACEMENT\n");
```

```
}
```

:

```
"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.

:

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

```
int main(){
```

```

doubledistance;//Distanceinkilometers
double time = 4.0; // Time in hours (known to be 4hours)

//Inputthedistancefromtheuser
printf("EnterthedistancebetweenGLAUniversityandD
elhi(inkilometers):");
scanf("%lf",&distance);

//Calculatethespeed(speed=distance/time)doublespeed=d
istance/time;

//Displaythespeedofthebus
printf("Thespeedofthebusis%.2lfkm/h\n",speed);

return 0;
}

```

Q30.In an exam Satyam got 50 marks, Suman got 70marks and Shyam got 80 marks, Write a 'C' programtofindaveragemarksofthesethreeparticipants.

```

:
#include<stdio.h>

intmain(){
    //MarksobtainedbySatyam,Suman,andShyam

```

```

int    satyamMarks    =
50;int  sumanMarks    =
70;intshyamMarks=80;

//Calculatethetotalmarks

inttotalMarks=satyamMarks+sumanMarks+shyamMark
s;

//Calculatetheaveragemarks

floataverageMarks=(float)totalMarks/3;//Usingfloatforac
curatedivision

//Displaytheaveragemarks

printf("TheaveragemarksofSatyam,Suman,andShyam
is: %.2f\n",averageMarks);

return 0;
}

```

Q31.One day, Mohancalled Sauravand Sajaland
gavesomemoneytothem,laterherealizedthatmoneythatwas
giventoSauravshouldbegiventoSajalandvice-versa.
Developa‘C’programtohelpMohansothathe can rectify his
mistake.

:

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

```
intmain(){
```

```
intsauravMoney,sajalMoney,temp;
```

```
//Inputtheinitialamountsofmoney
```

```
printf("EntertheamountofmoneygiventoSaurav:");
```

```
scanf("%d",&sauravMoney);
```

```
printf("EntertheamountofmoneygiventoSajal:");
```

```
scanf("%d",&sajalMoney);
```

```
//Swapthemoneyamountsusingatemporaryvariable
```

```
temp=sauravMoney;sauravMoney
```

```
=sajalMoney;sajalMoney = temp;
```

```
// Display the corrected amounts of
```

```
moneyprintf("After rectifying the
```

```
mistake:\n");printf("MoneygiventoSaurav:%d\n",  
sauravMoney);
```

```
printf("MoneygiventoSajal:%d\n",sajalMoney);
```

```
return 0;
```

```
}
```

Q32. OnedaywhenIwasgoingforalunch,suddenlyrainstarted,Iwasveryhungrysostartedrunningwith speed of 4km/h and it took 3 min to reach mess.Helpmetodevelopa'C'programtocalculatedistance travelled by me.

:

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

```
intmain(){
```

```
    doublespeed_kmph=4.0;//Speedinkilometersperhour
```

```
    doubletime_hr=3.0/60.0;//Timeinhours(3minutesconvert  
    edtohours)
```

```
    //Calculatethedistancetraveled
```

```
    doubledistance_km=speed_kmph*time_hr;
```

```
    //Displaythedistance
```

```
    printf("The distance traveled is %.2f  
kilometers\n",distance_km);
```

```
    return 0;
```

```
}
```

**Q33. Cantwoormoreescapesequencessuchas\nand
\tbecombinedinasinglelineofprogramcode?**

:

```
printf("Hello,\n\tWorld!\n");
```

34. What are comments and how do you insert them in a C program?

:

Comments in C are explanatory notes or annotations that are added to the source code to provide information, explanations, or descriptions to make the code more understandable to developers (including yourself) and to document the code's functionality. Comments are ignored by the compiler and do not affect the program's execution; they exist solely for human readability.

In C, there are two types of comments:

Single-

line comments: These comments are used for adding explanations or notes on a single line. They begin with // and continue until the end of the line.

// This is a single-line comment

int x = 10; // This comment explains the purpose of this variable

Multi-line comments: These comments can span multiple lines and are enclosed within /* and */. They are typically used for longer explanations or for commenting out entire blocks of code.

/* This is a multi-line comment.

It can span multiple lines and is useful for providing

detailed explanations. */

int y = 20;

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

:

The statement `scanf("%d", number);` has a minor issue in its format specifier. In C, the `scanf` function expects a pointer to the variable where it should store the input value. However, in the provided statement, `number` is not a pointer; it's just a variable. To correct the statement, you should use the address-of operator (`&`) to provide the memory address of the `number` variable to `scanf`, like this:

`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;
```

```
}
```

```
:
```

The output of the given program will be "Yes." Q37.

```
:
```

Among the provided variable names, the invalid ones are: `gross-salary`: Variable names cannot contain hyphens ("-"). You can use underscores (`_`) instead if

needed. For example, `gross_salary` would be a valid alternative.

avg.: Variable names cannot contain a period (dot). Remove the period to make it valid, like `avg` would be a valid variable name.

there is book in my soup: This variable name is valid. It consists of alphanumeric characters without any spaces or special characters, and it doesn't start with a digit.

Q38. Tom works at a nanaquarium 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 as 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 calculate the time required to completely clean the tank.

:

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

```
int main(){
```

```
    double volume=175.0; //Volume of the tank in gallons
```

```
    double rate=25.0; //Drain rate in gallons per hour
```

```
    //Calculate the time required to drain the tank completely
```

```
    double time_hours=volume/rate;
```



```

//Displaythetimerequiredinhours
printf("Timerequiredtocompletelycleanthetank:
%.2fhours\n",time_hours);

```

```

return 0;
}

```

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

```

:
#include<stdio.h>

intmain(){
    doubledesiredPower=0.75;//75%battery power as a decimal
    doublex;//Number of hours

    //Solve for x using the equation: y = -0.2x + 1
    //Rearrange to find x: x = (1 - y) / 0.2
    x = (1.0 - desiredPower) / 0.2;

    //Display the result
    printf("The battery power will be at 75%% after
    %.2f hours.\n", x);
}

```

```
    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

:

a. Compiler

Q41. What is the format specifier for an Octal Number?

a. %0 b. %d

c. %o d. %

:

c. %o

Q42. Which format specifier is used to print the exponent value up to 2 decimal places.

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

:

d. %.2e

Q43. Which of the following is not a basic data type?

a. char

b. array

c. float

d. int

:

b.array

Q44.What is the output of following code?#include<stdio.h>

voidmain()

{

intx=0;

x=

printf("\'hello\b\');");printf(“

%d”,x);

}

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

:

c."hell"8

Whatistheoutputoffollowingcode?#include<stdio.h>

voidmain()

{

intb,c=5;

int(“%d,%d”,b,c);

}

a.5,5. b.5,5.000000

c.Garbage,5.000000d.Garbage,5

:

d.Garbage,5

Q46. Which of the following is an identifier?

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

:

C. enum

Q47. What is the output of the following program? #include <stdio.h>

o.h>

void main()

{

char x,

a='c'; x=printf("%c"

,a);

printf("%d",x);

}

a. c1. b. cgarbage

c. 1 c. c

:

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

:

$(365.55)_{10} = (101101101.10011)_2$

$$(453.65)_{10} = (705.52)_8$$

$$(5164.12)_{10} = (1424.28)_{16} \quad (23.65)_{10} = (43.1)_5$$

$$(772)_{10} = (1664)_7$$

Q49. convert the following number to decimal number system-

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

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

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

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

:

$$(325.54)_6 = (179.08333333)_{10} \text{ (approximately)}$$

$$(1001010110101.1110101)_2 = (4781.9765625)_{10}$$

$$\text{(approximately)} \quad (742.72)_8 = (482.875)_{10} \quad (AC94.C5)_{16} = (44$$

$$116.7734375)_{10} \text{ (approximately)}$$

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

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

:

$$(DB56.CD4)_{16} = (1101101101010110.110011010100)_2$$

$$(DB56.CD4)_{16} = (33566.6413125)_8$$

$$(DB56.CD4)_{16} = (56222.803125)_{10}$$

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

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

:

$$(473.42)_8 = (1001110011.010)_2$$

$$(473.42)_8 = (315.25)_{10}$$

$$(473.42)_8 = (1A3.2)_{16}$$

$$(473.42)_8 = (1333.21)_5$$

Q52. Find the value of

$$A \cdot (23)_{10} = (17)_A$$

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

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

:

$$A \approx 1.35$$

$$A \approx 0.51$$

$$A \approx 0.32$$

Q53. What will be the output of the following program?

Assume integer is of 2 bytes void

```
main(){  
    int  
    a=32770;printf("%d",  
    a);  
}
```

:

In the given program, you are assigning the value 32770 to an integer variable 'a'. Since you've mentioned that an integer is assumed to be 2

bytes, this program can result in an overflow because the value 32770 is outside the range that a 2-byte integer can hold.

Q54. #include<stdio.h>int

main()

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