C-Programming CLASS - AU(2) Roll No. 67

① 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( ){
float original Price, tax Rate , total Price ;
Printf ("Enter the original Price : ");
Scanf ("%f", & original price);
Printf ("Enter the tax rate (as a percentage):
Scanf ("%f", & tax Rate)
total Price = original Price + (original price * (tax Rate /100));
Printf ("Total price including tax: $%.2f \n", total price);
return 0;
}
```

② Write a C program to calculate the weekly wages of an employee. The pay depends on wages per hour and no. 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( ){
double hourly_rate;
int hours_worked;
Printf ("Enter the hourly rate: ");
Scanf ("%.1f", & hourly_rate );
Printf ("Enter the hours worked:");
Scanf ("%d", & hours_worked);
double weekly_pay;
if (hours_worked <= 30){
weekly_pay = hourly_rate* hours_worked;
} else {
weekly_pay = (hourly_rate * 30) + (2* hourly_rate *(hours_
worked - 30));
}Printf ("Weekly pay : $%.2lf\n" weekly_pay);
}return 0;
```

13. Mr. X goes to market for buying
having a currency of Rs.500 with him he purchases 2.0 kg Apple priced Rs.50.0 per kg, 1.5 kg ... Rs.35.0 per kg, 2.5 kg Potato priced 10.0 per kg, and 1.0 kg ... priced Rs.15 per kg. He gives the currency of Rs. 500 to shokeeper. Find out the amount Shopkeeper will return to X by writing a C program.

```
Any # include <stdio.h>
    int main( ) {
    float apple - price = 1.5;
    float mango - price = 35;
    float potato - price = 10;
    float apple - qty = 2.0;
      "   mango   "   = 1.5;
      "   potato  "   = 2.5;
      "   tomato  "   = 1.0;
    float apple - cost = apple - price * apple - qty;
      "   mango -  "  = mango - "  * mango - qty;
      "   potato - "  = potato - "  * potato - qty;
      "   tomato - "  = 500;
    float total - cost = apple - cost + mango - cost + potato - cost +
                                                    tomato - cost;
    float available - money = 500;
    if (total - cost <= available - money) {
    Printf ("Mr. X can purchase all the items. Total cost: %.2f
                                        rupees \n", total - cost);
    } else {
    printf ("Mr. X does not have enough money to purchase all the
            items. Total cost: %.2f rupees \n", total - cost);
    }
    return 0;
    }
```

mobile no. In 3 diff lines.

Ans
```
#include <stdio.h>
int main( ){
printf ("Name : Your Name\n");
printf ("Date of Birth : January 1, 2000\n");
printf ("Mobile No : 123-456-7890\n");
return 0;
}
```

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

Ans
```
#include <stdio.h>
int main( ){
integer - input = int (input ("Enter an integer : "))
Char - input = input ("Enter a character : ")
plot - input = input ("Enter a plot value : ")
printf ("Integer :", integer - input)
printf ("Character :", Char - input)
printf ("Plot value :", plot - input)
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

Ans
```
#include <stdio.h>
int main( ){
total = $172.53
Printf (" Assume the total value contained in a variable
named 'Caused the same for total is {:.2f}'.
format (total))
return 0;
}
```

Q7. Raju got 6 and half apples from ... Akash. He wants to know how many apples in ... without adding them. Write a program which ... in doing this

Ans apples_from_raghu = 6.5
apples_from_Shinu = 6.5
apples_from_akash = 6.5
total_apples = apples_from_raghu + apples_from_Shinu + apples_from_akash
Printf ("Raju has a total of", total, apples, "apples.")
return 0;
}

Q8 Write a program to input and print your mobile no. (i.e. of 10 digits)

Ans double value = 12345.6789;
printf ("Value in exponential format: %.2e\n", value);
return 0;
}

Q9. Write a program that prints the floating point value in exponential format correct to two decimal places.

Ans number = float (input ("Enter a floating-point no. :"))
formatted_no. = "{:.2e}".format (no.)
printf ("Formatted no.:", formatted_no.)
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?

```
growth-rate-year 1 = 0.20
growth-rate-year 2 = 0.30
population-year 1 = initial-population * (1 + growth_rate_years)
population-year 2 = Population-year 1 * (1 + growth_rate-year2
printf ("population after 2 years: ", int (population-year2)
return 0;
}
```

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

```
ng char = input ("Enter a character: ")
    ascii_value = ord (char)
    printf ("The ASCII value of '{char}' is {ascii, value
    return 0;
```

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

```
ng basic pay - float (input ("Enter the basic pay: "))
    hra = 0.15 * basic_pay
    ta = 0.20 * basic_pay
    Salary = basic_pay + hra + ta
    printf ("The total salary is: {total salary}")
    return 0;
}
```

13. Write a program to find the slope of a line and angle of inclination that passes through two points P and Q with Coordinates (x_p, y_p) and (x_q, y_q) respectively.

Ans import math

```
xp = float(input("Enter the x - coordinate of point p: "))
yp = float(input("Enter the y - coordinate of point p: "))
xq = float(input("Enter the x - coordinate of point q: "))
yq = float(input("Enter the y - coordinate of point q: "))
slope = (yq - yp) / (xq - xp)
angle_radians = math.atan(slope)
angle_degrees = math.degrees(angle_radians)
print("Slope of the line: {slope}")
print("Angle of inclination (degrees): {angle_degrees}")

return 0;
}
```

Q14 Ans

```
int main()
{
int k=5;
float spi = 0.0;
float grade_points[k];
int credits[k];
printf("Enter grade points and credits for each course:\n");
for(int i=0; i<k; i++){
printf("Course %d - Grade points:", i+1);
scanf("%f", &grade_points[i]);
printf("Course %d Credits:", i+1);
scanf("%d", &credits[i]);
for(int i=0; i<k; i++){
spi += (grade_points[i] * credits[i]);
}
spi /= k;
printf("SPI: %.2f\n", spi);
return 0;
}
```

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

Ans

```
wavelength = float(input("Enter the wavelength (λ) in meters: "))
speed = float(input("Enter the speed (c) in meters per second: "))
frequency = speed / wavelength
print("The frequency (f) of the wave is:", frequency, "Hz")
return 0;
```

...30m/s accelerates steadily at 5 m/s² fo... What is the final velocity of the car?
...v2 = u2 + 2as]

Ans
```
int main( ) {
double initial-velocity = 30.0;
double acceleration = 5.0;
double distance = 70.0;
double final - velocity = sqrt (pow (initial-velocity, 2) + 2*
acceleration * distance);
printf ("The final velocity is %..2f m/s \n", final velocity
return 0;
}
```

Q17. A horse accelerates steadily from rest at 4 m/s² for 3
(a) What is its final velocity? (b) How far has it travelled
[Hint : (a) V = u + at (b) S - ut + ½ at2]

Ans
```
int main( ) {
    double u = 0.0;
    double a = 4.0;
    double t = 3.0;
    double v, S;
    v = u + (a * t);
    S = (u * t) + (0.5 * a * t * t);
    Printf ("Final velocity (v): .2f m/s \n", v);
    Printf ("Distance Traveled (S): %.2f meters \n", S);
    return 0;
}
```

Q18. Write a program to find the sum of your four dig
digit of your university roll no.

Ans
```
int main( ) {
```

```
int sum = 0;
for (int i = 0; rollNumber[i] != '\0'; i++)
    if (rollNumber[i] >= '0' && rollNumber[i] <= '9')
        sum += rollNumber[i] - '0';
printf("Sum of the last digits of your university roll number is %d\n", sum);
return 0;
}
```

```
int main() {
    float height_cm = 0.0, weight_kg = 0.0;
    printf("Enter your height in centimeters: ");
    scanf("%f", &height_cm);
    printf("Enter your weight in kilograms: ");
    scanf("%f", &weight_kg);
    float cm_to_inch = 0.393701;
    float kg_to_lb = 2.20462;
    float height_inch = height_cm * cm_to_inch;
    float weight_lb = weight_kg * kg_to_lb;
    printf("Your height in feet: %.2f ft\n", height_inch / 12);
    printf("Your weight in pounds: %.2f lbs\n", weight_lb);
    return 0;
}
```

Q20. `char option = 'b';`
`int sum = 0;`
`float product = 1.0f;`

Q21. Write a program that reads nine integers. Display these numbers by printing three no. in a line separated by commas.

Ans
```
int main() {
    int numbers[9];
    printf("Enter 9 integers, separated by spaces:\n");
    for (int i = 0; i < 9; i++) {
```

```
these no. are entered: \n");
for (int i = 0; i < 9; i++) {
printf ("%d", numbers[i]);
if ((i+1) % 3 == 0) {
  printf (" , ");
}
else if (i != 8) {
  printf (" ");
}
}
printf ("\n");
return 0;
}
```

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

Ans
```
int add (int a, int b);
void greet (char * name);

int main() {
int result = add (5,3);
Printf ("The result is %d\n", result);
char name [] = "Alice";
great (name);
return 0;
}
```

Q23. What will be the output of following program?

Ans Output will be 0,0,0.

Q24. What will be the output of following program?

Ans Output will be a GLA UNIVERSITY 14.

Q25. What are library functions?

Ans 1. Python - 'len()': This function returns the length of an object, such as a string, list, or tuple. For example, len('Hello') would return 5.

2. C++ 'std::cout': This is part of the C++ Standard Library and is used for output.

3. JavaScript - This function adds one or more elements to the end of an array and returns the new length of the array.

4. Java - This function is part of the Java Standard Library and calculates the square root of a number.

Library functions → Printf, Scanf, strlen, Sqrt.

Q26. What will be the output of following program?

Ans C is a placement oriented language HI30 36 1C

Q27. Whis the meaning of following Statement?
Printf ("%.d", Scanf ("%.d %.d", &a, &b));

Ans Statement prints the no. 2 to the console, indicating that two integers were successfully read by 'scanf'.

Q28. What will be the output of following program?

Ans Output will be:
"C % For % PLACEMENT".

A Q29.
```
int main() {
    double distance, time, speed;
    Printf ("Enter the distance in kilometers:")
    Scanf ("%.1f", &distance);
    Printf ("Enter the time in hours:");
    Scanf ("%.1f", &time);
```

```
int main() {
    int Satyam marks = 65;
    int Suman marks = 7;
    int Shivam marks = 88;
    int total marks = Satyam marks + Suman Marks + Shivam Marks;
    float average Marks = (float) total Marks / 3;
    printf("Average marks : %.2f \n", average Marks);
    return 0;
}
```

Q.31

```
struct Person {
    char name[20];
    float money;
};
int main() {
    struct Person mohan, saurabh, sejal, varsha;
    Strcpy(mohan.name, "Mohan");
    Mohan.money = 0.0;
    Strcpy(Saurabh.name, "Saurabh"
    Saurabh.money = 100.0;
    Strcpy(Sejal.name, "Sejal");
    Sejal.money = 0.0;
    Strcpy(varsha.name, "varsha");
    Varsha.money = 0.0;
    Varsha.money += Saurabh.money;
    Saurabh.money = 0.0;
    Printf("%.s now has %.2f money\n", mohan.name, mohan.money);
    (1                    11                    Saurabh.name, saurabh.money);
```

Segat.name, Segat.....
Varsha.name, Varsha.mono();

return 0;

}

32 int main() {
float speed_kmph = 40;
float time_minutes = 30;
float time_hours = time_minutes / 60.0;
float distance_km = speed_kmph * time_hours;
printf("You traveled %.2f kilometers.\n", distance_km);
return 0;
}

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

Ans int main() {
printf("Hello, world!\n\This\tis\ta\tTabbed\tline.\n");
return 0;
}

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

Ans int main() {
printf("Hello, World!\n");
return 0;
}

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

Ans int main()
{ Scanf("%d", &number);
return 0;
}

out which of the following variable names are ... REST, salary of emp, avg, there is book is my soup

Ans
```
float gross salary;
float interest;
float salary of employee;
float average;
gross-salary = 50000.0;
interest = 0.05;
salary of employee = 42000.0;
average = (gross-salary + salary of employee)/2;
Printf ("Gross salary : %.2f \n", gross salary);
       ("Interest : %.2f \n", interest);
       ("Salary of Employee : %.2f \n", salary of Employee);
       ("Average : %.2f \n", average);
return 0;
}
```

Q 38.
```
drain rate = 2;
total gallons = 175
time required hours = total gallons / drain rate
hours = int (time required hours)
minutes = (time required hours - hours) * 60
Printf ("It will take %d hours & hours and & minutes &
  minutes to completely drain the tank.")
return 0;
}
```

Q 39.
```
double battery Power = 1.0;
double target power = 0.75 {
  double hours = 0;
while (battery power > target power) {
      battery Power -= 0.2;
      hours += 1;
Printf (" It takes %. If hours for the battery power to
      reach 75%%.. \n", hours);
return 0;
```

Q40. (b) interpreter

Q41. (c) %.0

Q42. (d) %.2c

Q43. (b) array

Q44. ~~Output will be~~ (c) "hell"8

Q45 (d) garbage, 5

Q46. (b) basic - key

Q47. (a) c 1

Q48 (a) (10110110101.1011)2 (b) (765.51)8 (c) (1420.21)6 (d) (43.3)5 (e) (2045)7

Q49 (a) (125.9444)10 (b) (5120.90625)10 (c) (482.90625)10 (d) (44181.7695305)10

Q50. (110110101010.110011010100)2 (0333.6652)8 (1312.3132)4

Q51 (100111011.100010)2 (315.25)10 (90.82)11 (244.102)5

Q52. (a) (17)4 (b) (41)0 (c) (101)1

Q53. Integer 2 bites can store values from - 32767 to 32767 for signed integer when you assign 32770 to 'a' the output will not be predicted it might print a seemingly random value or behave unexpectedly.

Q54. Output will be : temperature in Fahrenheit is 37.00