Part A

1.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
    int number;
int positive = 0;
int negative = 0;
int zero = 0;
printf("Enter 10 numbers: ");
for(int i = 0; i < 10; i++)
{
scanf("%d", &number);
if(number > 0)
positive++;
else if(number < 0)
negative++;
else
zero++;
}
printf("The number of positive integers %d\n The number of negative integers
%d\nThe numbers which are zero %d",positive,negative,zero);
}
```

2.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
float marks;
float max = 0;
float min = 100;
float average;
float total = 0;
int i;
printf("Enter marks of 10 students: \n" );
for(i = 0; i < 10; i++)
```

```c
{
printf("The marks of %d student is: ",i+1);
scanf("%f", &marks);
total += marks;
if(marks > max)
max = marks;
if(marks < min)
min = marks;
}
printf("Total - %f\n", total);
printf("Average - %f\n", total/10);
printf("Max - %f\n", max);
printf("Min - %f", min);
}
```

3.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
float price;
float total;
int num = 0;
float avg;
printf("Enter a item price: ");
for(int i = 0; i < 10; i++)
{
scanf("%f", &price);
total += price;
if(price > 200)
num++;
}
printf("The average of a item is %f\n", total/10);
printf("The number of items whose price is greater than 200 is %d", num);
return 0;
}
```

4.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
int employeeNo;
int basicSalary;
int num = 0;
while(1)
{
printf("Enter Employee number: ");
scanf("%d", &employeeNo);
if(employeeNo == -999)
break;
printf("Enter your salary: ");
scanf("%d",&basicSalary);
if(basicSalary >= 5000)
num++;
}
printf("The number of employees whose basic salary is >= 5000 are %d",num);
}
```

5.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
int employeeNo;
int hours;
float overTime;
int total = 0;
int totalOT = 0;
while(1)
{
overTime =0;
printf("Enter employee number: ");
scanf("%d",&employeeNo);
if(employeeNo == -999)
break;
printf("Enter hours worked: ");
scanf("%d", &hours);
```

```
total++;
if(hours > 0 && hours < 40)
overTime += (hours * 150);
if(hours >= 40)
{
overTime += (39 * 150);
overTime += (hours - 39) * 200;
}
if(overTime > 4000)
totalOT++;
printf("Employee number: %d\n",employeeNo);
printf("Over time payment: %f\n", overTime);
printf("The percentage of people over R.s 4000 of overtime %f%%\n",
(float)totalOT/total);
return(0);
}

}
```

Part B

1.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
int number,rem;
printf("Enter a number: ");
scanf("%d",&number);
rem = (number % 2);
switch(rem)
{
case 1:printf("The number is odd");break;
case 0:printf("The number is even");break;
default: printf("Invalid input");
}
}
```

2.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
int num,a,b;
float avg;
printf("Enter a operator number: \n");
printf("1- +\n2- -\n3- /\n4- *\n");
scanf("%d", &num);
printf("Enter two numbers ");
scanf("%d %d", &a,&b);
avg = (float)a/b;
switch(num)
{
case 1:printf("%d + %d = %d",a,b, a+b);break;
case 2:printf("%d - %d = %d",a,b, a-b);break;
case 3:printf("%d/%d = %f",a,b,avg);break;
case 4:printf("%d*%d = %d",a,b,a*b);break;
}
}
```

3.

```c
#include <stdio.h>
#include <stdlib.h>
#define PI 3.14159
int main()
{
float radius;
int num;
printf("1-Calculate circumference\n2-Calculate circle area\n3-Calculate sphere
volume\n");
scanf("%d",&num);
printf("Enter radius: ");
scanf("%f", &radius);
switch(num)
{
case 1:printf("Circumference of circle is %f", 2 * PI * radius);break;
case 2:printf("Area of circle is %f", PI * radius * radius);break;
case 3:printf("Volume of sphere is %f", (4 * PI * radius * radius * radius)/3);break;
}
```

```
}
```

4.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
char c;
printf("Enter a character: ");
scanf("%c", &c);
switch(c)
{
case 'a':case 'A':case 'e':case 'E':case 'i':case 'I':case 'o':case 'O':case 'u':case 'U':
printf("%c is a vowel", c);break;
default:printf("%c is not a vowel", c);
}
}
```

5.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
int monthNo;
printf("Enter a month number: ");
scanf("%d", &monthNo);
switch(monthNo)
{
case 1:printf("Month %d has %d days", monthNo, 31);break;
case 2:printf("Month %d has %d days", monthNo, 28);break;
case 3:printf("Month %d has %d days", monthNo, 31);break;
case 4:printf("Month %d has %d days", monthNo, 30);break;
case 5:printf("Month %d has %d days", monthNo, 31);break;
case 6:printf("Month %d has %d days", monthNo, 30);break;
case 7:printf("Month %d has %d days", monthNo, 31);break;
case 8:printf("Month %d has %d days", monthNo, 31);break;
case 9:printf("Month %d has %d days", monthNo, 30);break;
case 10:printf("Month %d has %d days", monthNo, 31);break;
case 11:printf("Month %d has %d days", monthNo, 30);break;
case 12:printf("Month %d has %d days", monthNo, 31);break;
```

```
}
}
```

LOOPS

1.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
int number = 0;
for(number = 0;number <= 100; number++)
{
printf("%d\n", number);
}
printf("FOR LOOP\n");
number = 0;
while(number <= 100)
{
printf("%d\n", number);
number++;
}
printf("While LOOP\n");
number = 0;
do{
printf("%d\n",number);
number++;
}while(number <= 100);
printf("Do while LOOP");
}
```

2.

```c
#include <stdio.h>
#include <stdlib.h>
int main()
{
float number = 0;
float total = 0;
float avg = 0;
```

```
printf("Enter 10 marks: ");
for(int i = 0; i <10; i++)
{
scanf("%f", &number);
total += number;
}
printf("total %f\n", total);
avg = (total / 10.0);
printf("Average - %f\n",avg);
if(avg > 50)
printf("Pass");
else
printf("Fail!");
}
```

3.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
int number;
int factorial = 1;
printf("Enter number for factorial: ");
scanf("%d", &number);
for(int i = number; i >= 1; i--)
{
factorial *= number;
number--;
}
printf("Factorial %d", factorial);
}
```

4.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
int number;
int sum = 0;
printf("Enter a number: ");
```

```
scanf("%d", &number);
while(number != 0)
{
sum += (number % 10);
number /= 10;
}
printf("The sum of numbers are %d", sum);
}
```

5.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
int rem = 0;
int number;
int reversed = 0;
printf("Enter a number: ");
scanf("%d", &number);
while(number != 0)
{
rem = number % 10;
reversed = reversed * 10 + rem;
number /= 10;
}
printf("The reversed numbers is %d", reversed);
}
```

6.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
int base;
int power;
int result = 1;
printf("Enter a base: ");
scanf("%d", &base);
printf("Enter an exponent: ");
scanf("%d", &power);
```

```
for(int i = power; i >= 1; i--)
{
result *= base;
}
printf("The result is %d", result);
}
```

7.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
int first = 0,second = 1,n,i,next = 0;
printf("How many fibonacchi numbers do you want: ");
scanf("%d", &n);
for(i = 0 ; i < n; i++)
{
if(i == 0 || i == 1)
printf("%d\n", i);
else
{
next = first + second;
first = second;
second = next;
printf("%d\n", next);
}
}
}
```

8.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
int i,num,n = 0,rem,result = 0,original;
printf("Enter a number: ");
scanf("%d",&num);
original = num;
while(num != 0)
```

```
{
num /= 10;
n++;
}
num = original;
for(i = 0; i < n; i ++)
{
rem = num % 10;
rem = round(pow(rem,n));
result += rem;
num /= 10;
}
if(result == original)
printf("This is an Armstrong number");
else
printf("Not an Armstrong number");
return 0;
}
```

9.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
char c;
for(c = 'A'; c <= 'Z'; c++)
{
printf("%c characters ASCII number is %d\n",c,c);
}
}
```

10.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
int i = 0,j = 0, k = 1;
for(i = 0; i < 5; i++)
{
for(j = 0; j < k; j++)
```

```
    {
    printf("*");
    }
    printf("\n");
    k++;
    }
    }
```

11.

```
    #include <stdio.h>
    #include <stdlib.h>
    #include <math.h>
    int main()
    {
    int num,i;
    printf("Enter a number: ");
    scanf("%d",&num);
    for(i = 2; i < num /2; i++)
    {
    if(num % i == 0)
    {
    printf("This is not a prime");
    return 0;
    }
    }
    printf("This is a prime");
    return 0;
    }
```

12.

```
    #include <stdio.h>
    #include <stdlib.h>
    #include <math.h>
    int main()
    {
    int num,i;
    printf("Enter a number: ");
    scanf("%d",&num);
    for(i = 1; i <= num ; i++)
    {
```

```
if(num % i == 0)
printf("%d is a facor of %d\n",i,num);
}
return 0;
}
```

13.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
int num = 0,sum = 0;
while(num != -1)
{
printf("Enter a number: ");
scanf("%d",&num);
if(num != -1)
sum += num;
}
printf("The sum is %d",sum);
return 0;
}
```

14.

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
int numbers[10],i;
for(i = 0; i < 10; i++)
{
printf("Enter %d number: ",i+1);
scanf("%d",&numbers[i]);
}
}
```

15.

```c
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
int main()
{
int numbers[10],i,count = 0;;
for(i = 0; i < 10; i++)
{
printf("Enter %d number: ",i+1);
scanf("%d",&numbers[i]);
if(numbers[i] % 2 == 0)
count++;
}
printf("The number of even numbers in the array are %d\n",count);
return 0;
}
```