

**R/A/S/M/EXAM
2021**

130016

**PRACTICAL PROGRAMMING
&
WEB DESIGN**

Time : 2 hours]

[Full Marks : 100

Practical Programming

1. Choose *any one* of the following :

50×1=50

- (a) Assume a financial organization that lends money on interest. The interest rate is $x\%$ per month on the principal amount. After every year, the due amount becomes the principal amount. Your program needs to calculate the amount to be paid after m months. It takes as input the loan amount, the values of x and m and prints a table showing the due amount up to the m th month.

Example :

Input :

Loan amount : 1000

Interest rate : 10

Number of months of loan : 14

Output :

Month	Principal	Due Amount
1	1000	1100
2	1000	1200
.....		
.....		
.....		
12	1000	2200
13	2200	2420
14	2200	2640

SEAL

SEAL

- (b) A word that reads the same backward as forward is called a palindrome. E. g., MADAM and MALAYALAM are palindromes. Use the data structures, *Queue* and *Stack* to check whether a word is a palindrome or not. You need to create the corresponding functions (*Add* and *Delete* for *Queue* ; *Push* and *Pop* for *Stack*) and use them. You can read in the characters of the word one after another or as one single string. Print appropriate messages.

Example 1 :

Input :

Enter word : MADAM

Output :

The word MADAM is a palindrome.

Example 2 :

Input :

Enter word : TEACHER

Output :

The word TEACHER is not a palindrome.

- (c) Euler's totient function, $\phi(n)$ is the number of positive integers less than n and relatively prime to n . Two numbers are relatively prime if their only common divisor is 1. Take a positive integer as input and print the positive integers less than n and relatively prime to n . Additionally, print the value of the totient function of that integer.

Example 1 :

Input :

Positive integer : 10

Output :

The positive integers which are less than 10 and relatively prime to 10 are :

1 3 7 9

The totient function value of 10 is 4

Example 2 :

Input :

Positive integer : 7

Output :

The positive integers which are less than 7 and relatively prime to 7 are :

1 2 3 4 5 6

The totient function value of 7 is 6