Duration: 2 hours   **Marks: 50**

Problem 1:   **Weight: 10**

You are given an array of n – 1 distinct integers in the range of 1 to n. There are no duplicates in the list. One of the integers is missing in the array. Find the missing number in the array with O(n) complexity.

Any programming language or pseudo code is allowed for this problem.

Input: a[] = {1, 2, 4, 5}

Output: 3

Input: a[] = {1, 2, 3, 4,6, 7}

Output: 5

Problem 2:   **Weight: 10**

Only ABAP programming language is allowed for this problem.

Assume that you have below employee data in an ABAP internal table. The name of the internal table is IT_EMPLOYEE.

Id	Name	Department	Email
1	Saiful	Dev	
2	Sakib	QA	
3	Hanif	HR	

But employee email address was not assigned in the table. Your task is to generate email address for each employee by using the given format: **name_department_id@email.com**

Example: For employee id 1, the email address should look like **Saiful_Dev_1@email.com.**

After assigning all email addresses, you need to print all the fields of IT_EMPLOYEE internal table in the screen.

Final Output:

Id	Name	Department	Email
1	Saiful	Dev	Saiful_Dev_1@email.com
2	Sakib	QA	Sakib_QA_2@email.com
3	Hanif	HR	Hanif_HR_3@email.com

Problem 3:   **Weight:10**

Assume, we have a table called Sales_Order like that

Order_id	Order_Date	Customer_Id	Store_id
SO-1	10/6/2021	C-1	S-1
SO-2	11/6/2021	C-1	S-1
SO-3	12/6/2021	C-2	S-2
SO-4	15/6/2021	C-3	S-3

We have another table called Sales_Order_Details

Order_id	Item_number	Product_Id	Quantity	Unit_Price
SO-1	1	P-2	4	15
SO-2	1	P-1	2	10
SO-2	2	P-2	3	15
SO-3	1	P-3	2	8
SO-3	2	P-4	5	20
SO-4	1	P-1	5	10
SO-4	2	P-2	7	15
SO-4	3	P-3	10	8

Write a SQL query which returns **Order_id, Customer_Id, Product_Id, Quantity, Unit_Price, total_price.**

[Total_price = Unit_Price * Quantity.]

Problem 4:   **Weight:10**

Design an Html form containing **name, phone and email** and validate the form using JavaScript. Form layout is given below:

Name

Hanif

Phone

+88018XXXXXXXX

Email

hanif@email.com

Submit

Validation Criteria: You have to follow the given rules to validate the form

1. First character of name must be start with **capital letter**

2. First three characters of phone number must be **+88**

3. Email address must contain @ character (not at beginning) and last four characters of email must be **.com**

If the user input passes the validation criteria after clicking **Submit** button, then display an alert message like **"Submission Completed"**

Otherwise, display **"Please enter a valid input"**

Problem 5:   **Weight:10**

What is Subnet?

You need to subnet a network that has 5 subnets, each with at least 16 hosts. Which classful subnet mask would you use and why?

A.   255.255.255.192

B.   255.255.255.224

C.   255.255.255.240

D.   255.255.255.248