

# **Sai Nath University**

## **Assignment For MCA 3<sup>st</sup> Sem.**

The Assignment will consist of two parts, A and B. Part A will have 5 short answer questions(40-60 words) of 4 marks each. Part B will have 4 long answer questions of 5 marks each.

**All questions are compulsory.**

These Assignments should be completed and submitted in written form by the student to his/her respective Faculty/ Examiners. Assignment Submission Dates are:

➤ **Nov-17**

### **List Of Suggested Questions**

The list of suggested questions is for students to practice. Although optional, we recommend that students solve these questions, as they will help them in preparing for exams as well as in clearing the important concepts of the subject.

### **List of Practical and suggested practical's**

The list of practical's should be done by the students in their Lab Sessions. These are the basic practical's, which each student should be able to do himself independently. While the list of suggested practicals are optional, but it is recommended that students should perform those practical so as to have a thorough knowledge of the subject.

### **Education Delivery Schedule (EDS)**

As per University Semester scheme, the minimum contact hours of each paper has been

Divided into two hours theory and practical class.

The faculty will maintain this attendance paper wise for his/her batch.

| <b>Subject Code</b> | <b>Subject Name</b>            |
|---------------------|--------------------------------|
| MCA-310             | Theory of computation          |
| MCA-320             | Software Engineering           |
| MCA-330             | Analysis & Design of Algorithm |
| MCA-340             | Visual programming with VB     |
| MCA-350             | . Net Framework & C#           |
| MCA-360 P           | Lab (Programming in Java)      |

**SAI NATH UNIVERSITY**

**Cover page of Assignment**

|              |                        |
|--------------|------------------------|
| ID NUMBER    | .....                  |
| NAME         | .....                  |
| COURSE       | MCA.....               |
| STREAM       | COMPUTER SCIENCE ..... |
| SEM          | 3 <sup>rd</sup> .....  |
| SUBJECT CODE | .....                  |
| SUBJECT NAME | .....                  |

**Assignments will be completed by the Student in his/her own handwriting.**

## MCA -310

### Theory of computation

#### Part A

1. What is alphabet? What is grammar?
2. What is Turing machine?
3. What is PDA?
4. Justify the claim that the resulting automaton does describe the same language.
5. What is finite state machine?

#### Part B

1. Show that it is possible to associate with  $M$  a regular expression  $r$  over denoting the same language as that accepted by  $M$ .
2. Give the answer all question:

**A.** For each of the following languages over the alphabet  $\{a; b\}$ , say whether or not it is regular. Justify your answers stating clearly any results that you use. The union of countably many regular languages  $L_1; L_2; L_3; \dots$

**B.** Assuming that the empty string  $\epsilon$  is not in  $L(s)$ , show that if  $L(r) = L(t/sr)$  then  $L(r) = L(s^*t)$ . Hint: argue by induction on the length of strings in  $L(r)$

3. Give the answer all question :

A. The set of all strings in which the number of occurrences of the letter  $a$  and the number of occurrences of the letter  $b$  are both divisible by 3

B. The set of all strings such that in each initial substring the number of occurrences of the letter  $a$  and the number of occurrences of the letter  $b$  differ by no more than 2.

4. Describe how to derive from any regular expression a deterministic finite automaton describing the same language.

**MCA-320**  
**Software Engineering**

**Part A**

1. What is Water fall model? Explain.
2. Differentiate between validation and verification.
3. Write is testing. Explain white box testing and black box testing.
4. What do you mean  $\alpha$  and  $\beta$  testing. Explain in brief.
5. What are CASE tools?

**Part B**

1. Explain Cohesion and coupling and its types.
2. What is the difference between SRS document and design document?
3. What is DFD? Explain its level.
4. What is CMM level? Explain. Explain Gantt and PERT chart.

**MCA-330**  
**Analysis & Design of Algorithm**

**Part A**

1. What is asymptotic notation? Explain .
2. What is greedy approach? Give the answer with example.
3. What is divide and conquer? Write the algorithm of merge sort.
4. Write the algorithm of merge sort.
5. What is algorithm? Write the properties of algorithm.

**Part B**

1. What is heap tree? Write the algorithm to delete the element in heap tree.

2. Write the kruskal's shortest path algorithm
3. Write the algorithm of insert ,delete in data link list.
4. What is balanced AVL tree. Draw balance AVL Tree :  
23,76,98,2,35,778,35,21,98,2,1,54,65,98.

## **MCA-340**

### **Visual programming**

#### **Part A**

1. Write short notes on Event Procedure.
2. Write short notes on Command Button.
3. List any five string functions with examples
4. What are Menus?
5. Explain the MDI Form.

#### **Part B**

1. Discuss dialog boxes in VB with example.
2. Discuss Random Access Data file with example.
3. Explain the three kinds of modules in VB.
4. Explain scroll bars in VB with example.

## **MCA-350**

### **.Net Framework & C#**

#### **Part A**

1. Differentiate value type and reference type.
2. What is the use of static constructor in C#?

3. List out the different types of applications that can be created on .NET.
4. What are the uses of server side controls?
5. What is the difference between Single Call and Singleton?

## **Part B**

1. List out the various value and reference types supported in C#.
2. Describe the components of the .NET framework and explain the features of each component.
3. List out the exception handling statements supported in C# and explain with an example.
4. List out the categories of controls supported in window based application and explain the importance of each.

## **MCA-360**

## **Part A**

### **Lab (Programming in java)**

1. Write a program swap two number taken only two variable.
2. Write a java Program to print the following output using nested loops.

```
    1
  1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

3. Write a program enter 150 element by user.

4. Write a program to create a link list.
5. Write a program to convert Fahrenheit to Celsius.

## **Part B**

1. Write a java program to find the sum of the series:

$$s = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^n}{n!}$$

2. Write the java program draw a circle.
3. Write a program in java sort a given list of numbers using bubble sort .
4. Write a java program search the number in given list of number using binary search.