

**KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY**  
**Hiranya Kumar Bhuyan School of Science and Technology**

HOME ASSIGNMENT FOR  
**MASTER OF COMPUTER APPLICATION (MCA)**  
&  
**MASTER OF SCIENCE IN INFORMATION TECHNOLOGY (M.Sc.IT)**  
SECOND SEMESTER, 2016

**COURSE: COMPUTER ORGANIZATION AND ARCHITECTURE**  
**(MCA/M.Sc.IT-05)**

**Total Marks: 50**

*[Assignments are required to be written in your own language. Copying from the learning materials will carry less score]*

**A. Answer the following three questions: 2 X 3 = 6**

- Q1. What is the task of the DMA Controller when there is a request for memory transfer?
- Q2. If a magnetic disc has 100 cylinders, each containing 10 tracks of 10 sectors, and each sector contains 128 bytes, what is the maximum capacity of the disk in bytes?
- Q3. What is pipelining?

**B. Answer the following three questions: 4 X 3 = 12**

- Q1. What is the difference between direct and indirect addressing? How many references to memory are needed for each of instruction to bring an operand into accumulator?
- Q2. The cache memory of 1K words uses direct mapping with a block size of 4 words. How many blocks can the cache accommodate?
- Q3. What is the significance of locality of reference? Distinguish between temporal and spatial locality.

**C. Answer the following two questions: 6 X 2 = 12**

- Q1. What is the difference between I/O controlled transfer and DMA transfer? Why does I/O interrupt make more efficient use of CPU?
- Q2. What are the difference between zero-address, one-address, and two-address instructions? Illustrate with the help of examples.

**D. Answer the following two questions: 10 X 2 = 20**

- Q1. What is parallel processing? Discuss the four different types of data stream computers.
- Q2. What do you mean by effective address of data? Explain any four addressing modes. How is effective address calculated for them?

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**COURSE: DATA STRUCTURE THROUGH C LANGUAGE**  
**(MCA/ M.Sc.IT -06)**

**Total Marks: 50**

*[Assignments are required to be written in your own language. Copying from the learning materials will carry less score]*

**A. Answer the following three questions:** **2 X 3 = 6**

- Q1. What is the significance of NULL pointer in a linked list?
- Q2. What are the advantages of link representation of binary tree?
- Q3. What do you mean by overflow and underflow in stacks?

**B. Answer the following three questions:** **4 X 3 = 12**

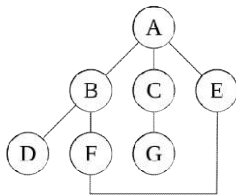
- Q1. Write a function to insert an element into the first position of an array.
- Q2. What are the advantages of circular queue? When a queue is considered to be full?
- Q3. Consider the following array:

[10, 15, 32, 40, 48, 52, 78, 80]

Write the steps to search element 52 using Binary search. Determine the number of comparisons required.

**C. Answer the following two questions:** **6 X 2 = 12**

- Q1. Perform depth first sort on the following graph:



- Q2. Sort the following array using quick sort also show the steps for sorting:

[25, 30, 59, 10, 92, 85, 30]

**D. Answer the following questions:** **10 X 2 = 20**

- Q1. Write a C program to print the information from each node in reverse order in doubly linked list, in which pointer to last node is TAIL.

Q2. Write separate functions for preorder, postorder and inorder traversal in binary tree.

Generate the binary tree whose in-order and pre-order traversals are given as follows:

Pre-order: M G D J I K R P V T Y

In-order: D G I J K M P R T V Y

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**COURSE: OBJECT-ORIENTED PROGRAMMING THROUGH C++**  
**(MCA/ M.Sc.IT -07)**

**Total Marks: 50**

[Assignments are required to be written in your own language. Copying from the learning materials will carry less score]

**A. Answer the following three questions: 2 X 3 = 6**

Q1. Why do we need constructors and destructors?

Q2. How does class accomplish data hiding?

Q3. How is an entry controlled loop different from exit controlled loop? Give one example of each loop.

**B. Answer the following three questions: 4 X 3 = 12**

Q1. When do we use a friend function?

Q2. What is an abstract class? When do we make a class virtual?

Q3. What are the merits and demerits of using inline function?

**C. Answer the following two questions: 6 X 2 = 12**

Q1. Write a C++ program to generate the pattern:

1=1

2=121

3=12321

4=1234321

Q2. Write a C++ program to find the sum of the elements of either diagonals of a square matrix.

**D. Answer the following two questions: 10 X 2 = 20**

Q1. Define a class **rectangle** to represent rectangle by its *length* and *breadth*. Write member functions to compute the **area** of rectangle. Write a member function **check()** to check if a rectangle is a square. Write two constructors with one and two arguments to set the values of **length** and **breadth**.

Q2. Write a C++ program for performing addition and subtraction of two complex numbers (a real and imaginary part) using overloaded + and - operator.

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**COURSE: VISUAL BASIC**  
**(MCA/ M.Sc.IT -08)**

**Total Marks: 50**

*[Assignments are required to be written in your own language. Copying from the learning materials will carry less score]*

**A. Answer the following three questions: 2 X 3 = 6**

- Q1. Write a procedure to add a status bar to a program.
- Q2. Explain when you would prefer to use check box instead of radio button.
- Q3. Write down the VB code to accept an input and check whether if it is string or number. If it is a string then give the length of the word in MsgBox as output. And if it is a number then output the square of that number in MsgBox.

**B. Answer the following three questions 3 X 4 = 12**

- Q1. Discuss the elements of VB IDE.
- Q2. What are the possible states of form? How is a Modal Form different from a Mode less Form?
- Q3. Discuss the three different loop control structures with an example.

**C. Answer the following questions: 6X 2 = 12**

- Q1. Write down the VB code to accept a number and then output the factorial of the number.
- Q2. Write down the VB code to perform addition, subtraction, multiplication and division of two numbers.

**D. Answer the following questions: 10 X 2 = 20**

Q1. A "Employee" table has the following structure:

Employee(Empno, Name, Date of Birth, Year of joining, Qualification, Salary)

The **Salary** column is empty. Write code to calculate and store Salary for all employees using ADO DB. The **Salary** is to be calculated as:

| <b>If</b> | <b>qualification</b> | <b>Salary</b> |
|-----------|----------------------|---------------|
|           | Post Graduate        | 40,000/-      |
|           | Graduate             | 30,000/-      |
|           | HS pass              | 20,000/-      |
|           | HSLC pass            | 10,000/-      |
|           | Below HSLC           | 5,000/-       |

Q2. What do you mean by Visual Basic Package and Deployment Wizard? Explain.

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