

**KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY**  
**Hiranya Chandra 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, 2017

**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. Discuss the mechanism of set-associative mapping.

**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. Define tree. How is binary tree different from binary search tree?
- Q3. Give two advantages of array over linked list.

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

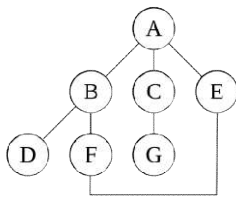
- Q1. Write a function to insert an element into a queue.
- Q2. What are the advantages of using stacks? Mention two applications of stacks.
- Q3. Consider the following array:

[10, 15, 32, 40, 48, 52, 67, 80]

Write the steps to search element 67 using Binary search. Determine the number of comparisons required.

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

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



- Q2. Sort the following array using merge 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 a linked list.
- 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

**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. What is encapsulation?

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 an inline function?

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

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

**C. Answer the following two questions:**

**6 X 2 = 12**

Q1. Write a C++ program to show multilevel inheritance.

Q2. Discuss with an appropriate example how polymorphism can be achieved in C++.

**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 radio button instead of check box.
- 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 string 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 Modeless 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 two strings and perform the following operations:
  - a. Display the 1<sup>st</sup> string in lower case
  - b. Display the 2<sup>nd</sup> string in upper case
  - c. Concatenate the two strings
- Q2. Write down the VB code to take three numbers as input and display the greatest and smallest of the three numbers as output.

**D. Answer the following questions:**

**10 X 2 = 20**

- Q1. An "Employee" table has the following structure:  
Employee(Empno, Name, Date of Birth, Year of joining, Qualification, Salary)  
The **Salary** column is empty. Write the VB code to calculate and store Salary for all employees using ADO DB. The **Salary** is to be calculated using the information below:

<b>If</b>	<b>qualification</b>	<b>then</b>	<b>Salary</b>
	Post Graduate		30,000/-
	Graduate		20,000/-
	HS pass		10,000/-
	HSLC pass		8,000/-
	Below HSLC		6,000/-

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

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**Assignment Guidelines**

**A. Guidelines to Co-ordinators:**

1. Assignments are parts of teaching-learning process and compulsory.
2. The spirit behind this is to help learners to understand the subject and prepare themselves better for the term-end examination.
3. Assignment responses are to be evaluated and feedbacks are required to be communicated to the learners, by giving back the assignments with evaluator's comments. Such assignments are to be collected at the time of issuing admit cards and be stored in the centre's office till the end of next semester.
4. Assignment marks are to be sent to the Controller of Examinations as soon as the examination routines are published.
5. Keeping the above points in mind *Co-ordinators will fix the time/date of submission of assignments by the learners as may be convenient to follow the guidelines in true spirits.*

**B. Guidelines to learners :**

1. As soon as the SLMs are received the learners will write the assignments in their own handwriting (assignment questions may be downloaded from the website, if necessary) to be submitted to Co-ordinators as per the dates fixed for the purpose. Timely submission of assignments at the Study Centres will help in quick processing of results of respective learners. Otherwise this will create unnecessary delay in declaration of results.
2. Writing of assignment ( work ) and submission of the same in time is compulsory.

**Registrar**

N.B. The learners will have to collect receipt after submitting the assignment with the signature and seal of the collector of study centre and will have to keep with him/her till the declaration of result.

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**Receipt**

Received the assignment from Mr/Ms .....Enrollment number .....of **2nd semester MCA/M.Sc.IT** on .....2017.

Date:

Signature of collector with seal

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