

**KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY**

**HIRANYA CHANDRA BHUYAN SCHOOL OF SCIENCE AND TECHNOLOGY**

**HOME ASSIGNMENT**

**BACHELOR OF COMPUTER APPLICATION**

**2<sup>nd</sup> Semester Assignment**

**2020**

**Bachelor of Computer Application**  
**Discrete Mathematics**  
**2nd Semester, 2020**

**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 questions:**

**2 X 4 = 8**

Q1. Find the power set of the set  $A = \{1, 2, 3\}$

Q2. Let  $A = \{1, 2, 3\}$  and  $B = \{8,9\}$ . Find whether the following subset of  $A \times B$  are functions of  $A$  to  $B$ .

(i)  $f = \{(1,8), (1,9), (2,8), (3,9)\}$

(ii)  $g = \{(1,9), (2,9), (3,9)\}$

Q3. Construct a truth table for the proposition:

$$(p \rightarrow q) \vee (\sim p \rightarrow q)$$

Q4. Find the number of permutations taking together all the letters of the word "UNIVERSITY".

**B. Answer the following questions:**

**3 X 4 = 12**

Q1. Reduce to echelon form:

$$\begin{pmatrix} 1 & 2 & -3 & 0 \\ 2 & 4 & -2 & 2 \\ 3 & 6 & -4 & 3 \end{pmatrix}$$

Q2. Let  $G = \mathbb{R} - \{-1\}$ . Define an operation  $*$  on  $G$  by

$$a * b = a + b + ab \quad \forall a, b \in G.$$

Show that  $(G, *)$  is an abelian group.

Q3. Show that

$$R = \{a + b\sqrt{2} : a, b \in \mathbb{Q}\}$$

is a field under usual addition and multiplication.

Q4. Find whether

$$q \vee (p \wedge \sim q) \vee (\sim p \wedge \sim q)$$

is a tautology or not ?

**C. Answer the following questions:**

**5 X 2 = 10**

Q1. Given

$$A = \begin{pmatrix} 3 & -1 & 4 \\ 0 & 2 & 1 \\ 1 & -1 & -2 \end{pmatrix}$$

Show that

$$A^3 - 3A^2 - 7A + 18I = 0$$

Hence find  $A^{-1}$

Q2. How many permutations and combinations can be made with the letters of the word "PARABOLA" taken three at a time?

**D. Answer the following questions:**

**10 X 2 = 20**

Q1. Show that the following equations are inconsistent. Apply Gaussian elimination on the augmented matrix to show inconsistency.

$$\begin{array}{l} x + 2y - 3z = 0 \\ 2x + 4y - 2z = 2 \\ 3x + 6y - 4z = 3 \end{array} \quad \begin{array}{l} x + 2y - 3z = 1 \\ 2x + 6y - 11z = -1 \\ x - 2y + 7z = 8 \end{array}$$

Q2. Let  $F$  be the set of all functions  $f: \mathbb{R} \rightarrow \mathbb{R}$ .

For  $f, g \in F$ , let us define  $f+g$  and  $fg$  as follows:

$$(f + g)(x) = f(x) + g(x) \forall x \in \mathbb{R}$$

$$(fg)(x) = f(x)g(x) \forall x \in \mathbb{R}$$

Show that  $F$  is a commutative ring with unity under the above-defined operations.

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**Bachelor of Computer Application**  
**Computer Based Accounting and Financial Management**  
**2nd Semester, 2020**

**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 questions:**

**2 X 4 = 8**

- Q1. Define standard costing.
- Q2. Define ledger.
- Q3. What is current ratio?
- Q4. Define journal.

**B. Answer the following questions:**

**3 X 4 = 12**

- Q1. Define marginal costing.
- Q2. Define budget.
- Q3. Define bank Reconciliation Statement.
- Q4. Define gross profit.

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

**5 X 2 = 10**

- Q1. Write a short note on Balance Sheet.
- Q2. Prepare cash book from the following information-

On 1<sup>st</sup> January, 2020: Cash in hand Rs. 12, 000

On 2<sup>nd</sup> January, 2020: Goods purchased for Rs. 3, 000

On 4<sup>th</sup> January, 2020: Cash paid for Rs. 3, 000 to AB Enterprise

On 7<sup>th</sup> January, 2020: Goods sold for Rs. 5, 000

On 10<sup>th</sup> January, 2020: Cash deposited into bank Rs. 500

On 12<sup>th</sup> January, 2020: Goods returned by customers Rs. 1, 200

On 15<sup>th</sup> January, 2020: Office furniture purchased for Rs. 20, 000 from Assam Furniture on credit.

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

**10 X 2 = 20**

Q1. Discuss the importance of working capital.

Q2. From the following information, prepare Trading and profit and Loss Account of Amul Enterprise for the year ended March, 2020-

Opening stock Rs. 30, 000; Wages Rs. 5, 000; Salaries Rs. 10, 000; Discount allowed Rs. 500; Purchases Rs. 1, 00, 000; Sales Rs. 5, 10, 000; Freight Rs. 1, 000; Carriage Rs. 500; Fuel Rs. 500; Closing stock Rs. 10, 000; Sales Returns Rs. 10, 000; Investment Rs. 1, 00, 000; Creditors Rs.10, 000. Bad debt Rs. 500; Interest received Rs. 1000; Repairs Rs. 1, 500.

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**Bachelor of Computer Application**  
**DATA STRUCTURE THROUGH C LANGUAGE**  
**2<sup>nd</sup> Semester 2020**

**Total Marks: 50**

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

**A. Answer the following three questions:** **2 X 4 = 8**

- Q1. Define time complexity and space complexity.
- Q2. What are linear and non linear data structures? Give examples for both.
- Q3. Give two applications of stack.
- Q4. Give the time complexity of quick sort. How is it different from randomized quicksort?

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

- Q1. Describe in brief the different types of linked list.
- Q2. What are binary trees? Give example of a complete binary tree.
- Q3. Write a C program to insert elements in a doubly linked list and display the list.
- Q4. Differentiate between binary searching and linear searching.

**C. Answer the following two questions:** **5 X 2 = 10**

- Q1. Give the steps and the final binary search tree for the following list of elements:  
[40, 71, 59, 63, 3, 90, 22]
- Q2. Explain how merge sort works on this array:  
[5, 16, 78, 23, 78, 90, 34]

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

- Q1. Explain the breadth first traversal in graphs using an example.
- Q2. Write a C program for the following: **(5+5)**
  - a) Implement a stack using arrays
  - b) Implement a queue using linked list

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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 **2<sup>nd</sup> Semester BCA** on .....2020.

Date:

Signature of collector with seal

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