

No. of Printed Pages : 03

Roll No.

C-211

B.C.A. EXAMINATION, Dec. 2019

(Third Semester)

(B. Scheme) (Main & Re-appear)

(BCA)

BCA201B

PROGRAMMING LANGUAGES

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Differentiate between the following :
 - (a) Variables and constants 8
 - (b) Compiler and interpreter. 7
2. (a) How to choose the programming language for use ? Discuss the challenges encountered while selecting the programming languages. 8
- (b) Describe the specification and implementation of Boolean data types. 7

Unit II

3. Discuss the specifications and implementation of :
 - (a) Pointers 8
 - (b) Sets. 7
4. (a) Distinguish between the implementation of a vector and a multi-dimensional array. 10
- (b) What are Abstract data types ? 5

Unit III

5. (a) Explain implementation of a recursive subprogram. 8
- (b) Explain how is co-routine different from subroutine. 7
6. (a) Discuss the various methods of transmitting parameters in a subprogram. 8
- (b) Discuss implementation of import or export of shared variables. 7

Unit IV

7. (a) Draw comparison between C and C++ programming language. 8
- (b) Name and describe the run time elements requiring storage. 7
8. Explain implementation of heap storage management. 15

8. (a) Differentiate between static and dynamic RAM. Draw the diagram of one cell of static RAM and Dynamic RAM each. 8
- (b) List the advantages of direct mapping scheme for cache mapping. Briefly explain the direct address mapping. 7

No. of Printed Pages : 04

Roll No.

C-212

B.C.A. EXAMINATION, Dec. 2019

(Third Semester)

(B. Scheme) (Main & Re-appear)

(BCA)

BCA203B

COMPUTER SYSTEM ARCHITECTURE

Time : 3 Hours]

[Maximum Marks : 75

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Unit I

1. Briefly explain the different types of common buses used in a computer system. **15**
2. Write and explain the stored program concept used in modern computers. **15**

Unit II

3. What is the difference between direct and indirect address instruction ? How many references to memory are needed for each type of an instruction to bring an operand into processor register ? Explain with suitable example. **15**
4. (a) What is instruction format ? What are its main fields into which the bits of an instruction register are divided ? **5**
(b) Explain the general register based CPU architecture with neat diagram. **10**

Unit III

5. Discuss the following : **15**
 - (i) Asynchronous data transfer with strobe control
 - (ii) Priority interrupts.
6. (a) List the advantages offered by hardwired control unit over microprogrammed control unit. **6**
(b) Justify the need of a microprogram sequencer. Draw and explain its structure. **9**

Unit IV

7. Write through scheme of cache updation ensures the data coherency. What is the price paid for this ? Is it worth ? Justify your answer. What do you mean by virtual memory ? How it is useful for the users of a computer system ? **15**

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Roll No.

C-213

B.C.A. EXAMINATION, Dec. 2019

(Third Semester)

(B. Scheme) (Main & Re-appear)

(BCA)

BCA205B

FUNDAMENTALS OF DATABASE
MANAGEMENT SYSTEM

Time : 3 Hours]

[Maximum Marks : 75

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Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

(2-04/7) M-C-213

P.T.O.

Unit I

1. Write the advantages and disadvantages of DBMS. 15
2. (a) Describe Data abstraction, its types and importance. 7
(b) Describe Data independence, its types and importance. 8

Unit II

3. Write a short note on object oriented data models. 15
4. What are the possible ways to categorize database management systems ? Mention the different types of DBMS. 15

Unit III

5. (a) State the various types of relationships in E-R model. Also give example of each. 5
(b) Explain types of participation constraints in E-R model with example of each. 5

- (c) Describe different types of attributes applicable to E-R model. 5

6. Discuss brief history of relational model and describe how a relational model is represented ? 15

Unit IV

7. What are the various possible failures for DBMS ? Discuss any *one* recovery protocol. 15
8. Discuss the architecture of distributed DBMS. 15

Unit IV

7. (a) Show stepwise procedure to construct a binary search tree from the following numbers : 60, 30, 20, 70, 55, 90, 35, 45, 80, 95. Show the state of tree after deleting 55 and 35. **8**
- (b) Write an algorithm to perform inorder traversal of Binary tree. **7**
8. (a) How a graph is represented using linked representation ? **7.5**
- (b) What is adjacency matrix ? **7.5**

C-214

B.C.A. EXAMINATION, Dec. 2019

(Third Semester)

(B. Scheme) (Main & Re-appear)

(BCA)

BCA207B

DATA STRUCTURES

Time : 3 Hours

[Maximum Marks : 75

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Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Explain the following : 15
- (a) Data Structures
 - (b) Algorithm complexity
 - (c) Time space tradeoff.
2. (a) What are the different categories of data structures ? What different operations can be performed on data structures ? What are the applications of different data structures ? 10
- (b) Differentiate between data types and data structures. 5

Unit II

3. (a) Consider linear arrays A(5 : 50), B(-5 : 10) and C(18). Find the number of elements in each array. Suppose $\text{Base}(A) = 300$ and $w = 4$ words per memory cell for A. Find the address of A[15], A[35] and A[55]. 6

- (b) Write an algorithm to search an element in sorted linked list. 9
4. (a) Write an algorithm to insert an element between adjacent NodeA and NodeB in doubly linked list. 7
- (b) What is garbage collection ? 4
- (c) What is threaded list ? 4

Unit III

5. (a) Write an algorithm to convert infix expression into postfix expression using stack. 7
- (b) Consider an infix expression : 8
- $P : (A * B ^ D) / (E + F) / G$
- Convert the expression P into postfix expression using stacks.
6. (a) Write an algorithm to insert an element into Queue when queue is implemented using array. 7
- (b) What is a Priority Queue ? What are its applications ? 4
- (c) Define a Dequeue. 4