301/331 B.C.A. (Part-III) Data Stru. (Using C/C++)

100127

B.C.A. (Part-III) EXAMINATION - 2022

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

DATA STRUCTURE (Using C/C++)

Time Allowed : 3 Hours

Maximum Marks : 100

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Write your roll number on question paper before start writing answers of questions.

Question paper consists of **three** parts.

All **three** parts are **compulsory.**

Part - I :   (Very Short Answer) consists **10** questions of **2** marks each. Maximum limit for each question is upto 40 words.

Part - II :   (Short Answer) consists **5** questions of **4** marks each. Maximum limit for each question is upto **80** words.

Part - III :   (Long Answer) consists **5** questions of **12** marks each with internal choice.

PART - I

10x2=20

1. Very Short Answer :

   (a)   What is an Algorithm ?

   (b)   Explain an Array in Data structure.

   (c)   Define polish notation.

   (d)   Write advantages of Double Linked List over Single Linked List.

   (e)   Write difference between Tree and Graph.

   (f)   Explain Binary Tree with diagram.

   (g)   What is adjacency matrix in Graph ?

   (h)   Differentiate between directed and undirected graphs .

   (i)   What is hashing ?

   (j)   Write time complexity of merge sort in all cases.

PART -II

2. Short Answer :

    (a) Explain Efficiency of an algorithm with example.

    (b) What is Linked List ? Explain doubly linked list with diagram.

    (c) Write Huffman's algorithm.

    (d) Explain shortest path in Graph with example.

    (e) Write an algorithm of Linear search for one dimension array.

PART -III

3. What is Stack ? Write the procedure of PUSH and POP operation in Stack.   4+8

    OR

    What is Queue ? Explain types of queue and its operation.   4+8

4. Explain Circular linked list. Write an algorithm for inserting and deleting a node in circular linked   4+8
    list.

    OR

    Explain Infix, Prefix and Postfix expression. Convert the following infix expression into postfix expression   6+6
    using stack.

    $((A+B) - C^*(D/E))+F$.

5. What is Binary Search Tree (BST) ? Write an algorithm for searching into Binary Search Tree.   4+8

    OR

    Explain Tree Traversal in detail with example.   12

6. Explain graph traversal-BFS and DFS with example.   12

    OR

    Write Warshall's algorithm with diagram.   12

7. What is binary search ? Write advantages of binary search over linear search. Write complexity of
    binary search.   4+4+4

    OR

    What is heap ? Write an algorithm for Heap sort.   12

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This question paper contains 2 printed pages.

Roll No. 0327669

302/332

Sys. Desi. Con.

B.C.A. (Part-III) EXAMINATION - 2022

100154

(Faculty of Science)

(Three-Year Scheme of 10+2+3 Pattern)

5×4=20

SYSTEM DESIGN CONCEPTS

Maximum Marks : 100

Time Allowed : 3 Hours

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PART-III : (Long answer) consists 5 questions of 12 marks each with internal choice.

PART - I

1. (a) What is Open System ?

   (b) Define Linear Cycle.

   (c) What do you mean by System Design ?

   (d) What is Entity ?

   (e) Define Test Case.

   (f) What do you mean by System Testing ?

   (g) What is Software Design ?

   (h) Write any two objectives of software project planning.

   (i) What do you mean by Balanced MIS ?

   (j) What is Information ?

2. (a) Explain Prototyping.
   (b) What is Decision Table ?
   (c) What do you mean by System Maintenance ?
   (d) Explain Design Documentation.
   (e) What is the purpose of an MIS ?

3. Explain :
   (a) Data Oriented Approach
   (b) Object Oriented Approach

   OR

   Explain System Development Life Cycle (SDLC) and its phases in detail.

4. Explain :
   (a) Process Modeling
   (b) Data Modeling

   OR

   Describe Entity Relationship Diagram in detail.

5. Explain :
   (a) Unit Testing
   (b) Integration Testing

   OR

   Explain :
   (a) Alpha and Beta Testing
   (b) Recovery Testing

6. Discuss software design principles in detail.

   OR

   Explain COCOMO model in detail.

7. Explain Simon's model of decision making in detail.

   OR

   What is Information System ? Discuss various types of Information system in detail.

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B.C.A. (Part-III) EXAMINATION - 2022
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100181

NETWORKING TECHNOLOGIES

Maximum Marks : 100

Time Allowed : 3 Hours

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PART - III : (Long Answer) consists 5 questions of 12 marks each with internal choice.

PART - I

10x2=20

1. Attempt **all** questions. Each question carries 2 marks.

(a). What are components of Network ?

(b) What is Transmission Mode ?

(c) Differences between Half-duplex and Full-duplex modes.

(d) What is Bandwidth ?

(e) Difference between Bridge and Router.

(f) Define scope of UDP protocol.

(g) What is Switching Network ?

(h) What is Packet Switching ?

(i) What are types of Fiber cable losses ?

(j) List any five applications of Satellite Communication.

P.T.O.

2. (a) Explain types of Networks.
   (b) Explain Checksum error detection technique.
   (c) Differentiate between Asynchronous and Synchronous transmission.
   (d) Explain role and working of DNS.
   (e) Explain Satellite Microwave Communication briefly.

PART - III

3. Discuss Network Architecture in detail.   12

OR

What is meant by Network Topology ? Explain various types of Network Topologies with merits and demerits.   12

4. Discuss OSI model with functions of each layer.   12

OR

Explain Link Routing algorithm in detail.   12

5. Discuss TCP/IP suite with the help of layered diagram.   12

OR

Write short note on the following protocols :   3x4=12
   (a) UDP
   (b) TCP
   (c) ARP

6. Explain Space Division Switching technique.   12

OR

Discuss Packet switching transmission technique.   12

7. Write short note on **any three** of the following :   3x4=12
   (a) Optical Fiber Communication
   (b) Integrated Services Digital Network (ISDN)
   (c) Terrestrial Microwave Transmission
   (d) DSL : Digital Subscriber Line
   (e) Geostationary Satellites
   (f) Encoded Data Formats

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CORE JAVA PROGRAMMING

Time Allowed : Three Hours

Maximum Marks : 100

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Part - III : (Long Answer) consists **5** questions of **12** marks each with internal choice.

PART - I

1. Attempt **all** questions. Each question carry **2** marks.

    (i)   What is JDK ?

    (ii)   What is "String Buffer" ?

    (iii)   What is AWT in Java ?

    (iv)   Define Applet.

    (v)   What is URL class in Java ?

    (vi)   Why Java programs are platform independent ?

    (vii)   What is the use of "extends" keyword ?

    (viii) What is inner class in Java ?

    (ix)   Define "implicit wait" in Threads.

    (x)   Define 'stack' in Java.

PART - II

2. Attempt **all** questions. Each question carry **4** marks.

    (i)   Explain the 'Conditional Operator' in Java with suitable example.

    (ii)   How Objects are created in Java ? Explain using methods through the objects.

    (iii)   Describe "Delegation Event Model" by providing suitable example.

    (iv)   Discuss "Applet life cycle".

    (v)   Differentiate between TCP/IP sockets and server sockets.

PART - III

3. Describe basic features of Java by providing appropriate examples.

OR

Discuss 'Loops' in Java with example. .

4. How 'Array' is declared and used in Java ? Explain by giving an example.

OR

Describe the Exception Handling Mechanism by providing appropriate example.

5. Discuss the 'Layout Managers' and their role in the GUI based programs in Java.

OR

What are the uses of Listners and Adapters in Event Handling process ? Explain with example.

6. In what two ways the threads can be created in Java Programming ? Which way is effective and why ? Explain.

OR

Discuss 'Thread Synchronization' by explaining its need and implementation in a multithreading based program in Java.

7. Describe 'Socket Based Connectivity' by providing suitable example.

OR

Write notes on :
   (i)   Collections
   (ii) JDBC

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E-COMMERCE

Maximum Marks : 100

Time Allowed : 3 Hours

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Question paper consists of **three** Parts. **All three** parts are compulsory.

PART - I : (Very Short Answer) consists **10** questions of **2** marks each. Maximum limit for each question is upto 40 words.

PART - II : (Short Answer) consists **5** questions of **4** marks each. Maximum limit for each question is upto 80 words.

PART - III : (Long Answer) consists **5** questions of **12** marks each with internal choice.

PART - I
(Attempt all questions)

1.   (i)   Name any four application areas of E-commerce.
      (ii)   What is value chain ?
      (iii)   What do you mean by client & server ?
      (iv)   What is technical design ?
      (v)   What is Testing ?
      (vi)   What is validation ?
      (vii)   What is electronic purse ?
      (viii)   What is cyber law ?
      (ix)   What is M - wallet ?
      (x)   What is credit risk ?

PART - II
(Short Answers)

2.   Define E - commerce. What are the benefits of using E-commerce ?

3.   Write short note on High - level Design.

4.   Explain the transactional and Operational risk of E-banking.

5.   Explain the implementation planning.

6.   What is an Electronic payment system ? What are its types ?

PART - III

(Long Answers)

7. Define EDI. Explain the layered architecture of EDI.

OR

Discuss B2B, B2C, C2B, and C2C Model of commerce with suitable examples.

8. What is detail design ? Discuss its designing elements and designing step.

OR

Describe a client - server Model of E-Commerce with its characteristics.

9. Differentiate between validations and verification. Explain the types and process of validation.

OR

Explain the various types of testing use in E-commerce.

10. Define E - Customer Relationship Management and also explain its architecture in detail.

OR

Write short notes on :
   (a) Business Ethics.
   (b) Security risk of E-commerce.

11. What is E-banking ? Explain E-Banking support services.

OR

Write short notes on.
   (a) Mobile Delivery Technology.
   (b) Application of M-Commerce.

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100184

ADVANCE TECHNOLOGY OF PROGRAMMING THROUGH PHP

Time Allowed : Three Hours

Maximum Marks : 100

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PART - I

1. Attempt **all** questions. 10×2=20

   (a) What does scripting language mean in programming ?

   (b) What are the rules for naming a PHP variable ?

   (c) What is the purpose of break and continue statement ?

   (d) Write in brief about foreach( ) statement with syntax.

   (e) What is the difference between single quoted string and double quoted string ?

   (f) Write the use of str_split( ) function with syntax.

   (g) What do you mean by dynamic website ?

   (h) What do you mean by exception handling ?

   (i) Which function you use to read a file ? Write its syntax also.

   (j) How can you connect the webpage with database ?

PART - II

2. Differentiate between client-side and server-side scripting. 4

3. What is the meaning of the associative array ? Explain with a suitable example. 4

4. What are the uses of explode( ) and implode( ) functions ? Explain with an example. 4

5. Write the difference between Get( ) and Post( ) function. 4

6. Using an appropriate example, demonstrate how to use fread( ), fgets( ), and fgetc( ) in a file. 4

PART - III

7. Describe the various types of operators available in PHP.   12

OR

     (6+6)=12

Write short note on :

   (a)   Features of PHP

   (b)   Data types in PHP

8. What is an array ? Describe the types of array available in PHP.   (2+10)=12

OR

Write a program in PHP to find the given number is Prime or not.   12

9. Differentiate between Call by Value and Call by Reference function in PHP.   (6+6)=12

OR

Explain any six string handling library function with example.   (6x2)=12

10. What is session ? Why do we use it ? Where does PHP store session data ? Through an example describe how to maintain session on website.   (1+2+2+7)=12

OR

What is exception ? Why do we handle exception ? Explain about it through an example.   (2+2+8)=12

11. How can you perform open, read, write, close operations on file in PHP ? Explain with suitable example.   (4+8)=12

OR

Write a program in PHP to store and access the data using database.   12

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