

This question paper contains 3 printed pages.

Roll No. 254145

B.C.A. (Part-III)

Data Stru. (Using C/C++)

301

401002

B.C.A. (Part-III) Examination, 2021

(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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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**

1. Very Short Answer :

(a) What is big.O notation in data structure?

- (b) What is the difference between stack and queue?
- (c) Write algorithm to find middle of linked list.
- (d) Write a difference between circular linked list and doubly linked list.
- (e) What is the time complexity of insertion, deletion and searching an element in binary tree and binary search tree?
- (f) Define huffman algorithm.
- (g) Write a difference between Adaptive and Non-adaptive algorithm of sorting.
- (h) What is binary search?
- (i) Write basic operations of array in data structure.
- (j) Define classification of data structure.

### PART-II

2. Convert the following infix expression into prefix expression :
  - (i)  $2 + 3 * 4 - 5$
  - (ii)  $2 + 3/5 \wedge 6 - (4 * 5)$
  - (iii)  $A \text{ AND } B + C \wedge D \text{ OR } E \text{ AND } F$
  - (iv)  $-2 + 3 * 4 \wedge (5/3) + \text{NOT } 7$
3. Define Deque and its variations.
4. Write some of the properties of binary tree.
5. Write short notes on :
  - (i) Bubble sort
  - (ii) Merge sort
  - (iii) Quick sort
  - (iv) Selection sort.
6. Explain depth first search of traversing a graph.

### PART-III

7. Explain the concept of dynamic memory allocation.

**OR**

How is linked list different from arrays as data structure?

8. ✓ What is stack? Explain the pop and push operation of it.

**OR**

Write an algorithm to add a item to a circular queue.

9. Explain the process of deleting a node from binary tree using example.

**OR**

✓ What is adjacency matrix? How is it made?

10. Write an algorithm for :

✓ (i) Binary search

✓ (ii) Sequential search.

**OR**

What is the difference between :

(i) Directed and Undirected graph?

✓ (ii) BFS and DFS?

11. What are the various operations possible on a doubly linked list? Explain with the algorithm.

**OR**

✓ Write an algorithm to create Binary search tree.

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Roll No. .... 254145 .....

B.C.A. (Part-III)

Sys. Desi. Con.

302

400303

B.C.A. (Part-III) Examination, 2021

(Faculty of Science)

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

## SYSTEM DESIGN CONCEPTS

Time Allowed : 3 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. (a) Define System.
- (b) What is SDLC?
- (c) What is structure chart?
- (d) What is use of E-R diagram?
- (e) What is the objective of software testing?
- (f) Define System Implementation.

- (g) Explain object oriented concepts.
- (h) What is software project planning?
- (i) What is the use of MIS?
- (j) Discuss structured v/s unstructured decision.

### PART-II

- 2. (a) Explain various fact gathering techniques.
- (b) What is data dictionary?
- (c) Explain Documentation.
- (d) What is the use of COCOMO Model?
- (e) Discuss formal and informal system.

### PART-III

3. Explain :

- (a) Spiral Model.
- (b) Waterfall Model.

OR

Define feasibility study. Explain the various types of feasibility study in system design.

4. Explain :

- (a) Decision Tree.
- (b) Decision Chart.

OR

Describe DFD in system design.

5. What is testing? Discuss various types of testing in details.

OR

Explain :

- (a) White Box & Black Box Testing.
- (b) Verification & validation.

6. Discuss decomposition technique in detail.

**OR**

Describe various design methodologies are used in software design in detail.

7. Explain MIS in below criteria :

- ✓ (a) Characteristics.
- ✓ (b) Components.
- (c) Levels of Management.

**OR**

Describe pitfalls in MIS development in detail.

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Roll No. 254145

**B.C.A. (Part-III)**

**Net. Tech.**

**303**

**401124**

**B.C.A. (Part-III) Examination, 2021**

(Faculty of Science)

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

## **NETWORKING TECHNOLOGIES**

**Time Allowed : 3 Hours**

**Maximum Marks : 100**

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### **PART-I**

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

- (a) What is a Network?
- (b) What is Bandwidth?
- (c) Define DNS.

- ✓(d) What is Link?
- ✓(e) What is Gateway?
- (f) Define DHCP scope.
- ✓(g) What is MAC Address?
- ✓(h) What is TCP/IP?
- (i) What is SSL?
- ✓(j) What is Computer Network?

10×2=20

### PART-II

2. Attempt all questions. Each questions carries 4 marks :

5×4=20

- ✓(a) Explain types of Networks.
- ✓(b) Define the types of Transmission Modes.
- ✓(c) Differentiate between LAN & WAN.
- (d) What is Packet Switching? Explain.
- (e) Define Microwave Communication.

### PART-III

3. ✓ What are the different types of Computer Networks? Explain with suitable example. 12

OR

- ✓ Explain Network Topology with example. 12

4. ✓ What is Error Detection & Correction? Explain with example. 12

OR

- ✓ What is Open System Interconnection? Explain with example. 12

5. Write short notes on any four :

- (a) MAC Address.
- (b) DNS.
- (c) TCP/IP.
- (d) IPv4 and IPv6.
- (e) SMTP.
- (f) ISDN.

3×4=12



6. What is Data Encoding? Explain with example.

12

OR

Define TDM with example.

12

7. Write short notes on any **three** :

(a) Satellite Communication.

(b) SONET.

(c) Fiber Cable.

(d) Light sources.

(e) Microwave.

4×3=12

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B.C.A. (Part-III)

Cor. Jav. Pro.

304

B.C.A. (Part-III) Examination, 2021 400802

(Faculty of Science)

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

## CORE JAVA PROGRAMMING

Time Allowed : 3 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 carries 2 marks :

- (i) Mention any four differences between C++ and Java.
- (ii) How can you prevent inheritance in Java?
- (iii) What is meant by package scope of members?
- (iv) What are checked and unchecked exceptions?
- (v) What is an Applet?

- (vi) What are interfaces and how are they different from abstract classes?
- (vii) What is a socket?
- (viii) What is delegation event model in Java?
- (ix) What are different categories of JDBC drivers?
- (x) Discuss about the Collection' hierarchy briefly.

10×2=20

### PART-II

2. Attempt all questions. Each question carries 4 marks :

- (i) Discuss features of Java in detail.
- (ii) What are the differences between regular for loop and for-each loop?
- (iii) What are inner classes and how are they defined?
- (iv) What is multi-threading and how is it beneficial?
- (v) Differentiate between AWT and Swings.

5×4=20

### PART-III

3. Discuss in detail the features of Object-oriented programming.

12

OR

Discuss about various decision-making statements in Java with syntax and examples.

12

4. How are 2D arrays declared and used in Java? Write a program to input and sort an array of name of students.

12

OR

What is inheritance and how is it beneficial for building software components? How does Java support inheritance? Show using an example.

12

5. Differentiate between :

- (a) Character Stream v/s Byte Stream.
- (b) Listeners and Adapters.

6+6=12

OR

Discuss about different layout managers available in Java.

12

6. What is multi-threading and what are its advantages? How is multi-threading supported by Java programming language? 12

**OR**

Write a program to draw an Window or Applet with a text box and a button. Whenever the user will press the button the value of the counter text box will increase by 1. 12

7. What is socket programming in Java and what classes are used for it? 12

**OR**

What is the Collection framework? Discuss the Collection class hierarchy in Java. 12

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Roll No. 254145

**B.C.A. (Part-III)**

**E-Comm.**

**305 (New)**

**B.C.A. (Part-III) Examination, 2021** 400916

(Faculty of Science)

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

**E-COMMERCE**

**Time Allowed : 3 Hours**

**Maximum Marks : 100**

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**PART-I**

1. Attempt all questions :

- (i) What is an e-commerce?
- (ii) What is the role of EDI in E-business communication?
- (iii) How we can define a secure e-commerce website?

- ✓ (iv) Define the term testing in terms of a website checking.
- ✓ (v) Define the term e-cheque.
- (vi) Write two risks of e-commerce operations.
- (vii) What do you mean by wireless banking?
- (viii) What is reputation risk?
- ✓ (ix) What is the role of e-wallet in online payment system?
- (x) What is tokenization?

## PART-II

- ✓ 2. Explain the scope of e-commerce.
- ✓ 3. What are the different phases of testing a website? Explain.
- 4. What do you understand about token based and token less money? Explain.
- ✓ 5. Mention e-banking support services.
- ✓ 6. Explain the online shopping and payment process from an e-commerce website.

## PART-III

- ✓ 7. Explain the value chain system using suitable example.

OR

- ✓ Explain the business strategy formulation for e-business.

- 8. Explain various issues faced at the time of e-commerce website design and implementation.

OR

How can we verify and validate an e-commerce functional website on different parameters?  
Explain them.

9. What are the security risks involved in e-commerce business and its transactions?

**OR**

Write short note on E-payment system/ and e-customer relationship management system.

10. What are the privacy and security features available with mobile commerce? Explain.
11. Write short note on M-commerce, security assessment and PCI compliance.

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This question paper contains 3 printed pages.

Roll No. 254145

B.C.A. (Part-III)

Adv. Tec. of Pro. Thr. PHP

306-B

B.C.A. (Part-III) Examination, 2021 400062

(Faculty of Science)

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

## ADVANCE TECHNOLOGIES OF PROGRAMMING THROUGH PHP

Time Allowed : 3 Hours

Maximum Marks : 100

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### PART-I

1. Attempt all questions :

(a) What do you mean by Server Side Script in PHP?

(b) What is echo in PHP?



- (c) How to get length of String in PHP?
- (d) What is the use of Ajax?
- (e) What is Session in PHP?
- (f) What is array in PHP?
- (g) What is Cookies in PHP?
- (h) What is use of isset () function?
- (i) What do you mean by ODBC?
- (j) What is Sequence in PHP?

### PART-II

- 2. What are the common uses of PHP?
- 3. What are the characteristics of PHP variables?
- 4. What is the purpose of break and continue statement in PHP?
- 5. What are the Operators in PHP?
- 6. Explain debugging process of PHP.

### PART-III

- 7. What are the different types of array in PHP?

OR

Explain any five string functions in PHP.

- 8. Discuss different data types of PHP.

OR

Explain any three loops with example.

- 9. Explain File handling in detail.

OR

What is exception handling? Explain try and catch methods.

10. What is regular expression? Explain with example.

**OR**

What are the differences between PHP constants and variables?

11. What are the differences between include and require in PHP?

**OR**

What is Member functions of a class in PHP? Explain with example.

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