# BCA 3<sup>rd</sup> Semester (Full & Re-appear) Examination, December-2024 DATA STRUCTURE-I

Paper: BCA-202

Time allowed: 3 hours] [Maximum marks: 80

Note: Attempt five questions in all. Question No. 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each unit. All questions carry equal marks.

**1.** Explain the following:

 $8 \times 2 = 16$ 

- (a) Data Structure
- (b) String
- (c) Parallel arrays
- (d) Threaded lists
- (e) Deques
- (f) Uses of trees in data structure
- (g) Graph theory
- (h) Define Tree.

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l	Explain the following in detail:	2×8=16
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- (a) Categories of Data structures
- (b) Applications of data structures

Explain the concept of storing strings, string operations and Pattern matching algorithms in detail.

### Unit-II

Explain the following in detail:

What is Linked list? What are the advantages and disadvantages of representing a group of items as an array versus a linear linked list?

(a) Linear arrays and Representation of linear array in memory 8

(b) Header linked list and circular linked list with example.

### Unit-III

6. (a) What is Stack? Explain the different operations on stacks in detail.

(b) Explain the applications of stack in detail. 8

7. What is Queues? Explain the concept of priority queues in detail. Also explain the applications of queues in detail.

### Unit-IV

8. Explain the following in detail:  $2\times8=16$ 

(a) Traversing binary trees

(b) Traversal algorithms using stacks

9. What is Graph? Explain Sequential and Linked representation of graphs in detail.

## BCA 3<sup>rd</sup> Semester (Full & Re-appear)

## Examination, December-2024

## **Introduction to Operating System**

Paper: BCA-201

Time allowed: 3 hours]

[Maximum marks: 80

Note: Question No. 1 is compulsory. Attempt four questions by selecting one question from each unit. All questions carry equal marks.

- 1. (a) What is the concept of thrashing?
  - (b) What is process states diagram?
  - (c) What is Critical Section?
  - (d) What is Queue scheduling algorithm?
  - (e) What is Real-time Scheduling?
    - (f) What do you mean by free space management?
    - (g) What are Bernstein's Conditions?
    - (h) What should be page size? Justify your answer.

 $8 \times 2 = 16$ 

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2. (a) What are operating system services? Discuss their significance.

(b) What is an operating system? What are important characteristics of a good operating system? Also discuss the responsibilities of an operating system as a resource manager. 10

3. Differentiate between the following:

(a) Program, process and thread

(b) Multitasking and Batch processing 5

(c) Time-sharing and Multiprogramming 5

### Unit-II

4. Differentiate 'Deadlock-Avoidance', 'Deadlock-Prevention' and 'Deadlock-Detection'. What is Banker's algorithm and indicate for which of the above three the same is used? Illustrate the same through a suitable example.

5. What do you mean by a scheduler? What should be the performance criteria for a scheduler? Compare and contrast importance scheduling techniques.

Unit-III

6. What is fragmentation? What are different types of fragmentation? How each of these can be overcome? Explain.

(b) What is paging? How address mapping is performed in paging technique? Also enumerate the advantages and disadvantages of paging.

c. (a) What is memory management? Discuss objectives of memory management.

(b) What is a Swapping System? Consider a swapping system in which memory of the following hole sizes in memory order: 10K, 4K, 20K, 18K, 7K, 9K, 12K and 15K. Which hole is taken for successive requests of: 10

(i) 12K

(ii) 10K

(iii) 9K

for first-fit? Repeat the same for Best-Fit, Worst-Fit and Next-Fit.

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### Unit-IV

8. What is meant by disk scheduling? Explain	n why
disk. scheduling is necessary? Enumerat	e the
principal differences among various	disk-
scheduling techniques.	16

9. What is a file-system? Give the general model of a file-system? What are the main responsibilities of a file-system? Where is file-system located in layered organization of operating system? 16

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## BCA 3<sup>rd</sup> Semester (Full & Re-appear)

## Examination, December-2024

Communication Skills (English)

1. (a) Write a short note on the scope communication.  (b) What is communication process?  (c) What do you mean by non-vert communication?  (d) What is dyadic communication?  (e) Make the words, using the following prefix  (i) dis	Note	: Atte	mpt five questions in all, selecting one question
(a) Write a short note on the scope communication.  (b) What is communication process?  (c) What do you mean by non-vert communication?  (d) What is dyadic communication?  (e) Make the words, using the following prefix  (i) dis		fron	each unit. Question No. 1 is compulsory
<ul> <li>(b) What is communication process?</li> <li>(c) What do you mean by non-vert communication?</li> <li>(d) What is dyadic communication?</li> <li>(e) Make the words, using the following prefix (i) dis</li></ul>	1.	(a)	Write a short note on the scope of
(c) What do you mean by non-vert communication?  (d) What is dyadic communication?  (e) Make the words, using the following prefix  (i) dis	1.3	(b)	경우를 보고 있습니다. 그는 사람들은 사람들은 사람들이 되었다면 보고 있다면 보고 있다면 되었다면 되었다면 보고 있다면 되었다면 보고 있다면 보다면 보고 있다면 보고
(d) What is dyadic communication?  (e) Make the words, using the following prefix  (i) dis	327	(c)	What do you mean by non-verbal
(e) Make the words, using the following prefix  (i) dis		(d)	What is dyadic communication?
(i) dis	. A	(e)	Make the words, using the following prefixes:
(f) Make the words, using the following suffix (i) ent (ii) tion			
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(i) ent	170	(f)	Make the words, using the following suffixes.
tion			소. (-1-) 보이 무섭하다 (2000년 2일 시간에서 그 모델 토르웨어티아 그 전에 되고 이렇게 되고 이렇게 있습니다. (-1) 없네요.
(g) What are the harriers to public	in the	ni, in	7::\
builters to public sneaking?		(g)	What are the barriers to public speaking?
(h) What are the objectives of interview? $8\times2=$		(h)	What are the objectives of interview? $8 \times 2 = 16$

2.	(a)	Discuss the features of Communication	n.
	(b)	What are the principles of communica	tion?
3.	(a)	Explain the process of communication	
٠ ۲ <u>۷</u>	(b)	What do you mean by communication I	parriers'
		Explain their important causes.	8
Oil	1. 1. 3. 3. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	Unit-II	4411/
4.	(a)	State the disadvantages of communication.	verbal
	(b)	Define non-verbal communication	and
Ak	. The same	explain its importance.	8
5.	(a)	Explain the role of effective listen	ing in
1		communication.	8
	(b)	Define soft skills. How these ca	n be
		developed?	8
	, -	Unit-III	
19	(a) (	Give one word substitute of any five of	of the
	f	ollowing:	5
an S	(i	One who does not care for art, liter	ature
	refer je jo	etc.	
19	(i	i) Men living in the same age.	
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rji i	(iii) A game or battle in which neither party wins.
	(iv) One who thinks only of oneself.
w Çu	(v) One who is not easily pleased.
	(vi) That which cannot be read.
	(vii) A story that can hardly be believed.
	(viii) A sound that cannot be heard.
(b)	[[마리] [[Hg., 1945] 22] - 이 마리 [Hg.] (Hg. 14) [[Hg.] (Hg.) (Hg.] (Hg.) (Hg.) (Hg.) (Hg.) (Hg.) (Hg.) (Hg.) (Hg.
solre.	prefixes: 6
	(i) Un
	(ii) Dis
116	(iii) Im
	(iv) Ir
Ėų,	(v) Ch
	(vi) Re_
(c)	Fill in the blanks with appropriate
	prepositions:
	(i) He is seniorme.
	(ii) He died of cancer.
	(iii) He reached the station 6 O'clock.
	Fill in the blanks with articles:
	(iv) He wasintelligent student.
, ,	(v) It is European Ship.
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7. (a)	Explain the various ways which help us to
	improve vocabulary.
(b)	In what way we develop our fluency with the
	help of language games?
Lievoil	(vii) A stoVI-tinUan hardly be he
<b>8.</b> (a)	Explain the points we should keep in mind in
gaiwolld.	organizing a public speech. (d) 8
(b)	What are the ways which are essential for an
	effective speech?
9. (a)	What are the characteristics of an effective
	presentation?
(b)	What are the major points for the preparation
	for professional interviews?
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## B.C.A. 3rd Semester (Full & Reappear)

### Examination, December - 2024

### INTRODUCTION TO DATABASE SYSTEMS

## Paper -BCA-203

Time allo	wed: 3 hours]	[Maximum r	narks : 80
Note: (	Question No. 1 is	compulsory. Atte	
$q_1$	uestions in total, the	e first being compu	lsory and
Se	elect one question f	rom each unit.	
1. (a)	What is Data indep	endence?	2
(b)		straction? Explain	by taking
	suitable example.		2
(c)	Differentiate between	een Data and Inform	ation. 2
(d)	Who are databas	se designers? How	are they
MACLETT	different from App	olication developers?	2
(e)	What is conceptua	l modeling?	2
(f)	What are ER diagram	ams?	2
(g)	Define functional	dependency.	2
(h)	Write the "INSER	T" command of SOI	hv takina
	an examples.	The Contract of the Contract o	L by taking
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B.C.A. 3" Sentetinut all & Respons)

Examination December - 2024 What is Database system? How is Database system different from a traditional file-based system? Explain its components, advantages, and disadvantages in detail.

(a) What is a Database Management System? What are the main functions of a DBMS? Explain.

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- (b) Write short note on the following:  $2 \times 4 = 8$ 
  - (i) DBMS Languages
  - (ii) Database Administrator

### Unit = II

Explain the Three-level architecture of a DBMS.

What is data independence? Differentiate between logical Data independence and physical data independence.

5. Differentiate between the following:  $2 \times 8 = 16$ 

- Centralized and Client-server architecture of 19810 equi DBMS. The midged of the months are
  - (b) Record-based and Object-based data models.

### Unit - III

Write short note on the following:

- Entity Relationship Model
- (ii) Role of Abstraction and Integration of Data in **DBMS**
- What are data models? Explain Hierarchical, Network and Relational Data models in detail.

### Unit - IV

- What is relational Algebra? Explain in detail.
  - What are Normal forms? Explain the different Normal Forms in detail with the help of examples.

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9. (a) What is Query Processing? How do we optimize a	a
query? Explain its algorithms.	3
(b) What is SQL? Explain the various types of SQI	ِ ئے۔
commands.	3
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