Total No. of Pages: 3

## MAR-APR-2024 SUMMER EXAMINATION

### **B.Tech. CBCS**

**Sub. Name: Data Structures and Algorithms** Sub. Code: 91972

Day and Day Time: 10:3	-		•		-		Total Ma	rks: 70
Instruction	2. A	<ol> <li>All questions are compulsory</li> <li>Assume suitable data wherever necessary and mention it boldly</li> <li>Draw neat labbelet diagrams wherever necessary</li> </ol>						
Special In	st.: Q.1 Sol	is compul ve any 4 qu	sory. iestions from re	emaining qu	estions.			5407
Q1)	Solve	MCQ's (	1 marks each)					[10]
1.	The data	a structure	required for b	readth First	traversal	on a graph	is	[1]
		a) queu	(2000) \ .	stack	c) array	d) tre	ee	
2.					y likely	see in a	non-recursive	[1]
	implem	300	f a recursive a			e) Queue	d) Trees	
		a) stack	b)	Linked list	C	) Queue	d) Trees	
3.	The tim	e complex	ity of quicksor					[1]
	a. O		b) O(logn)		c) O(n2)		d) O (n logn)	(4)
4.	Which of	/2250	owing is not the			andad aya	10	[1]
		A 100	nary queue		d) Priorit	ended que	16	
		c) Circi	ılar queue		u) I Hom	y queue		
5.	Which o	lata structi	re is the best f	or impleme	enting a p	riority queu	e?	[1]
	a. He		b) Array	C) Link		d) Sta		
-	Which c	of the follo	wing are appli	cations of li	nked lists	s?		[1]
6.	Which of the following are applications of linked lists?  a) Implementing file systems b) Chaining in hast tables							
			y Trees impler		d)	All of the	above	
		_					ray index starts	[1]
							rmine the array	
j		which the	insertion of th					
	a. 5		p) 0	c) 1	d)	2		
				<i>[11]</i>				P.T.O.

[1]

Q5) a) Explain applications of queue in detail.

b) b) Explain following graph Representation:

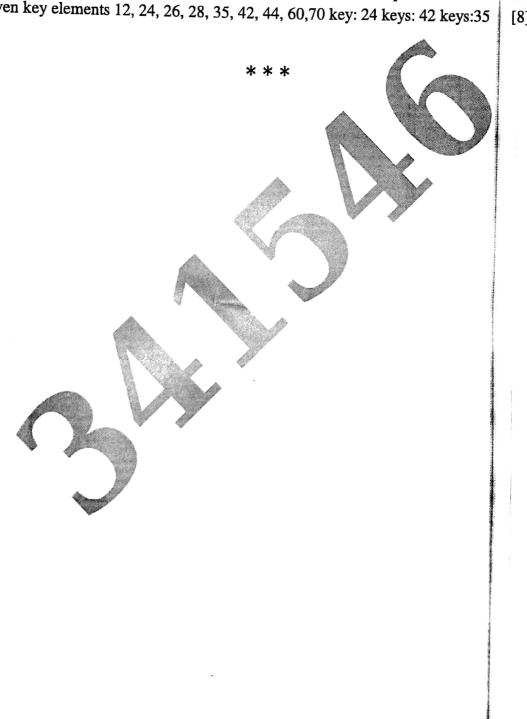
[2] P.T.O.

[8]

- i) Adjacency Matrix
- ii) Adjacency Lists

**Q6**)

- a) Write an algorithm for Merge Sort and Sort the Following number in [15] ascending order using radix sort. 12, 8, 25, 4, 66, 2, 98, 225.
- [7] b) Explain binary search? Choose appropriate search technique and solve search of given key elements 12, 24, 26, 28, 35, 42, 44, 60,70 key: 24 keys: 42 keys:35 [8]



# MAR-APR-2024 SUMMER EXAMINATION

B.Tech. CBCS

Sub. Name: Database Management System Sub. Code: 91973

Day and Date: MAY ,13-05-2024 Time: 10:30 AM To 01:00 PM

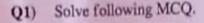
Total Marks: 70

Instructions:

Special Inst.:

1) Q.1 is compulsory.

- Solve any 4 questions from remaining questions. Use non-programmable calculator is permissible.
- 4) Figures to the right indicate full marks.
- 5) Assume suitable data, if required.



[10]

- Which of the following refers to the number of attributes in a relation?
  - A. Degree
  - B. Row
  - C. Column
  - D. All the above
- Which of the following makes the transaction permanent in the database? ii.
  - A. View
  - B. Rollback
  - C. Commit
  - D. Flashback
- By normalizing relations or sets of relations, one minimizes iii.
  - A. Data
  - B. Field
  - C. Database
  - -D. Redundancy
- Which of the following generally used for performing tasks like creating īv. structure of the relations, deleting relation?
  - A. TCL (Transaction Control Language)
  - B. DCL (Data Control Language)
  - -C. DDL (Data Definition Language)
  - D. DML (Data Manipulation Language)
- Which one of the following given statements possibly contains the error?
  - A. select \* from emp where empid = 10003;

P.T.O.



	B. select empid from emp where empid = 10006;	
	C. select empid from emp;	
	D. select empid where empid = 1009 and Lastname = 'GELLER';	
vi.	The Which one of the following refers to the copies of the same data occ	cupying
	the memory space at multiple places.	
	A. Data Repository	
	B. Data Redundancy	
	C. Data Mining	
	D. Data Inconsistency	
vii.	The ability to query data, as well as insert, delete, and alter tur	oles, is
	offered by	
	A. TCL (Transaction Control Language)	
	B. DCL (Data Control Language)	
	C. DDL (Data Definition Language)	
	D. DML (Data Manipulation Language)	
	Table Company COL 2	
viii.	Which command is used to remove a Table from an SQL?	
	A. Drop table	
	B. Delete	
	C. Purge D. Remove	
	D. Remove	
ix.	The key is the one in which the primary of one relation is re	eference
****	another relation is called	
	A. Primary key	
	B. Foreign key	
	C. Candidate key	
	D. Concatenate key	
x.	Which of the following is not a property of transactions?	
	A. Atomicity	
	B. Concurrency	
	C. Durability	
	D. Isolation	
(2) Se	olve the following question	[15]
(2)		
a.	Explain the following terms	[7]
	1. Cardinality	
	2. Participation	
9)	The second of th	103
b.	Define DBMS? Explain different characteristics of DBMS.	[8]
un	g Quad Camera 🙉	P.T.O.
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Seat No.

Total No. of Pages 13

## SHIVAJI UNIVERSITY, KOLHAPUR

S.Y B. Tech. (Electronics & Computer Science)

(Part-II) (Semester - III)

Oct. / Nov. 2023 Examination, ENGINEERING MATHEMATICS -III

Sub. Code: 91969

Day and Date: Tuesday, 02-01-2024

Time: 10.30 a.m. to 01.00 p.m.

Total Marks : 70

#### Instructions:

- Q.1 is compulsory.
- 2) Solve any 4 questions from remaining questions.
- 3) Use non-programmable calculator is permissible.
- 4) Figures to the right indicate full marks
- 5) Assume suitable data, if required

### Q1 Solve MCQ's (2 marks each)

i. The complete solution of 
$$(D^3 - 3D^2 + 3D - 1)y = 0$$

A) 
$$y = (C_1 + C_2x + C_3x^2)e^x$$

B) 
$$y = C_1 + (C_2 + C_3 x)e^{-x}$$

C) 
$$y = C_1e^x + (C_2 + C_3v)e^x$$

D) 
$$y = (C_1 + C_2 x)e^x + C_3 e^{-3x}$$

ii.. The curl of vector field 
$$f(x, y, z) = x^2 i + 2zj - yk$$
 is

A) -3j

(c) 31

D) 0

iii. If 
$$A(x) = \frac{1}{x+2}$$
, where  $x = \{1,2,3,4\}$  then scalar cardinality of A...

A) 2.2818

C) 1.2833

2.1896

AURZY cardinality in total number of-

sale of iv. In Fourier expansion of  $f(x) = 2 - \frac{x^2}{2}$ ;  $0 \le x \le 2$  the value of constant

105% of the tools produced in a certain manufacturing process turned out to be defective. Find the probabilities that out of 20 selected at random there are exactly 2 are defective.

A) 0.2345

0.2020

€) 0.2852

D) 0.1923

Q.2 a) Solve  $(D^2 + D + 2)y = 1+x$ 

[7]

[8]

Q.3 a) If a, b are constants and r acosnt + b sin nt, P.T.

i) 
$$\vec{r} X \frac{d\vec{r}}{dt} = n(\vec{a}X\vec{b}) \cdot (i) \frac{d^2\vec{r}}{d\vec{b}^2} + n^2\vec{r} = 0$$
 [7]

b) Prove that 
$$\nabla \left(\frac{\bar{r}}{r^3}\right) = 0$$
 [8]

- Find Laplace Transform of i) t sin at, ii) Find L1 [ 1 1 1 1 1 Q.4 m
  - Obtain half range Fourier cosine and sign series for  $f(x) = e^x$  in  $(0, \pi)$ . [8]
- a-cut and strong a-cut. Find a-cut and strong a-cut for a 0.2, 0.3, Q.5 a) 0.4 for the Fuzzy set defined by

$$C(x) = \frac{x}{x+1}, x \in \{1, 2, 3, 4, 5\}.$$

Define Fuzzy cardinality. Find the fuzzy cardinality of

$$A(x) = \frac{35-x}{15} \text{ on } X = \{20,22,24,26,28,30,32,34\}$$
 [8]



