



**Department of IOT & CS**  
**Academic Year 2022-2023**  
**Term Test – II**

**Course Name:** Database Management Systems

**Class:** S.Y B.Tech.

**Date:** 25/11/2022

**Maximum Marks:** 25

**Course Code:** DJ19ICC303

**Sem:** III

**Time:** 09:30 am – 10:30 am

**Instructions:**

1. Draw figures wherever required

<b>Q. No</b>	<b>Questions</b>	<b>Marks</b>																																								
1.	Discuss key features of Rocksdb database.	04																																								
2	Demonstrate use of 2PL using a suitable example.	07																																								
3a	Convert the Big Patient Table into 3rd normal form. The functional dependencies are shown in Table 2 for your reference. Show the result of each step in the normalization process.	07																																								
	Table 1 Sample Data for the Big Patient Table																																									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>VisitNo</th><th>VisitDate</th><th>PatNo</th><th>PatAge</th><th>PatCity</th><th>ProvNo</th><th>ProvSpecialty</th><th>Diagnosis</th></tr> </thead> <tbody> <tr> <td>V10020</td><td>1 13 2007</td><td>P1</td><td>35</td><td>DENVER</td><td>D1</td><td>INTERNIST</td><td>EAR INFECTION</td></tr> <tr> <td>V10020</td><td>1 13 2007</td><td>P1</td><td>35</td><td>DENVER</td><td>D2</td><td>NURSE PRACTITIONER</td><td>INFLUENZA</td></tr> <tr> <td>V93030</td><td>1 20 2007</td><td>P3</td><td>17</td><td>ENGLEWOOD</td><td>D2</td><td>NURSE PRACTITIONER</td><td>PREGNANCY</td></tr> <tr> <td>V82110</td><td>1 18 2007</td><td>P2</td><td>60</td><td>BOULDER</td><td>D3</td><td>CARDIOLOGIST</td><td>MURMUR</td></tr> </tbody> </table>	VisitNo	VisitDate	PatNo	PatAge	PatCity	ProvNo	ProvSpecialty	Diagnosis	V10020	1 13 2007	P1	35	DENVER	D1	INTERNIST	EAR INFECTION	V10020	1 13 2007	P1	35	DENVER	D2	NURSE PRACTITIONER	INFLUENZA	V93030	1 20 2007	P3	17	ENGLEWOOD	D2	NURSE PRACTITIONER	PREGNANCY	V82110	1 18 2007	P2	60	BOULDER	D3	CARDIOLOGIST	MURMUR	
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	Table 2 Functional Dependency in the Big Patient Table																																									
	PatNo → PatAge, PatCity ProvNo → ProvSpecialty VisitNo → PatNo, VisitDate, PatAge, PatCity VisitNo, ProvNo → Diagnosis																																									
	<b>OR</b>																																									
3b	What is normalization? What are three anomalies resolved by normalization? Explain each anomaly with the help of suitable example.	07																																								



Shri Vile Parle Kelavani Mandal's  
**DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING**  
(Autonomous College Affiliated to the University of Mumbai)  
NAAC Accredited with "A" Grade (CGPA : 3.18)

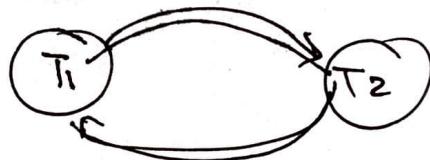


4a	What is deadlock? Discuss various methods of deadlock prevention.	07
OR		
4b	Is the following schedule S serializable? If yes, is it conflict serializable or view serializable?	07

Schedule S:

T1                    T2  
~~R(A)~~ R(C)  
W(B) W(B)  
R(B)                R(B)  
W(A)                W(A)  
~~W(A)~~ W(A)  
W(A)                W(A)

\*\*\*\*All the Best\*\*\*\*





**Department of Computer Engineering**  
**(IOT and Cyber Security with Block Chain Technology)**  
**Academic Year 2022-2023**

**Term Test – II**

**Course Name: Digital Logic Design and Application**

**Class: SE**

**Date: 25 /11/2022**

**Maximum Marks: 25**

**Course Code: DJ19ICC305**

**Sem: III**

**Time: 11:00 am – 12:00 noon**

**Instructions:**

1. Please solve questions in order with clear and dark ink pens
2. Draw figures wherever required
3. All questions are compulsory
4. Assume necessary data wherever required

$$C_1 = G_0 + P_0 C_0$$

$$P_i * C_{i-1} + C_i$$

Q.No.	Question	CO Mapped	Max. Marks
1.	(a) Differentiate between combinational circuits and sequential circuits.  (b) Explain the operation of the <u>S-R</u> flip flop using a (i) neat circuit diagram, (ii) truth table (iii) excitation table (iv) K-Map (v) characteristic equation		[05]
2.	Design a BCD adder using 4-bit binary adders and explain the working by giving a suitable example (Write truth table, draw K-Map and circuit)  <b>OR</b>  What is a carry look-ahead adder? Design a 4-bit carry look ahead adder using gates	305.4	[05]
3.	Implement the following Boolean expression using the 8:1 multiplexer. $f(A, B, C, D) = \sum m(1, 3, 5, 10, 11, 13, 14) + d(0, 2)$ Use the design table and draw the circuit.  <b>OR</b>  Write a short note on ALU	305.3	[05]



Department of AI & ML / AI & DS / IOT

Academic Year 2022-23

Term Test - 2

Course Name: Engineering Mathematics -III

Course Name: Engineering Mathematics  
Course Code: DJ19AMC301 / DJ19ADC301 / DJ19ICC301

Course: SE

Sem : III

Time:

Date:

Max Marks: 25

**Department of Computer Engineering**  
**Academic Year 2022-2023**  
**Term Test - II**

**Course Name:** Data Structures  
**Class:** SE  
**Date:** 26/11/2022  
**Maximum Marks:** 25

**Course Code:** DJ19ICC302  
**Sem:** III  
**Time:** 09:30 am – 10:30 am

**Instructions:**

1. Please solve questions in order with clear and dark ink pens
2. Draw figures wherever required

<b>Q. No</b>	<b>Questions</b>	<b>Marks</b>
1.	Implement binary search Techniques and maintain any two reasons why it is providing better time complexity than Linear search techniques.	7
2	What is Hashing? Hash the following data in table of size 10 using quadratic probing. 63,82,94,77,53,87,23,55,10,44	7
3	Demonstrate step by step insertion of the following elements in an AVL tree. 63,9,19,18,108,99,81,45	6
<b>OR</b>		
3	Given the postorder and inorder traversal of a binary tree, construct the original tree.  Postorder: D E F B G L J K H C A  Inorder: D B F E A G C L J H K	6
4	Explain Depth First Search (DFS) Traversal with an example.	5

*6+5=11 +1*  
*→ Missed writing*  
*No 11 written*  
*63*  
*+ 82*  
*- 97*  
*(x^2) + 417 -*



**Department of IOT and Cyber Security with Block Chain Technologies.**  
**Academic Year 2022-2023**  
**Term Test - II**

**Course Name:** Discrete Structures  
**Class:** SY BTech  
**Maximum Marks:** 25

**Course Code:** DJ19AMC304  
**Sem:** III  
**Duration:** 1 hour

**Instructions:**

1. Please solve questions in order with clear and dark ink pens

Q. No	Questions	Marks
Q.1a)	<p>Determine which of the following graphs(i,iii) contains Euler and/or Hamiltonian path and/or circuit. Also mention the same.</p>	06
<b>OR</b>		
Q.1a)	<p>Determine whether the following graphs are isomorphic or not. Justify your answer.</p>	06
Q.2 a)	<p>Let <math>G</math> be the set of all non-zero real numbers and let <math>a * b = ab/2</math>. Show that <math>(G, *)</math> is an Abelian Group.</p>	07
b)	<p>Define:  i) Monoid  ii) Group</p>	02
Q3 a)	<p>State Pigeon Hole principle and extended pigeon hole principle. Show that if 30 dictionaries in a library containing total of 61,327 pages, then one of the dictionary must have at least 2045 pages.</p>	5
b)	<p>Let <math>f(x) = x+2</math>, <math>g(x) = x-2</math> and <math>h(x) = 3x</math> for all <math>x \in \mathbb{R}</math>. (<math>\mathbb{R}</math> is the set of real number). Find (i) <math>f \circ g \circ h</math> (ii) <math>h \circ g \circ f</math> (iii) <math>f \circ f \circ f</math></p>	5

ALL THE BEST