Library 28/11

ARKA JAIN University, Jharkhand (NAAC GRADE A, ACCREDITED UNIVERSITY)			END SEM EXAMINATION School of Engineering & IT
Branch	Computer Science & Engineering	Program	B.Tech
Subject Name	Data Analytics	Semester	VII
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phone** or any kind of **Written Material, Arguments with the Invigilator or Discussion with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Paper(s)**.		
Knowledge Level (KL)	**K1** : Remembering	**K3** : Applying	**K5** : Evaluating
	K2 : Understanding	**K4** : Analysing	**K6** : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q. N 1	QUESTIONS	Marks	COs	KL
i	Define Data Analytics.	2	CO1	K2
ii	Why Power Bi and Tableau is important in in data visualization? Explain.	2	CO3	K5
iii	Explain data streaming?	2	CO2	K5
iv	What is clustering?	2	CO3	K5
v	What is the challenges in conventional data storage system?	2	CO2	K6
vi	What is tree pruning?	2	CO2	K2
vii	Describe the techniques of data visualization?	2	CO2	K6
viii	Which function is used in logistic regression? Write the equation for logistic regression.	2	CO2	K4
ix	Why fidelity in data visualization is important?	2	CO1	K5
x	Compare Linear Regression with k-nearest neighbour classification.	2	CO3	K4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Design Hadoop Architecture (HDFS) and explain each components in details	5	CO1	K6
3	Compare Linear Regression with k-nearest neighbour classification	5	CO3	K5
4	Design and explain Berkeley Big-data Analytics (BDA) Stack.	5	CO3	K3
5	How "Counting Distinct Elements in a Stream" is performed? Explain.	5	CO1	K4
6	Explain with example how "Real Time Sentiment Analysis works"	5	CO3	K1
7	What is the need of threshold value in logistic regression?	5	CO1	K2

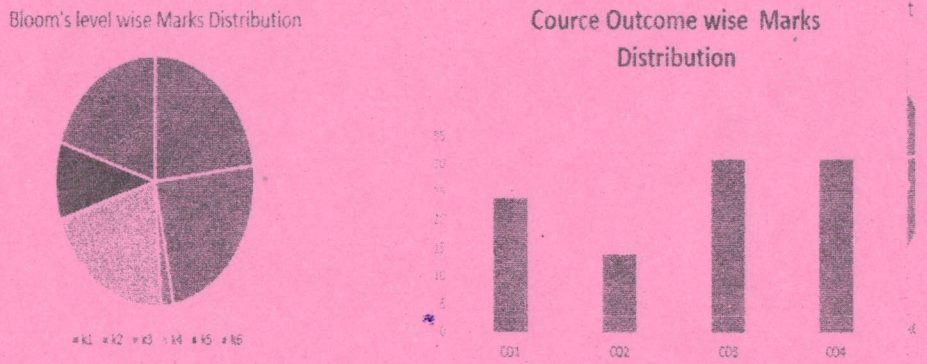
Section C (Answer any THREE out of FIVE) – 30 Marks-
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Write a comparison on structured, semi-structured and Unstructured Data.	10	CO3	K1
9	Write a short note on Linear Discriminant Analysis.	10	CO1	K2
10	Consider a sequence of twitter tags below: Fifa, ipl, fifa ,ipl, ipl, ipl,fifa Also lets say each element in sequence has weight of 1.Lets c be 0.1. Which one is more trending as per the Decaying window protocol?	10	CO2	K4
11	Cluster the following points A1(2,10),A2(2,5),A3(8,4),B1(5,8),B2(7,5),B3(6,4),C1(1,2),C 2(4,9).Consider A1,B1,C1 as the initial cluster centroid. Using K means clustering make 3 cluster of the given data points.	10	CO3	K4
12	Write a short note on Flajolet Martin Algorithm.	10	CO3	K5

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understand Big Data and its analytics in the real world, framework like **Hadoop** to efficiently store and process Big Data .
	CO2	Learn to feed a computer algorithm an immense amount of data and have the computer analyse and make data-driven recommendations and decisions based on only the input data – Learning algorithm.
	CO3	Learn to analyses data in real-time to provide up-to-the-minute data analytics and insights using Stream concepts.
	CO4	Learn advanced analytics, which involve complex applications with elements such as predictive models, statistical algorithms and what-if analysis powered by analytics systems.

GRAPHICAL REPRESENTATION

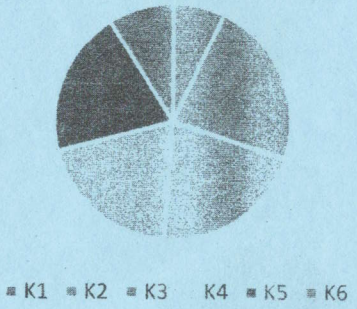


CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

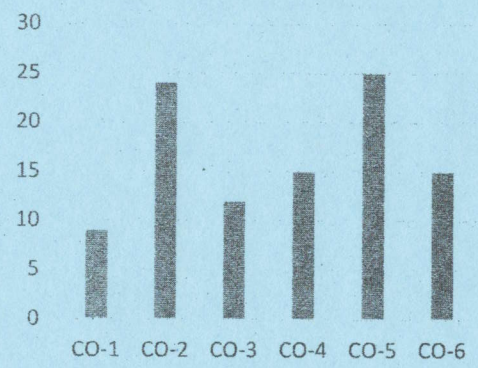
Course Outcomes	CO1	Acquire professional knowledge and skills
	CO2	Describe some common problems or attacks on network security.
	CO3	Describe some network security services and mechanisms
	CO4	Study and analyse some cryptographic algorithms with their relation with real life.
	CO5	Describe a hash function and its requirements.
	CO6	Describe the steps in the creation of a digital certificate.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Cource Outcome wise Marks Distribution



'M' 30/11

JGI	**ARKA JAIN University** Jharkhand — NAAC GRADE A ACCREDITED UNIVERSITY	**END SEM EXAMINATION** School of Engineering & IT	
Branch	Computer Science & Engineering	Program	B.Tech
Subject Name	Cryptography & Network Security	Semester	VII
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phone** or any kind of **Written Material, Arguments with the Invigilator or Discussion with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Paper(s).**		
Knowledge Level (KL)	**K1** : Remembering	**K3** : Applying	**K5** : Evaluating
	K2 : Understanding	**K4** : Analysing	**K6** : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q. N 1	QUESTIONS	Marks	COs	KL
i	What is X.509?	2	CO1	K1
ii	What is S/MIME? Where it is being used?	2	CO1	K3
iii	What are roles of Firewall?	2	CO1	K4
iv	What are passive and Active attack?	2	CO4	K1
v	What is Feistel structure?	2	CO2	K2
vi	What is IP Security?	2	CO2	K2
vii	What are weaknesses of DES?	2	CO4	K1
viii	What are cryptanalysis attacks?	2	CO2	K6
ix	What is substitution and transposition ciphers?	2	CO3	K6
x	Define trusted system.	2	CO2	K3

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain RSA algorithm. Also perform encryption and decryption for message M=2, when p=11 and q=3 and e=7.	5	CO1	K2
3	Explain in detail about OSI Security Architecture	5	CO2	K3
4	Explain Symmetric cryptography and Asymmetric Cryptography with example.	5	CO3	K4
5	What is a hash function? Also list four basic requirements of hash functions	5	CO3	K6
6	What are the important services offered by PGP?	5	CO2	K5
7	Do you know of any algorithms that merge or combine the RSA and Diffie-Hellman algorithms? Would there be any benefit in doing so? If this is not possible, is one better than the other?	5	CO3	K6

Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	(a)Write Diffie-Hellman key exchange algorithm. (b)Consider a Diffie-Hellman scheme with a common prime q=11 and a primitive root α=2. i. If user A has public key Y_A= 9, what is A's private key X_A ? ii. If user B has public key Y_B=3, what is the shared secret key K?	10	CO4	K2
9	**a)** Why is the RSA algorithm difficult for Eve to break? **b)** Let M' be the bitwise complement of M and let K be a DES key with bitwise complement K'. Prove that the bitwise complement of the DES encryption of M using key K is the DES encryption of M' using K'. (Mathematically, prove that if Y = DES_K(M), then Y' = $DES_{K'}$(M').)	10	CO3	K4
10	(a) Explain how the elliptic curves are useful for cryptography? (b) Write about the basic uses of MAC and list out the applications.	10	CO4	K5
11	(a) What are the key requirements of message digests? (b) Describe the secure hash algorithm.	10	CO3	K3
12	(a) Describe the steps in the creation of a digital certificate. (b)Explain Firewall design used in your university with outcome.	10	CO3	K2

'M' 3/12

ARKA JAIN University, Jharkhand — NAAC GRADE A ACCREDITED UNIVERSITY			END SEM EXAMINATION School of Engineering & IT
Branch	Computer Science & Engineering	Program	B.Tech
Subject Name	Real Time System	Semester	VII
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s).		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q. N 1	QUESTIONS	Marks	COs	KL
i	Briefly describe the Soft real time systems	2	CO1	K4
ii	Explain timing constraint in real time system	2	CO2	K2
iii	Write the necessary condition for a periodic task to be RMA schedulable	2	CO3	K2
iv	Write the conditions required to select a frame size for a task to be cyclic schedulable.	2	CO3	K1
v	Task completion time for a foreground-background task is calculated by what formula?	2	CO3	K1
vi	Analyze whether the statement "All hard real time systems are safety-critical in nature" is true in its sense or not.	2	CO3	K4
vii	Mention one of the shortcomings of EDF scheduling	2	CO3	K4
viii	Analyze and Explain under what condition Liu and Layland's test is necessary in RMA scheduling	2	CO3	K2
ix	Write the sufficient condition for a periodic task to be RMA schedulable	2	CO3	K4
x	Emphasize on safety and reliability in Real time system	2	CO2	K2

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	With example briefly explain Firm Real time system	5	CO1	K6
3	Explain Quality of Service (Qos) in Real time communication	5	CO4	K4
4	With a neat sketch, create sporadic task model of real time systems	5	CO1	K6
5	Mention some of the advantages and disadvantages of RMA.	5	CO1	K2
6	A preemptive static priority real-time task scheduler is used to schedule two periodic tasks T1 and T2 with the following characteristics: T_1= (e_1=10, p_1=20), T_2= (e_1=20, p_1=50) assume that T1 has higher priority than T2. A background task arrives at time 0 and would require 1000 msec to complete. Compute the completion time of background task assuming that context switching takes no more than 0.5 mSec	5	CO2	K2
7	Explain One shot Timers. Why watchdog timers are popular example of one shot timers.	5	CO2	K1

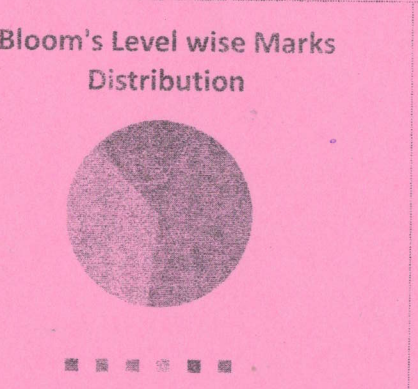
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

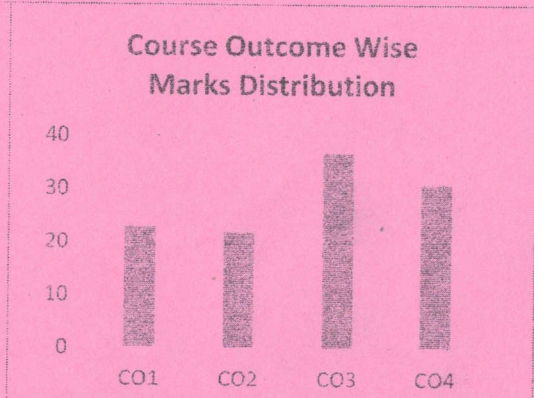
Q. No.	QUESTIONS	Marks	COs	KL
8	Discuss the concept of data independence and explain its importance in a database environment	10	CO4	K2
9	A Cyclic scheduler is to be used to run the following set of periodic tasks on a uniprocessor: T_1= (e_1=1, p_1=4), T_2= (e_1=1, p_1=5), T_3= (e_1=1, p_1=20) and T_4= (e_1=2, p_1=20). Select an appropriate frame size.	10	CO3	K4
10	Explain Transaction processing in real time systems, Lay emphasis on priority	10	CO3	K2
11	Describe the basic features of the relational data model. Discuss their advantages, disadvantages and importance of the end-user and the designer	10	CO4	K4
12	Describe in detail the different types of DBMS	10	CO3	K2

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understand the use of multi-tasking techniques in real time systems.
	CO2	Evaluate the performance of soft and hard real time systems.
	CO3	Analyze multi task scheduling algorithms for periodic, aperiodic and sporadic tasks.
	CO4	Understand the use of real-time databases in real time systems

GRAPHICAL REPRESENTATION





'M' 5/12

JGi ARKA JAIN University Jharkhand — NAAC GRADE A ACCREDITED UNIVERSITY		END SEM EXAMINATION School of Engineering & IT	
Branch	Computer Science & Engineering	Program	B.Tech
Subject Name	Computer Graphics	Semester	VII
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Three out of Five of Section C** • **Possession of Mobile Phone** or any kind of **Written Material, Arguments with the Invigilator or Discussion with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Paper(s)**.		
Knowledge Level (KL)	**K1** : Remembering	**K3** : Applying	**K5** : Evaluating
	K2 : Understanding	**K4** : Analysing	**K6** : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q. N 1	QUESTIONS	Marks	COs	KL
i	What is Geometric Transformation?	2	CO3	K1
ii	List the advantages and disadvantages of DVST.	2	CO1	K1
iii	What is polygon? Explain different types of polygons.	2	CO2	K2
iv	Define aspect ratio. What is a refresh buffer?	2	CO1	K1
v	Write the composition transformation matrix for scaling, translation and Rotation.	2	CO3	K2
vi	Define Boundary-Fill algorithm.	2	CO2	K1
vii	List the properties of B-spline curve.	2	CO5	K1
viii	Classify various methods of solid modelling.	2	CO4	K2
ix	What is Back-Face Detection?	2	CO4	K2
x	What is Window-to-Viewport Coordinate Transformation	2	CO5	K2

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the steps in DDA line drawing algorithm.	5	CO2	K2
3	Perform a 45-degree rotation of objects A (2, 1), B (5, 1) & C (5, 6) in clockwise direction and give the coordinates of the transformed objects.	5	CO3	K6
4	Explain Cohen-Sutherland Line Clipping algorithm.	5	CO2	K2
5	Consider a non-interlaced raster system with resolution of 1280 by 1024, a refresh rate of 60 Hz, a horizontal retrace time of 5 Microseconds and a vertical retrace time of 500 µs. What is the fraction of the total refresh time per frame spent in horizontal retrace of the electron beam?	5	CO1	K3
6	Explain Various Applications of Computer Graphics	5	CO1	K2
7	Explain the Z-buffer algorithm for hidden-surface removal.	5	CO4	K2
Section C (Answer any THREE out of FIVE) – 30 Marks- (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	How does back-face removal solve the hidden surface problem for convex objects? Explain with example.	10	CO4	K5
9	Write a short note on a) Cathode-Ray Tubes. b) Vector Scan display c) Raster scan Displays d) Beam penetration technique	10	CO1	K2
10	Derive the matrix for general perspective projection	10	CO4	K6
11	Prove that the multiplication of 3-D transformation matrices for each of the followings sequence of operations is commutative: a) Any two successive translations b) Any two successive scaling operations.	10	CO3	K5
12	What is homogeneous co-ordinate? Discuss the composite transformation matrices for two successive translation and scaling.	10	CO3	K1

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	To describe file structure of display & graphics file formats.
	CO2	To apply the algorithms to draw lines, circles and polygons
	CO3	To use transformation techniques to scale, rotate and translate the object.
	CO4	To select the methods of enlarging visible portion of drawing
	CO5	To develop the logic for drawing the natural objects using differential algorithms for curved lines

GRAPHICAL REPRESENTATION