



Chhattisgarh Swami Vivekanand Technical University
University Teaching Department
Class Test-2 (July-December 2024)

B. Tech(H)-7th Semester
Branch: Data Science

Subject Name: Big Data Analytics

Max Marks: 40

Min Marks: 14

Subject Code: D128771(022)

Times: 2 hrs

Note: All questions are compulsory

CO1. Develop a comprehensive understanding of big data technologies, tools, and techniques for processing and analysing large-scale datasets.

CO2. Acquire knowledge and skills in utilizing advanced analytics methods tailored for big data to extract meaningful insights.

CO4. Gain proficiency in utilizing big data platforms and tools such as Hadoop, Spark, and NoSQL databases for efficient data processing and analysis.

Roll No - 30001821042

Q.No.	Questions	Marks	BL	CO
UNIT 1				
1	a Explain the architecture and working principles of artificial neural networks (ANNs).	4	L4	4
	b Discuss the key techniques used in NLP such as tokenization, stemming, and word embeddings.	8	L4	4
	c Compare and contrast different ensemble techniques like bagging, boosting, and stacking.	8	L5	4
UNIT 2				
2	a Define cloud-based big data analytics and briefly describe the role of platforms like Amazon Web Services (AWS) in handling large datasets.	4	L5	5
	b Compare the big data analytics services offered by Microsoft Azure, and Google Cloud Platform (GCP).	8	L5	4
	c How do Docker and Kubernetes together improve the scalability and portability of big data applications?	8	L5	5



Chhattisgarh Swami Vivekanand Technical University

University Teaching Department

Class Test-2 (July-December 2024)

B.Tech(H)-7th Semester

Branch: Data Science

Subject Name: Data Wrangling

Max Marks: 40

Min Marks: 14

Subject Code: D128772(022)

Times: 2 hrs

Note: Part a is compulsory, attempt any two questions from b, c, and d.

CO1. Equip students with essential skills and techniques for acquiring, cleaning, transforming, and preparing raw data for analysis.

CO2. Provide students with knowledge and tools to handle diverse data formats efficiently.

CO3. Enable students to address missing or inconsistent data effectively during the data wrangling process.

CO4. Teach students how to create structured datasets suitable for analysis and modeling in data science projects.

CO5. Empower students with the ability to apply data wrangling techniques to real-world datasets, enhancing their proficiency in data preparation for downstream analysis.

Roll No. - 300012821042

Q.No.	Questions		Marks	BL	CO
UNIT 3					
1	a	Describe a method for resolving mismatched keys in two datasets.	2	L3, L4	1,3
	b	Provide a detailed example of how to handle duplicate entries in a dataset before merging. Include code snippets.	5	L3	3
	c	Compare and contrast inner, outer, left, and right joins with respect to their outputs using sample datasets.	5	L2, L4	4
	d	Discuss the algorithms commonly used for fuzzy matching. Provide examples of their applications in real-world data scenarios.	5	L2, L3	2
UNIT 4					
2	a	What are spatial joins? How do they differ from regular joins in databases?	2	L1, L3	4
	b	What are some common preprocessing techniques for handling image data in machine learning? Provide at least two examples.	6	L2, L3	1
	c	What is the purpose of integrating external datasets with GIS? Give an example.	6	L2, L3	5
	d	Explain the concept of resampling in time series data. How does it help in analyzing seasonal patterns?	6	L2, L4	1

UNIT 5

2	a	What is the purpose of using code comments in data wrangling?	2	L2	1
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b	Discuss the importance of documentation in data wrangling and how it impacts project outcomes.	6	L4, L5	5
c	Compare the benefits of using a workflow management tool versus manual scripting for data wrangling.	6	L4, L5	2
d	What strategies can be employed to ensure effective collaboration in a data wrangling project?	6	L3, L6	5

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY****Department of Computer Science & Engineering**

Class Test – 2 Session- July – Dec, 2024 Month-November

Sem- BTech(H) 7th (DS) Subject- Software Engineering Code- D128773(022)

Time Allowed: 2 hrs

Max Marks: 40

Min Marks: 14

Note: - Q1 is compulsory, attempt any two questions from Q2, Q3, and Q4.**C03:** The learner understands the coding standards and software testing techniques.**C04:** The learner understands the software maintenance activities and software refactoring techniques.**C05:** The learner understands the project management framework and effort estimation models.

Q.N.	Questions	Marks	Levels of Bloom's Taxonomy	CO			
Unit III							
Q1	What do you understand by programming paradigm? Explain two programming paradigms.	[4]	L1	3			
Q2	What are the key elements of BDD? Explain code comments and documentation coding standard. Give two documentation tools.	[8]	L2	3			
Q3	Explain various incremental integration. Give an example of docstrings.	[8]	L2	3			
Q4	What are the characteristics of the software testing template? Explain best practices for software development.	[8]	L2	3			
Unit IV & V							
Q1	What are the major capabilities that version control system implements?	[4]	L1	4			
Q2	Explain how Work Breakdown Structure (WBS) is structured in software engineering.	[8]	L2	5			
Q3	Explain various strategies for modernizing and migrating legacy systems. Perform code refactoring to implement encapsulate field.	[8]	L3	4			
Q4	(a) Explain agile effort estimation technique.	[8]	L3	5			
	(b) Suppose we have the following counts for different elements, with their respective weights:						
Element Type Count Weight							
External Inputs 20 4		[8]	L3	5			
External Outputs 10 5							
Internal Logic 15 7							
Assume Complexity Adjustment Factor (CAF) = 1.2 and Productivity Rate = 10. Calculate the Adjusted Function Points (AFP) and Effort.							



Chhattisgarh Swami Vivekanand Technical University

University Teaching Department

Class Test-2 (July-December 2024)

B. Tech (H)-7th Semester

Branch: Data Science

Subject Name: Image Processing

Subject Code: D127733(022)

Max Marks: 40

Min Marks: 14

Times: 2 hrs

Note: Questions are (a) compulsory and Attempt any two (b), (c), and (d)

CO 3 : To familiarize students with image segmentation and feature extraction Techniques.

CO4 : To develop practical skill in implementing image processing algorithms using appropriate tools and programming language.

CO5 : To Encourage students to Analyze and evaluate the performance of image processing algorithm in real world Application.

Roll No. - 300012821042

Q.No.	Questions	Marks	BL	CO
PART A				
1	a What do you mean by image segmentation.	4	L1	3
	b Discuss Sobel and canny Edge Detection Algorithms.	8	L2	3
	c Write short Notes on : 1) Corner detection 2) Texture Analysis	8	L3	3,5
	d Explain Wavelet based Compression .	8	L2	3,5
PART B				
2	a Define Mathematical Morphology.	4	L1	4
	b Explain Mathematical Morphological Operation with suitable Example.	8	L2	4
	c Write short Notes on : 1) Noise Removal 2) Feature Extraction	8	L3	4
	d Write case study on Remote Sensing.	8	L4	4,5

Chhattisgarh Swami Vivekanand Technical University
 University Teaching Department
Class Test-2 (July-December 2024)
B.Tech(H)-7th Semester
Branch: Artificial Intelligence/Data Science

Subject Name: Management Information System

Max Marks: 40

Min Marks: 14

Times: 2 hrs

Note: All questions are compulsory

CO1: Develop understanding of foundational concepts in IT strategy and emerging technologies.

CO2: Demonstrate quantitative evaluation of IT strategies.

CO3: Synthesize knowledge of advanced MIS tools.

CO4: Quantitatively evaluate management information systems.

Roll No - 300012821047

Q. No.	Questions	Marks	BL	CO
UNIT 1				
1	<p>a.1 Which of the following is a key benefit of aligning IT strategy with business strategy?</p> <ul style="list-style-type: none"> a) Reduces hardware costs b) Increases employee retention c) Improves organizational performance d) Simplifies software development 	1	2	1
	<p>a.2 In B2B e-commerce, the primary participants are:</p> <ul style="list-style-type: none"> a) Consumers and businesses b) Businesses and other businesses c) Consumers only d) Businesses and governments 	1	2	1
	<p>a.3 Which technology allows devices to communicate and exchange data over the internet without human intervention?</p> <ul style="list-style-type: none"> a) Blockchain b) Cloud Computing c) Internet of Things (IoT) d) Virtual Reality 	1	2	1
	<p>a.4 Which emerging technology is most closely associated with distributed ledgers?</p> <ul style="list-style-type: none"> a) Big Data b) Blockchain c) Artificial Intelligence d) Augmented Reality 	1	2	1
b	Explain the concept of IT-business alignment and its significance in modern organizations.	8	3	1
c	Describe the role of cloud and vendor strategies in the formulation of an IT strategy.	8	3	1
d	A company uses a balanced scorecard for IT-business alignment. If the weights assigned to the four perspectives (Financial, Customer, Internal Processes, Learning and Growth) are 30%, 25%, 25%, and 20%, respectively, and their respective performance scores are 80, 70, 90, and 85, calculate the overall balanced scorecard performance score.	8	5	2

Q. No.	Questions		Marks	BL	CO
UNIT 2					
2	a.1	What is the primary purpose of Augmented Reality (AR) technology? a) To replace the real world with a virtual one b) To overlay digital information on the real world c) To analyze large datasets in real-time d) To automate repetitive business tasks	1	2	3
	a.2	Which emerging technology allows employees to use their personal devices securely in a workplace environment? a) Bring Your Own Device (BYoD) b) Internet of Things (IoT) c) Virtual Reality (VR) d) Cloud Computing	1	2	3
	a.3	Which system is designed to simulate human expertise in a specific domain? a) Learning Management System b) Decision Support System c) Expert System d) Executive Information System	1	2	3
	a.4	Which ethical issue is most relevant when organizations analyze personal user data? a) Data accuracy b) Privacy violation c) System reliability d) Cost efficiency	1	2	3
	b	Describe the differences between Expert Systems and Executive Information Systems with examples.	8	3	3
	c	Explain how Learning Management Systems contribute to knowledge management in organizations.	8	3	3
	d	An executive information system tracks performance metrics for a company. If the system measures three metrics: Revenue Growth (20%), Customer Satisfaction (40%), and Employee Productivity (40%), and the scores for these metrics are 85, 75, and 90, respectively, calculate the weighted average performance score.	8	5	4



Chhattisgarh Swami Vivekanand Technical University
University Teaching Department
Class Test-2 (Nov 2024)
B. Tech(H)-7th Semester
Branch: Artificial Intelligence / Data Science

Subject Name: Gaming Theory

Max Marks: 40

Note: All questions are compulsory

Min Marks: 14

Subject Code: D127774(022)

Time: 2 hrs

Q U N O - 300012821042

CO 3: To analyze and solve games using various solution concepts like Nash equilibrium and dominant strategies.

CO 4: To model real-world AI problems using game-theoretic approaches in multi-agent systems.

CO 5: To design and implement game-theoretic algorithms for AI applications like auctions and reinforcement learning.

Q.No.	Questions		Marks	BL	CO
UNIT 4					
1	a	Which of the following domains ensures the critical value function is well-defined? (a) Single-parameter domain (b) Quasi-linear domain (c) Convex domain (d) Any domain	2	L1	3
	b	Explain Myerson's Lemma and its role in characterizing allocation rules in a single-parameter domain.	6	L2	3
	c	Describe the DSIC mechanism's allocation rule in the single-parameter domain and its necessary conditions.	6	L3	3
UNIT 5					
2	a	What is the kind of domain of the type set of each player in the mechanism design problem of Knapsack allocation? (a) Arbitrary (b) Quasi-linear but not convex (c) Convex but not single-parameter (d) Single-parameter	2	L1	4
	b	Explain the deferred acceptance algorithm and its properties in achieving stable matching.	6	L2	4
	c	Write pseudocode for implementing a men-proposing deferred acceptance algorithm and analyze its complexity.	6	L3	4
UNIT 5					
3	a	Discuss the importance of monotonicity in allocation rules under mechanism design and give an example.	6	L2	5
	b	Design a strategic bidding game and compute the Nash equilibrium for a given payoff matrix.	6	L6	5