

Printed Pages: Mid Semester Test-2
Academic year 2024 – 2025

UID No: 23BCB10081

Program Name/Code: CSE (CS-BS)

Subject Code: 23CST-238

Semester:3

Subject Title: COMPUTER ORGANIZATION AND ARCHITECTURE

Time: 1 Hour

Maximum Marks: 20

Instructions: Attempt all questions

Q. No	Statement	CO mapping
	Section A 5 x 2 = 10 marks	
1	Define the Mapping functions.	CO1
2	List the various types of semiconductor RAMs?	CO1
3	List the factors that determine the storage device performance.	CO1
4	Mention various ways to achieve cache coherence without using hardware	CO1
5	Evaluating the efficiency of single instruction execution, is a pipeline or non-pipeline system better?	CO1
	Section B 2 x 5 = 10 marks	
6	Differentiate RAM and ROM in terms of usage in a computer system.	CO2
7	Describe the benefits of using a Least Recently Used (LRU) replacement algorithm.	CO2

Printed Pages: Mid Semester Test-2
Academic year 2024 – 2025

UID No: 23BCB10081

Program Name/Code: CSE (CS-BS)

Subject Code: 23CSH-234

Semester:3

Subject Title: Object Oriented Programming

Time: 1 Hour

Maximum Marks: 20

Instructions: Attempt all questions

Q No	Statement	CO mapping
	Section A 5 x 2 = 10 marks	
1	Define data abstraction.	CO3
2	Explain the concept of class in OOP.	CO3
3	Explain the private access specifier.	CO3
4	Identify the default access specifier used for class members.	CO3
5	Describe the 'this' keyword. When is it used in C++?	CO3
	Section B 2 x 5 = 10 marks	
6	Describe the concept of data hiding in OOP. How does data hiding improve the security and robustness of a software system?	CO4
7	Describe the ideas behind OOP's class and object notions. Why are they essential to OOP and how do they connect to one another?	CO4

Program Name/Code: CSE (CS-BS)

Subject Code: 23CST-236

Semester:3

Subject Title: FORMAL LANGUAGE AND AUTOMATA THEORY

Time: 1 Hour

Maximum Marks: 20

Instructions: Attempt all questions

Q. No	Statement	CO mapping
Section A 5 x 2 = 10 marks		
1	Construct the CFG removing the NULL production: $S \rightarrow ABAC$, $A \rightarrow aA/e$, $B \rightarrow bB/e$, $C \rightarrow c$, $A \rightarrow e$, $B \rightarrow e$	CO1
2	Differentiate between Greibach normal form and Chomsky's normal form.	CO1
3	Design a Pushdown Automaton (PDA) that accepts the language consisting of strings with an equal number of 1's and 0's.	CO1
4	Explain whether a context-free grammar that generates the empty language can be converted to Greibach Normal Form. Justify your answer.	CO1
5	Explain if context free grammar is also a context sensitive grammar.	CO1
Section B 2 x 5 = 10 marks		
6	Explain the properties of Context Sensitive Grammar.	CO2
7	Construct PDA from the following Grammar. $S \rightarrow aB$ $B \rightarrow bA/b$ $A \rightarrow aB$	CO2

Program Name/Code: CSE (CS-BS)

Subject Code: 23CSH-246

Semester: 3

Subject Title : COMPUTATIONAL STATISTICS

Time: 1 Hour

Maximum Marks: 20

Instructions: Attempt all questions

Q. No	Statement	CO mapping															
Section A 5 x 2 = 10 marks																	
1	Define linear discriminant function analysis with help of an example..	CO2															
2	Explain the purpose of discriminant analysis in statistical studies.	CO2															
3	Summarize the main differences between linear discriminant analysis and other classification methods.	CO2															
4	Describe the impact of outliers on the results of a discriminant analysis.	CO2															
5	Explain the role of eigenvalues in determining the significance of principal components.	CO2															
Section B 2 x 5 = 10 marks																	
6	Analyze the variance explained by each principal component and discuss its importance in PCA. <ul style="list-style-type: none"> Sample Data: <table border="1"> <thead> <tr> <th>Component</th><th>Eigenvalue</th><th>Variance Explained (%)</th></tr> </thead> <tbody> <tr> <td>PC1</td><td>2.93</td><td>48.8</td></tr> <tr> <td>PC2</td><td>1.72</td><td>28.7</td></tr> <tr> <td>PC3</td><td>0.61</td><td>10.2</td></tr> <tr> <td>PC4</td><td>0.44</td><td>7.3</td></tr> </tbody> </table>	Component	Eigenvalue	Variance Explained (%)	PC1	2.93	48.8	PC2	1.72	28.7	PC3	0.61	10.2	PC4	0.44	7.3	CO3
Component	Eigenvalue	Variance Explained (%)															
PC1	2.93	48.8															
PC2	1.72	28.7															
PC3	0.61	10.2															
PC4	0.44	7.3															
7	Apply the steps involved in validating a discriminant analysis model and the importance of each step with help of an example.	CO3															

Printed Pages: Mid Semester Test-2
Academic year 2024 – 2025

UID No: 23BCBI0081

Program Name/Code: CSE (CS-BS)

Subject Code: 23CSH-239

Semester:3

Subject Title: SOFTWARE ENGINEERING

Time: 1 Hour

Maximum Marks: 20

Instructions: Attempt all questions

Q. No	Statement	CO mapping
Section A 5 x 2 = 10 marks		
1	Define "modular design" in software engineering.	CO1
2	Explain the benefit of using modular design in software development.	CO1
3	Describe the role of "data design" and "architectural design" in the design model in brief.	CO1
4	Explain what is meant by "top-down design" and "bottom-up design" in software engineering.	CO1
5	Define software project planning. List the key components of a software project plan.	CO1
Section B 2 x 5 = 10 marks		
6	Illustrate the Key Principles of Modular Design in detail.	CO2
7	Demonstrate and explain the key components of a software project plan in detail.	CO2