

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(IT)	Semester	4
Subject Code	PCIT-105	Subject Title	Python Programming
Mid Semester Examination (MSE) No.	2	Course Coordinator	Prof. Reema Verma
Max. Marks	24	Time Duration	1 hour 30 minutes
Date Of MSE	25-04-2024	Roll Number	

Note: Attempt all questions

Q.No.	Question	COs,RBT Level	Marks
Q1	How does the pop() method differ from remove() method ?	CO3, L2	2
Q2	Compare and contrast the difference between Terminal base and GUI Interface.	CO5, L4	2
Q3	State the significance of __init__ method.	CO4, L2	4
Q4	Demonstrate the various ways arguments can be passed at the time of function call(provide example for any two)	CO4, L3	4
Q5	Construct a program detailing the expansion of the vehicle class hierarchy to incorporate additional vehicle types.Evaluate how each new type can demonstrate unique behaviour while maintaing the advantages of polymorphism.	CO7, L5	4
Q6	a) Using Tkinter construct a simple login form with labels for user name and password along with entry widget for user input.employ grid manager to arrange these widgets in structured layout. b) Analyze the advantages of using ttk widgets over standard Tkinter in terms of appearance and functionality.	CO5, L6	8

Course Outcomes (CO)

1	Familiar with Python environment, data types, operators used in Python.
2	Compare and contrast Python with other programming languages..
3	Learn the use of control structures and numerous native data types with their methods
4	Design user defined functions, modules, and packages
5	Investigate and implement Graphical User Interfaces based programming
6	Create and handle files in Python
7	Identify the need of object oriented programming features and implement the same to meet real time requirements.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level Number	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(IT)	Semester	4
Subject Code	BSIT-101	Subject Title	Probability and Statistics
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Rupinder Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	23 rd April, 2024	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks												
Q1	Explain dependent events and independent events with suitable example.	CO7, L1	2												
Q2	Write properties of Binomial Distribution.	CO3, L4	2												
Q3	The following are the intermediate results of two series X and Y: Mean of X=90, Mean of Y=70, N=10, $\sum x^2=6360$, $\sum y^2 = 2860$, $\sum xy = 3900$ (where x and y are deviations from the respective means). Find two regression equations.	CO5, L3	4												
Q4	There are two urns. Urn I contain 1 white and 6 red balls and urn II has 4 white and 3 red balls. One of the urns is selected at random and a ball is drawn from it and found to be white. What is the probability that it is drawn from the 1 st urn?	CO6, L2	4												
Q5	The chances of survival after 25 years are 3 out of 10 for a man and 4 out of 10 for a woman. Construct the probability that: <ul style="list-style-type: none"> • Both will be alive after 25 years. • At least one will alive after 25 years 	CO3, L5	4												
Q6	The number of defects per unit in a sample of 330 units of a manufactured product was found as follow: <table border="1" style="margin: 10px auto;"> <tr> <td>No of defect:</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>No of units:</td> <td>214</td> <td>92</td> <td>20</td> <td>3</td> <td>1</td> </tr> </table> Fit a Poisson Distribution to the data and test goodness of fit.	No of defect:	0	1	2	3	4	No of units:	214	92	20	3	1	CO3, L6	8
No of defect:	0	1	2	3	4										
No of units:	214	92	20	3	1										

Guru Nanak Dev Engineering College, Ludhiana
Department of Information Technology

Program	B.Tech (IT)	Semester	4 th
Subject Code	PCIT-108	Subject Title	Computer Architecture and Microprocessor
MSE No	2	Course Coordinator(s)	Er. Gitanjali
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	22 nd April 2024	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Elucidate how the performance of a multiprocessing environment is enhanced by parallel processing.	CO4, L2	2
Q2	Provide evidence for the claim that "The use of microprocessors makes daily life easier" by using real-time applications.	CO6, L5	2
Q3	Illustrate the need and significance of memory hierarchy. Also elaborate the memory hierarchy in order of their features with their comparative analysis.	CO1, L3	4
Q4	Discuss the purpose of each pin in the 8051 microcontroller pin diagram.	CO6, L2	4
Q5	<ul style="list-style-type: none"> a) Compare and contrast RISC and CISC architecture b) Write an assembly language program to compute the 2's complement of an 8-bit number by taking input as 22Hex. 	CO2, L4 CO5, L6	4
Q6	<p>Consider a system where clock is triggering at the speed of 1MHz (1 clock = 1us). In a pipelined processor, there are 4 stages and each stage takes only 1 clock. If a program has 100 instructions, then calculate</p> <ul style="list-style-type: none"> a) Time without pipeline b) Time with pipeline c) Speed Up and Max Speed Up d) Efficiency 	CO4, L6	8

Course Outcomes (CO)

Students will be able to

1	Identify computer systems, memory organization, Microprocessor and assembly language programming.
2	Clarify instruction formats, RISC and CISC architecture and different addressing modes.
3	Solve basic binary math operations by using the instructions of microprocessor.
4	Compare between pipelining and parallelism.
5	Design structured, well commented, understandable assembly language programs to provide solutions to real world problems
6	Classify the trends and developments of microprocessor technology

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level Number	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(IT)	Semester	4
Subject Code	PCIT-107	Subject Title	Web Technologies
Mid Semester Test (MSE) No.	2	Course Coordinator(s)	Dr. Akshay Girdhar and Prof. Harjot Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	25 th April, 2024	Roll Number	

Note: Attempt all questions. All assumptions must be clearly stated.

Q. No.	Question	COs, RBT level	Marks
Q1	Differentiate between const and define () in PHP.	CO1, L2	2
Q2	Explain the features of CodeIgniter framework.	CO1, L2	2
Q3	Write a JavaScript program to create that changes the displayed image when a button is clicked.	CO6, L6	4
Q4	Explain the differences between GET and POST methods in PHP. When would you use each method, and what are the implications of using one over the other?	CO5, L4	4
Q5	Write a JavaScript program to demonstrate the working of a user-defined function to perform a mathematical computation by passing parameters.	CO6, L6	4
Q6	Create a simple web application for managing employee records in a company. The application should allow users to perform Insert , Update and Delete operations on an "employees" table in a MySQL database. The "employees" table has the following structure: <ul style="list-style-type: none"> • id (Primary Key, Auto Increment) • name (VARCHAR(30), not null) • email (VARCHAR(50), not null, unique) • position (VARCHAR(50), not null) 	CO5, L6	8

Course Outcomes (CO)

Students will be able to

CO1	Understand the basic tools required for Web designing and applications
CO2	Build HTML5 and CSS3 for designing interactive web pages.
CO3	Analyze the basic operations of an AJAX application
CO4	Develop an interactive website using jQuery.
CO5	Acquire the basic usage of PHP construct and its integration with database for developing web modules like, login module, session authentication
CO6	Create and design dynamic web application using contemporary development tools like, MVC framework.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level Number	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
RBT Level Name						

Guru Nanak Dev Engineering College, Ludhiana
Department of Information Technology

Program	B.Tech.	Semester	6
Subject Code	PCIT-104	Subject Title	Database Management System
(MST) No.	2	Course Coordinator	Mohanjit Kaur Kang
Max. Marks	24	Time Duration	1hr 30 mins
Date of MST		Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Elucidate timestamp and validation protocol.		
Q2	Interpret the role of concurrency and serializability in DBMS.	CO3, L1	2
Q3	List down at least ten SQL Queries in DBMS with syntax.	CO2, L5	2
Q4	How does a database maintain data integrity during transactions with ACID properties. Elaborate ACID properties?	CO3, L1	4
Q5	Contrast and compare log based recovery and cascading rollback or shadow paging.	CO3, L3	4
Q6	Illustrate functional Dependency? Explain its use in DBMS. Explain BOYCEE-CODD normal forms and how does it differ from 3NF. OR How you will proceed to evaluate NOSQL. Demonstrate NOSQL databases including instances from Google, Face book, and MetLife case studies.	CO2, CO5, L4, L5	8

Course Outcomes (CO)

Students will be able to

1	Apply knowledge of database system, No Sql database, data mining and SQL structure.
2	Identify, formulate database design, Functional dependencies and recovery techniques
3	Use the techniques, skills and tools such as query handling, normalized relations
4	Design Physical and object relational database.
5	Investigate various case studies using NoSql.
6	Apply the Applications of spatial and multimedia databases for real world.

RBT Classification RBT Level Number	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Create

Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech. (IT)	Semester/ Section	4 th / A&B
Subject Code	PCIT-106	Subject Title	Operating System
Mid Semester Examination (MSE) No.	2 nd	Course Coordinator(s)	Dr. K.S. Mann and Dr. Pankaj Bhambri
Max. Marks	24	Time Duration	09AM to 10.30AM
Date of MSE	24 th April 2024 (Wednesday)	University Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Share the causes of thrashing and overlays.	CO2, L1	2
Q2	Illustrate any four major differences between UNIX, LINUX and Windows.	CO6, L5	2
Q3	Discuss the File Attributes and Operations. Elaborate the File Management with detailed requirement and implementation issues of Contiguous, Linked and Indexed allocation methods.	CO3, L3	4
Q4	Explain the need of virtual memory. Illustrate bad blocks, fragmentation types and file system layered architecture.	CO3, L2	4
Q5	Discuss the Belady's Anomaly and Segmentation. Consider the page reference sequence 1, 2, 3, 7, 6, 1, 2, 5, 3, 7, 0, 4, 2, 3, 6, 0, 3, 2. Compare the number of page faults for LRU, FIFO and Optimal Page Replacement Algorithm with frame size 4.	CO4, L5	4
Q6	Suppose a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 149, and the previous request was at cylinder 99. The queue of pending requests, in FIFO order, is, 86, 1470, 913, 1774, 948, 1590, 1000, 1750, 130. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk scheduling algorithms? a. FCFS b. SSTF c. SCAN d. LOOK e. C-SCAN f. C-LOOK (Direction of Movement is towards the smaller value).	CO5, L5	8

Course Outcomes (CO)

Students will be able

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- 1 Exemplify various types of Operating Systems, deadlocks, Process, File and Memory management.
- 2 Implement various deadlock scheduling algorithms.
- 3 Analyze and apply various memory and file management mechanisms.
- 4 Classify various page replacement algorithms for demand paging.
- 5 Use different disk scheduling algorithm for better utilization of external memory.
- 6 Examine the case studies of different Operating Systems to recapitulate the concepts of Operating System.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)			
	RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	

Note: Students are advised to check each question thoroughly before attempting for the appropriate responses. It will be helpful for proper understanding of the problem-set and step-marking.