

Guru Nanak Dev Engineering College, Ludhiana

Department of Civil Engineering

Program	B.Tech.	Sem	6 th
Sub. Code	OECE-103	Subject	Project Management & Monitoring
MST	2	Teacher	Gurpreet Singh, Manmohan Singh, Prabhjot Singh, Arpan Singh
Max. Mark	24	Time	1 hour 30 minutes
Date	14-5-2025	U.R.No.	

Note: Attempt all questions

Q. No	Question	Marks																																																		
Q1	What is difference between PERT and CPM.	2																																																		
Q2	Why there is a need to update the network?	2																																																		
Q3	Name any two software's which can be employed for planning and monitoring of a project?	4																																																		
Q4	Discuss the different types of floats and explain their significance?	4																																																		
Q5	Explain the method of time cost optimization of project network.	4																																																		
Q6	Consider the data of a project as shown in the following table:	8																																																		
<table><tr><th>Activity</th><th>Normal Time (weeks)</th><th>Normal Cost (Rs)</th><th>Crash Time (weeks)</th><th>Crash Cost (Rs)</th></tr><tr><td>1-2</td><td>7</td><td>700</td><td>4</td><td>850</td></tr><tr><td>1-3</td><td>5</td><td>500</td><td>3</td><td>700</td></tr><tr><td>1-4</td><td>8</td><td>600</td><td>5</td><td>1200</td></tr><tr><td>2-5</td><td>9</td><td>800</td><td>7</td><td>1250</td></tr><tr><td>3-5</td><td>5</td><td>700</td><td>3</td><td>1000</td></tr><tr><td>3-6</td><td>6</td><td>1100</td><td>5</td><td>1300</td></tr><tr><td>4-6</td><td>7</td><td>1200</td><td>5</td><td>1450</td></tr><tr><td>5-7</td><td>2</td><td>400</td><td>1</td><td>500</td></tr><tr><td>6-7</td><td>3</td><td>500</td><td>2</td><td>850</td></tr></table>		Activity	Normal Time (weeks)	Normal Cost (Rs)	Crash Time (weeks)	Crash Cost (Rs)	1-2	7	700	4	850	1-3	5	500	3	700	1-4	8	600	5	1200	2-5	9	800	7	1250	3-5	5	700	3	1000	3-6	6	1100	5	1300	4-6	7	1200	5	1450	5-7	2	400	1	500	6-7	3	500	2	850	
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6-7	3	500	2	850																																																
If the indirect cost per week is Rs. 200, Find the optimal crashed project completion time.																																																				

Guru Nanak Dev Engineering College, Ludhiana			
Program	B.Tech.(IT)	Semester	6
Subject Code	MCI-103	Subject Title	Organizational Behaviour
Mid Semester Test (MST) No.	2	Course Coord(s)	Dr. Jagdeep Singh, Dr Deepak Dhand
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST		Roll Number :-	1203787

Note: Attempt all questions

Q. N.	Question	COs, RBT level	Marks
Q1	What are the causes of conflicts?	CO2, L2	2
Q2	What is the relationship between power and politics?	CO3, L2	2
Q3	Explain the concept of stress at work. As a manager, what steps you will take to prevent and manage stress in the organization?	CO2, L3	4
Q4	Explain in detail on how groups are formed in organizations in different stages and the emergence of informal leaders and working norms.	CO2, L2	4
Q5	Explain Job Satisfaction. What are the main causes of Job dissatisfaction?	CO1, L1	4
Q6	How does organization culture create its impact on workforce? Suggest measures for developing organization culture.	CO2, L3	8

Course Objectives:

- 1 Individuals' — Behaviour in an Individual Context
- 2 Groups/Teams' — Behaviour in an Organisational Context
- 3 Organizations' — How do these Artificial Persons' Behave?

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level No.	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana			
Program	B.Tech.(IT)	Semester	6
Subject Code	MCI-103	Subject Title	Organizational Behaviour
Mid Semester Test (MST) No.	2	Course Coord(s)	Dr. Jagdeep Singh, Dr Deepak Dhand
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST		Roll Number :-	

Note: Attempt all questions

Q. N.	Question	COs, RBT level	Marks
Q1	What are the causes of conflicts?	CO2, L2	2
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Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(IT)	Semester	6
Subject Code	PCIT-114	Subject Title	Introduction to Machine Learning
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Prof. Rupinder Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	16-05-2025	Roll Number	2203751

Note: Attempt all questions

Q. No.	Questions	COs, RBT level	Marks																																				
Q1	Elucidate perceptron in neural networks.	CO1, L1	2																																				
Q2	Differentiate multi-class and multi-label classification.	CO1, L5	2																																				
Q3	Elaborate in detail the steps involved in the Fuzzification process in Fuzzy Logic.	CO2, L2	4																																				
Q4	Perform agglomerative hierarchical clustering on the following dataset using Euclidean distance. Show the step-by-step process using a dendrogram. Data points: A(1, 2), B(2, 2), C(5, 5), D(6, 6)	CO3, L3	4																																				
Q5	Use K-Means clustering to cluster the following data into two groups. Assume cluster centroids are $m_1 = 2$ and $m_2 = 4$. The distance function used is Euclidean distance. { 2, 4, 10, 12, 3, 20, 30, 11, 25 }	CO4, CO5, L6	4																																				
Q6	A dataset contains the following information about whether a student will play cricket based on weather conditions: <table border="1" data-bbox="526 1142 973 1489"> <thead> <tr> <th>Outlook</th><th>Temperature</th><th>Humidity</th><th>Play</th></tr> </thead> <tbody> <tr><td>Sunny</td><td>Hot</td><td>High</td><td>No</td></tr> <tr><td>Sunny</td><td>Hot</td><td>High</td><td>No</td></tr> <tr><td>Overcast</td><td>Hot</td><td>High</td><td>Yes</td></tr> <tr><td>Rainy</td><td>Mild</td><td>High</td><td>Yes</td></tr> <tr><td>Rainy</td><td>Cool</td><td>Normal</td><td>Yes</td></tr> <tr><td>Rainy</td><td>Cool</td><td>Normal</td><td>No</td></tr> <tr><td>Overcast</td><td>Cool</td><td>Normal</td><td>Yes</td></tr> <tr><td>Sunny</td><td>Mild</td><td>High</td><td>No</td></tr> </tbody> </table> Use Naive Bayes classification to predict whether the student will play cricket when: Outlook = Sunny, Temperature = Cool, Humidity = High	Outlook	Temperature	Humidity	Play	Sunny	Hot	High	No	Sunny	Hot	High	No	Overcast	Hot	High	Yes	Rainy	Mild	High	Yes	Rainy	Cool	Normal	Yes	Rainy	Cool	Normal	No	Overcast	Cool	Normal	Yes	Sunny	Mild	High	No	CO6, CO5, L5	8
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Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(IT)	Semester	6 th
Subject Code	PCIT-113	Subject Title	Design and Analysis of Algorithms
Mid Semester Examination (MSE) No.	MSE -II (Jan-May, 2025)	Course Coordinator	Er. Parminder Kaur Wadhwa
Max. Marks	24	Time Duration	1 hour 30 minutes

Note: Attempt all questions

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Roll No. 2203751

Q. No.	Question	COs, RBT level	Marks
Q.1	Illustrate the concept of NP-complete problem classes.	CO5, L3	2
Q.2	Compare the working of Boyer-Moore algorithm and Knuth-Morris-Pratt (KMP) algorithm.	CO4, L4	2
Q.3	Demonstrate how Rabin-Karp algorithm works for DNA pattern matching application.	CO4, L3	4
Q.4	Elaborate how the backtracking technique is applied to solve 0/1 Knapsack problem.	CO2, L3	4
Q.5	Design a backtracking algorithm to find all the combinations of the given numbers represented in a set $S = \{1, 2, 3, 4, 7\}$ whose sum is $m = 10$.	CO2, L6	4
Q.6	Prove the equation eq.(1); for an Instance I of the scheduling problem involving:- number of processors, $m = 3$; number of tasks, $n = 7$; task times $(t_1, t_2, t_3, t_4, t_5, t_6, t_7) = (5, 5, 4, 4, 3, 3, 3)$ Consider $F^*(I)$ be the finish time of an optimal schedule and $F^{\wedge}(I)$ be the finish time of an Longest Processing Time (LPT) schedule. $\frac{ F^*(I) - F^{\wedge}(I) }{F^*(I)} \leq \frac{1}{3} - \frac{1}{3m}$ eq. (1)	CO6, L5	8

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Course Outcomes (CO) Students will be able to

1. Develop an understanding of time and space complexities of an algorithm.
2. Explore basic algorithm design techniques like divide and conquer, greedy, dynamic programming.
3. Explore the various problem solving techniques related to graphs.
4. Solve problems related to strings by applying various algorithms.
5. Identify the relationship between P, NP, NP-hard and NP-complete problems.
6. Understand the importance of approximation algorithms.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
RBT Level No.						
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech.(IT)	Semester	6
Subject Code	PEIT-109	Subject Title	Mean Full Stack Web Development
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Dr. Palwinder Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	15 May, 2025	Uni. Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Elaborate the concept of data binding in Angular?	CO3, L2	2
Q2	Demonstrate the use of directives in an AngularJS web application?	CO3, L3	2
Q3	Illustrate, How the components of the simple Angular app fit and work together?	CO4, L3	4
Q4	Discuss the process to handle forms and submission of data in Angular?	CO4, L6	4
Q5	Demonstrate different levels of services in Angular with example.	CO2, L4	4
Q6	Design a single-page modular web application with Angular using navigation and routing parameters?	(CO3, CO4), L6	8

Course Outcomes (CO)

Students will be able to

1	Develop web applications using the concept MEAN stack development.
2	Create and design web applications using Node.js and Express framework.
3	Apply the knowledge of AngularJS and MongoDB for web page designing.
4	Identify, formulate and solve engineering problems in the area of dynamic responsive web applications
5	Function on multi-disciplinary teams through web application creation

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

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Guru Nanak Dev Engineering College, Ludhiana

Department of Civil Engineering

Program	B.Tech.	Sem	6 th
Sub. Code	OECE-103	Subject	Project Management & Monitoring
MST	1	Teacher	Prabhjot S., Gurpreet S. Manmohan S. Arpan S.
Max. Mark	24	Time	1 hour 30 minutes
Date	19-3-2025	R.No.	

Note: Attempt all questions

Q. No	Question	Ma rk
Q1	Differentiate between Gantt bar chart & Milestone chart.	2
Q2	Categorize the various rules for provision of Dummies in network.	2
Q3	Planning is the starting point of all management functions. Discuss.	4
Q4	Draw the network for the following project & Apply Fulkerson's rule for arranging the events in the network :- - A is start event and K is end event - A precedes event B. - J is successor event to F, - C and D are successor events to B. - D is preceding event to G, - E and F occur after event C, - C restrains the occurrence of G and G precedes H, - H precedes J and K succeeds J, - F restrains the occurrence of H.	4
Q5	What is meant by probability distribution curve? Differentiate clearly between normal probability distribution curve and beta distribution.	4
Q6	Draw the project network, find the expected duration and variance of each activity. Calculate the earliest, latest occurrence time and <u>slack</u> for each event & determine the critical path.	8

Activity	Optimistic Time	Most Likely Time	Pessimistic Time
1-2	1	7	13
1-6	2	5	14
2-3	2	14	26
2-4	2	5	8
3-5	7	10	19
4-5	5	5	17
6-7	5	8	29
5-8	3	3	9
7-8	8	17	32

Guru Nanak Dev Engineering College, Ludhiana

Program	B.Tech.	Semester	5
Subject Code	MCI-103	Subject Title	Organizational Behaviour
Mid Semester Test (MST) No.	1	Course Coordinator(s)	
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	20-9-2025	Roll Number :-	2203751

Note: Attempt all questions

Q. N.	Question	COs, RBT level	Marks
Q1	Explain organizational behaviour.	CO1, L2	2
Q2	Differentiate between Attitude and Perception	CO2, L4	2
Q3	Explain Learning. What are the various elements of learning?	CO1, L2	4
Q4	Explain briefly: a) Job Satisfaction. b) Motivation	CO2, L2	4
Q5	Describe leadership. Explain the theories of leadership in detail.	CO2, L3	4
Q6	Explain the challenges and opportunities for managers in using OB concepts.	CO3, L4	8

Course Objectives:

1	Individuals' — Behaviour in an Individual Context
2	Groups/Teams' — Behaviour in an Organizational Context
3	Organizations' — How do these Artificial Persons' Behave?

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
RBT Level No.	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech.(IT)	Semester	6
Subject Code	PCIT-115	Subject Title	DevOps: S/w Architecture
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Dr. Kamaljit Kaur and Pf. Himani Sharma
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST		Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Define a Dockerfile and its role in building containers.	CO5, L1	2
Q2	Discuss four major differences between Docker volumes and bind mounts.	CO4, L4	2
Q3	Describe Docker image, how is it different from docker container and elaborate the benefits in application deployment.	CO6, L3	2+1+1=4
Q4	Elucidate the concept of Jenkins architecture with the help of diagram.	CO3, L4	4
Q5	Illustrate the steps used to demonstrate how Jenkin is used to build projects and integrate with version control systems like GIT.	CO5, L4	4
Q6	Discuss the various steps used in docker container life cycle. Explain the concepts of docker compose, docker file and docker image in detail also elaborate the commands to start, stop and kill a container.	CO6, L5	8

Course Outcomes (CO)

Students will be able to

1	Contrast the various drivers accountable for the surfacing of DevOps
2	Restate the service delivery process and business benefits
3	Illustration of most common and popular DevOps tools
4	Assessment of critical success factors for DevOps implementation
5	Evaluations of the results with GIT, GITHUB, Jenkins and Dockers
6	Integration of GITS, Dockers and Jenkins

Integration of Git, Docker and Jenkins						
RBT Classification	Lower Order Thinking Levels (LOTS)	Higher Order Thinking Levels (HOTS)				
RBT Level Number	L1	L2	L3	L4	L5	L6
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Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech.(IT)	Semester	6
Subject Code	PEIT-109	Subject Title	Mean Full Stack Web Development
Mid Semester Test (MST) No.	1	Course Coordinator(s)	Dr. Palwinder Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST		Uni. Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Describe JavaScript closures with example.	CO2, L2	2
Q2	Demonstrate how to render views in express file?	CO1, L3	2
Q3	Discuss the process of implementation of MVC Pattern. Also explain Vertical and horizontal folder structure with example.	CO1, L6	4
Q4	Enlist the technologies that make up the MEAN stack? Explain in detail.	CO1, L2	4
Q5	Design a common MEAN stack architecture using a API built in Node.js, Express, and MongoDB?	CO2, L6	4
Q6	Creating a new document/database using MongoDB and perform CRUD Operations like <u>insert</u> , <u>update</u> , <u>read</u> and <u>delete</u> data with examples.	(CO3, CO4), L6	8

Course Outcomes (CO)

Students will be able to

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Guru Nanak Dev Engineering College, Ludhiana			
Department of Information Technology			
Program	B.Tech.(IT)	Semester	6
Subject Code	PCIT-115	Subject Title	DevOps: S/w Architecture
Mid Semester Test (MST) No.	1	Course Coordinator(s)	Dr. Kamaljit Kaur & Pf.Himani Sharma
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	20-03-25	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Illustrate various steps involved for moving the process from working to staging area and the concept of unstaging.	CO1, L2	2
Q2	Distinguish four major differences of Git merge and GIT rebase.	CO5, L5	2
Q3	Illustrate the concept of Devops. Explain how it works? Also explain various Devops tools in detail.	CO3, L2	4
Q4	Explain the concept of "Immutable Infrastructure" and its benefits in a Devops environment. How does it differ from traditional infrastructure management?	CO4, L3	4
Q5	Compare and contrast continuous integration, continuous delivery and continuous deployment. How do they contribute to the Devops pipeline?	CO2, L4	4
Q6	Design a simple GIT workflow for a small project team. Include the steps for creating branches, committing changes and merging branches into the main branch.	CO5, L6	8

Course Outcomes (CO)

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M458C

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Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(IT)	Semester	6 th
Subject Code	PCIT-113	Subject Title	Design and Analysis of Algorithms
Mid Semester Examination (MSE) No.	MSE -I (Jan-May, 2025)	Course Coordinator	Er. Parminder Kaur Wadhwa
Max. Marks	24	Time Duration	1 hour 30 minutes

Note: Attempt all questions

Roll No. _____

Q. No.	Question	COs, RBT level	Marks
Q.1	Define the principle of optimality.	CO2, L1	2
Q.2	Formulate the Big-Oh notation of the following code snippet:- for (i=0; i < n; i++) { for (j=0; j < i; j++) { statement; } }	CO1, L6	2
Q.3	Illustrate the performance of algorithm using Divide and Conquer technique to find Maximum and Minimum values from an array of 'n' integers.	CO2, L3	4
Q.4	Demonstrate the application of dynamic-programming approach to solve multi-stage graph problem.	CO2, L3	4
Q.5	Compare the efficiency of Bellman and Ford Algorithm with Dijkstra's algorithm to solve single-source paths problem in a graph.	CO3, L4	4
Q.6	Justify that dynamic programming approach ensures optimal solution than a greedy algorithmic approach for earning <i>maximum profit</i> for the 0/1 Knapsack problem.	CO2, L5	8

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Guru Nanak Dev Engineering College, Ludhiana

Department of Information Technology

Program	B.Tech.(IT)	Semester	6
Subject Code	PCIT-114	Subject Title	Introduction to Machine Learning
Mid Semester Test (MST) No.	1	Course Coordinator(s)	Prof. Rupinder Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	18-03-2025	Roll Number	

Note: Attempt all questions

Q. No.	Questions	COs, RBT level	Marks																																							
Q1	What is the key difference between machine learning and traditional programming?	CO1, L1	2																																							
Q2	Illustrate hyperplane and support vectors in SVM.	CO1, L5	2																																							
Q3	Discuss at least four evaluation metrics for regression.	CO1, L3	4																																							
Q4	Explain Linear Regression and obtain the regression equation of y on x from the following: <table><tr><td>x</td><td>2</td><td>4</td><td>6</td><td>8</td></tr><tr><td>y</td><td>3</td><td>7</td><td>5</td><td>10</td></tr></table>	x	2	4	6	8	y	3	7	5	10	CO2, L2	4																													
x	2	4	6	8																																						
y	3	7	5	10																																						
Q5	Differentiate amongst Supervised, Unsupervised and Reinforcement Learning with suitable examples.	CO1, L4	4																																							
Q6	a) Construct decision tree algorithm with given example. <table><tr><th>Sno.</th><th>Sky</th><th>AirTemp</th><th>Humidity</th><th>Wind</th><th>Water</th><th>Forecast</th><th>Enjoy Sport</th></tr><tr><td>1</td><td>Sunny</td><td>Warm</td><td>Normal</td><td>Strong</td><td>Warm</td><td>Same</td><td>Yes</td></tr><tr><td>2</td><td>Sunny</td><td>Warm</td><td>High</td><td>Strong</td><td>Warm</td><td>Same</td><td>Yes</td></tr><tr><td>3</td><td>Rainy</td><td>Cold</td><td>High</td><td>Strong</td><td>Warm</td><td>Change</td><td>Yes</td></tr><tr><td>4</td><td>Sunny</td><td>Warm</td><td>High</td><td>Strong</td><td>Cool</td><td>Change</td><td>Yes</td></tr></table> b) Examine the stopping criteria used in decision trees. Provide justification with sound arguments.	Sno.	Sky	AirTemp	Humidity	Wind	Water	Forecast	Enjoy Sport	1	Sunny	Warm	Normal	Strong	Warm	Same	Yes	2	Sunny	Warm	High	Strong	Warm	Same	Yes	3	Rainy	Cold	High	Strong	Warm	Change	Yes	4	Sunny	Warm	High	Strong	Cool	Change	Yes	CO5, L6 <
Sno.	Sky	AirTemp	Humidity	Wind	Water	Forecast	Enjoy Sport																																			
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes																																			
2	Sunny	Warm	High	Strong	Warm	Same	Yes																																			
3	Rainy	Cold	High	Strong	Warm	Change	Yes																																			
4	Sunny	Warm	High	Strong	Cool	Change	Yes																																			

"Eat 5 star do nothing"

Course Outcomes (CO) Students will be able to:

1. Apply Supervised Learning, Unsupervised learning, Deep Learning, Visualization techniques.
2. Recognize and formalize a task as a machine learning problem.
3. Interpret and present the predicted model.
4. Identify suitable algorithms to tackle different machine learning problems.
5. Apply machine learning algorithms to real datasets.
6. Make powerful and accurate predictions.

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