Guru Nanak Dev Engineering College, Ludhiana
Department of Information Technology

Program	B.Tech.(IT	Semester	1
Subject Code	BSC-105	Subject Title	Chemistry
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Dr Amanpreet kaur Mandeep kaur Dr.Rajvir kaur Karan Bhalla
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	07Nov, 2023	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Define the term Eutectic point used in Pb-Ag system & give its importance.	CO3, L1	2
Q2	Differentiate between $CH_2=CH-CH=CH-CH_3$ and $CH_2=CH-CH_2-CH=CH_2$ by using UV –Visible spectroscopy.	CO2, L4	4 2
Q3	Explain the different modes of vibrations in IR spectroscopy.	CO2, L2	4
Q4	Draw a neat labelled phase diagrams of Water system & Calculate 'F' for area ,curve and triple point .	CO3, L2	4
Q5	Auxochrome causes bathochromic shift ,justify the statement.	CO2, L5	4
Q6	(i) Determine the high resolution HNMR spectra of (a) $CH_3CHClCOCH_3$ (b) $CHCl_2CH_2Cl$ (iii) Evaluate the following statement, The vibrational frequency of carbonyl group in $CH_3CHO = 1745$ cm^{-1} and in $CH_3-CO-CH_3 = 1715$ cm^{-1}	CO2,L5	6+2

Course Outcomes (CO)
Students will be able to

1	Understand important Properties of simple and complex molecules and apply it to explain the behaviour of materials.
2	Identification of molecules based on their excitation in different molecular orbitals.
3	Interpret the phase diagram and use it in industry
4	Apply the principles of water chemistry, on characteristics of surface water, drinking water, waste water and in industrial applications
5	Analyse relationships between different thermodynamic functions with electrochemistry
6	Understand the basic concept of different types of interactions in molecules and use it to explain their stereochemistry and identify major chemical reactions use synthesis of molecules

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

Guru Nanak Dev Engineering College, Ludhiana

Department of Applied Science

Program	B.Tech (CSE,IT)	Semester	1
Subject Code	BSC-104	Subject Title	Mathematics II
Mid Semester Test (MST) No.	2nd	Course Coordinator(s)	Prof. Gagandeep Kaur, Prof. Neeraj Kumar Prof. Jaskiran Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	06-11-2023	Roll Number	

Note: Attempt all questions

Q. No.	Question	CO, RBT level	Marks
Q1	If $w = f(x,y)$, $x = r\cos\theta$, $y = r\sin\theta$. Show that $\left(\frac{\partial w}{\partial r}\right)^2 + \frac{1}{r^2}\left(\frac{\partial w}{\partial \theta}\right)^2 = \left(\frac{\partial f}{\partial x}\right)^2 + \left(\frac{\partial f}{\partial y}\right)^2$.	CO5, L3	2
Q2	Determine the directional derivative of $2xy + y^2z$ at point $(1, -1)$ in the direction of $\hat{\imath} + 2\hat{\jmath}$?	CO1, L4	2
Q3	Solve the double integral by changing into polar coordinates $$\iint (x^2 + y^2)^{\frac{3}{2}}\, dxdy \text{ over the circle } x^2 + y^2 = 1.$$	CO3, L3	4
Q4	Find the volume bounded by the cylinder $x^2 + y^2 = 4$ and the planes $y + z = 4$ and $z = 0$.	CO3, L3	4
Q5	If $u = \tan^{-1}\frac{y^2}{x}$, then Prove that : $x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2} = -\sin 2u \sin^2 u$	CO5, L5	4
Q6	Verify Stoke's theorem for $\vec{F} = (x^2 + y^2)\hat{\imath} - 2xy\hat{\jmath}$, taken around the rectangle bounded by the lines $x = a, x = -a, y = 0$ and $y = b$,	CO4, L5	8

Course Outcomes (CO)

Students will be able to

1	Understand and apply concepts of vector calculus , differential equations and calculus of complex functions to engineering problems
2	Sketch basic cartesian , parametric and polar curves
3	Apply techniques of multiple integrals in engineering problems
4	Evaluate integrals of vector point functions over line , surface and volumes
5	Substantiate the ability to integrate knowledge and ideas of multivariable calculus to engineering problems
6	Understand how to decompose the periodic functions in series of sine and cosine

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

Guru Nanak Dev Engineering College, Ludhiana
Department of Applied Sciences

Program	B. Tech.(CSE,IT)	Semester	1
Subject Code	HSMC-101	Subject Title	English
Mid Semester Test (MST) No.	2	Course Coordinator(s)	Ms.Puneet Narang Ms.Nisha Ms.Manjot Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	4.11.2023	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Identify the sentence structures. a) The girl is making a cake in the kitchen. b) He bought his sister a doll.	CO4, L3	2
Q2	"The rapid reading techniques of scanning and skimming prepare the reader for intensive reading." Justify.	CO2, L5	2
Q3	Underline the dependent clause in each of the following sentences. Also identify whether each of the dependent clause is a noun clause or an adjective clause or an adverb clause. a) The boy who is playing outside is my brother. b) If I make a promise, I will keep it. c) You may go wherever you like. d) I never believed what people said about him.	CO4, L3	4
Q4	Discuss various reading strategies which play important role in fulfilling different reading purposes.	CO2, L3	4
Q5	Compose a paragraph on the following topic. *250 words* Has Internet Made Society Better?	CO5,L6	4
Q6	Assume that you are Ramesh Malik, the Purchase Manager of Alpha Engineering Company, Salt Lake City, Kolkata. Your company sent an order for fifteen HP Scanners (Model: ScanJet 3200C) to National Systems Limited, Electronics City, Hosur Road, Bangalore. But you received only 12 scanners. Compose a letter to be sent to Suresh Gautam, the GM, Sales and Marketing of National Systems Limited, making a complaint and asking him to send the remaining 3 scanners.	CO6, L6	8

Course Outcomes (CO)
Students will be able to

1	Grasp the significance of effective communication in English at work places.		
2	Acquire effective listening skills and reading skills for academic and professional efficiency.		
3	Present their thoughts and ideas in an organised form in written form		
4	Enhance grammatical competence in English through lessons on English language usage.		
5	Utilise suitable writing styles while expressing themselves in written form in English		
6	Produce effectively different forms of professional writing.		

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

Guru Nanak Dev Engineering College, Ludhiana			
Department of Applied Sciences			
Program	B.Tech.CSE, IT	Semester	1
Subject Code	ESE-104	Subject Title	Programming for Problem Solving
Test	2	Course Coordinator(s)	Ranjodh Kaur, Siddharth Jain, Gagneet Kaur, Kapil Sharma,Jaswant Singh,Sita Rani, Kuljit Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of Test	16th October, 2023	Roll Number	

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

Q. No.	Question	MM
Q1	Briefly illustrate semantic and logical errors with the help of examples.	2
Q2	What will be the output for the following code snippet:	2

```
int main ()
{
int i=1,j=1;  int a = 0;
int y;   int x = 11; char c='A';
    y = sizeof(x++);
    printf("%i  %i  %i", y, x,sizeof(c));
  double d = 10.5;
printf(" %lu", sizeof(a + d));
for(i=1;i<=3;i++)

    {

      for(j=1;j<=3;j++)

        if(++i ==2 || --j==2)
        {
         continue;
        }
       printf(" %d",i);
       printf(" %d",j);
       if(++i==4 || --j==3)
        {
          break;
        }

    }
printf(" %d",i);
printf(" %d",j);
return 0;

}
```

Q3	Define flowchart. Construct a flowchart and write an algorithm to find how many times the digit **D** appears in the number **N**.	4
Q4	Differentiate between call by value and call by reference with the help of examples.	4
Q5	Create a user-defined function to find the square of any positive integer number read through the keyboard. Make use of parameter passing and return type concepts.	4
Q6	Develop a menu driven code that does the following: • If 'A' is entered, user-defined function 'isPalindrome' must be able find whether number entered by user is palindrome or not. • If 'B' is entered, user-defined function 'kgToPounds' must be able to convert kilograms to pounds, value to be converted must be read through the keyboard. (One kilogram is equal to 2.204 pounds). • If any other 'character' is entered, code must be able to terminate with a suitable message. [Make use of parameter passing and return type concepts while developing code.]	8

Guru Nanak Dev Engineering College, Ludhiana
Department of Applied Sciences

Program	B.Tech.CSE, IT	Semester	1
Subject Code	ESE-104	Subject Title	Programming for Problem Solving
Mid Semester Exam (MSE) No.	2	Course Coordinator(s)	Ranjodh Kaur, Siddharth Jain, Gagneet Kaur, Kapil Sharma, Jaswant Singh, Sita Rani, Kuljit Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MSE	09th November, 2023	Roll Number	

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

Q. No.	Question	MM
Q1	The elements of an array are given 32, 51, 27, 85, 66, 23, 13, 57. Identify and write the arrangement of elements after first pass of the bubble sort method.	2
Q2	How does a pointer store the memory address of a variable? Give example.	2
Q3	Compare in detail selection sort with insertion sort algorithm.	4
Q4	Provide a detailed explanation of the recursive process with the help of a user-defined function, describing how the function calls itself and terminates to solve a specific problem.	4
Q5	Given two matrices, the task is to multiply them. Matrices can either be square or rectangular. Write a program for this task.	4
Q6	Consider a scenario where you're tasked with managing student records using an array of structures in C. The structure 'Student' contains the following fields: **studentID, name, age,** and **grade**. Write a program that allows the user to perform the following tasks: a) Input student details (ID, name, age, grade) for 'n' students (where 'n' is determined by the user). b) Display the details of all students in the record. c) Find and display the student(s) with the highest grade. In your program, implement functions for each of these tasks.	8

Analyse ... concept of differe... type... synthesis of molecules ... Levels (HOTS)

Guru Nanak Dev Engineering College, Ludhiana

Department of Applied Sciences

Program	B.Tech CSE, IT	Semester	1	
Subject Code	ESE-104	Subject Title	Programming for Problem Solving	
Mid Semester Exam (MSE) No.	1	Course Coordinator(s)	Ranjodh Kaur, Siddharth Jain, Gagneet Kaur, Kapil Sharma, Jaswant Singh, Sita Rani, Kuljit Kaur	
Max. Marks	24			
Date of MSE	28ᵗʰ September, 2023	Time Duration	1 hour 30 minutes	
		Roll Number		

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

Q. No.	Question	COs, RBT level	MM
Q1	Differentiate between algorithm and pseudocode with the help of an example.	CO1, L2	2

Q2	What will be the output for the following code snippet:
	 `int main ( )`
	 `{`
	 `int i=1,j=1;`
	 `for(i=1;i<=3;i++)`
	 `{`
	 `for(j=1;j<=3;j++)`
	 `{`
	 `if(i ==2 && j==2)`
	 `continue;`
	 `}`
	 `printf("in continue");`
	 `printf(" %d",i);`
	 `printf(" %d",j);`
	 `if(++i==4 ||, --j==5)`
	 `{`
	 `break;`
	 `}`
	 `}`
	 `}`
	 `printf(" %d",i);`
	 `printf(" %d",j);`
	 `return 0;`
	 `}`
		CO4, L3	2

Q3	What goes behind the scene when you attempt to get an output from a source code in C programming language? Elaborate the process steps with the help of diagram.	CO2, L2	4
Q4	Given a number N and a digit D. Write a program to find how many times the digit D appears in the number N. (For example N is 13314, D is 3, answer will be 2. Value of N and D should be read through the keyboard and case must be processed if N and D are positive).	CO4, L3	4
Q5	"Initialization is always out of the loop", this statement given in double quotes is true for which loop(s); compare and contrast the identified loop(s) with other loop(s) in detail.	CO4, L4	4
Q6	Design a menu driven code that does the following: • If '1' is entered, user-defined function '**add**' must be able to add two positive numbers using a user-defined function • If '2' is entered, user-defined function '**multiplication**' must be able to print multiplication table of positive integer numbers from 1 to **n**. • If any other integer is entered, code must be able to terminate with a suitable message.	CO6, L6	8

Guru Nanak Dev Engineering College, Ludhiana

Department of Applied Science

Program	B.Tech.(CSE,IT)	Semester	1
Subject Code	BSC-104	Subject Title	Mathematics II
Mid Semester Test (MST) No.	1st	Course Coordinator(s)	Dr. Gagandeep Kaur, Mr. Neeraj, Ms. Jaskiran Kaur
Max. Marks	24		
Date of MST	25-09-2023	Time Duration	1 hour 30 minutes
		Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Sketch the region of integration and evaluate $\int_0^2 \int_0^{y^2} \frac{x}{y} e^y dxdy$.	CO3, L3	2
Q2	Check whether the curve $r = a\sin 3\theta$ passes through pole ? Also find tangents at the pole if there exists any.	CO2, L2,L4	2
Q3	Trace the curve $x^3 + y^3 = 3axy$, $a \geq 0$	CO2, L3	4
Q4	Change the order of integration in $\int_0^1 \int_{x^2}^{2-x} xy\, dydx$ and hence evaluate the same.	CO3, L3,L5	4
Q5	Obtain the half range sine series for the function $f(x)=x^2$ in the interval $0 \leq x \leq 3$.	CO6, L5	4
Q6	Expand the Fourier series for the function $f(x)=|\cos x|$ in the interval $(-\pi, \pi)$	CO6, L3,L5	8

Course Outcomes (CO)

Students will be able to

1	Understand and apply concepts of vector calculus , differential equations and calculus of complex functions to engineering problems.
2	Sketch basic cartesian , parametric and polar curves.
3	Apply techniques of multiple integrals in engineering problems.
4	Evaluate integrals of vector point functions over line , surface and volumes .
5	Substantiate the ability to integrate knowledge and ideas of multivariable calculus to engineering problems .
6	Understand how to decompose the periodic functions in series of sine and cosine .

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

Guru Nanak Dev Engineering College, Ludhiana
Department of Applied Sciences

Program	B. Tech.(CSE,IT)	Semester	1
Subject Code	HSMC-101	Subject Title	English
Mid Semester Test (MST) No.	1	Course Coordinator(s)	Ms.Puneet Narang, Ms. Nisha, Ms. Manjot Kaur
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	26.09.2023	Roll Number	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Describe the role of empathetic listening in a communicative process.	CO1, L2	2
Q2	How do upward channels of communication, available in your college, extend support to you as a student? Answer briefly by taking example from your own college set up.	CO1, L5	2
Q3	Indicate the critical difference between successful and ineffective communication.	CO1, L2	4
Q4	**Study the following statements and mark as true or false against each of them.** a) Both Encoding and Decoding of message are also influenced by our emotions. b) Your communication will be very effective if you exclusively focus on using impressive vocabulary and correct grammar. **Identify the type of communication barrier that describes each of the following situations.** c) Every time I have a meeting with Mr. Smith, I end up disagreeing with him about a particular issue. d) This room is horrible to work in. I am able to hear everyone around and there is no scope for privacy.	CO1,CO4, L4	4
Q5	What, in your opinion, are certain poor listening practices being followed by students during the classroom learning?	CO2,L5	4
Q6	**DO AS DIRECTED.** 1) Yesterday, there was an accident ---- the corner of the street. (Fill in preposition suitably) 2) In this poem, the poet describes ---- his childhood. (Fill in preposition suitably) 3) The woman, with all the dogs, (walk/walks) down my street.(Choose the correct subject – verb combination) 4) The President, accompanied by his wife, (is/are) travelling to India. (Choose the correct subject –verb combination) 5) The corporation paid ---- stockholders a healthy dividend on----investments.(Fill in the blanks with suitable pronouns) 6) He is pursuing his graduation from ----university in New Delhi.(Fill in correct article) 7) The tickets are affordable. These just cost twenty dollars each. (Make suitable correction) 8) I call my mother only when I am sick. (Make suitable correction)	CO4, L5	8x1

Course Outcomes (CO)
Students will be able to

1	Grasp the significance of effective communication in English at work places.
2	Acquire effective listening skills and reading skills for academic and professional efficiency.
3	Present their thoughts and ideas in an organised form in written form.
4	Enhance grammatical competence in English through lessons on English language usage.
5	Utilise suitable writing styles while expressing themselves in written form in English.
6	Produce effectively different forms of professional writing.

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