



GIET UNIVERSITY, GUNUPUR – 765022
B. Tech –2nd Semester (2023-2024): CYCLE TEST - II
Subject Name: Eng. Mathematics-II
 (Common to all branches)

Time: 1.30 hrs

Maximum: 40 Marks

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

	CO #	Blooms Level
a. Find the parametric representation of the straight line through the points A(1,2,3) and B(3,2,0)	4	2
b. Find the unit normal to the surface $x + y + z = 1$	5	1
c. Define convergent of a sequence and Radius of Convergence.	2	2
d. Check the exactness of the differential $F = 2xy^2 dx + 2x^2 y dy + dz$	5	1
e. Find the angle between two vectors $2i+3j-k$ and $-1i+2j+k$	4	2

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions

	Marks	CO#	Blooms Level
2.a. Prove that $\text{div}(f\nabla g) = f\nabla^2 g + \nabla f \cdot \nabla g$	5	4	2
b. Find the direction derivative of f at P in the direction of the vector V , $F = \ln(x^2 + y^2)$, $P(4, 0)$, $V = [1, -1]$	5	4	2
(OR)			
c. Find the Directional derivative of f at point P in the direction of vector a , $f = \frac{1}{\sqrt{x^2+y^2+z^2}}$, $P: (3, 0, 4)$ $a = i + j + k$.	5	4	3
d. Evaluate $\int_0^3 \int_{-y}^y (x^2 + y^2) dx dy$ by changing the order.	5	4	3
3.a. Calculate $\oint_C F \cdot dr$ where the Force $F = [xy, x^2y^2]$ and work in the displacement along C is the quarter - circle from (2,0) to (0,2) with centre at (0,0).	5	5	3
b. By using Greens theorem evaluate $\oint_C F \cdot dr$ where $F = \frac{e^y}{x} i + (e^y \ln x + 2x) j$ Where $R: 1 + x^4 \leq y \leq 2$	5	5	3

y : 1474
2-12



(OR)

- c. Test the exactness and evaluate the integral $\int_{(0,\pi)}^{(3,\pi/2)} e^x (\cos y dx - \sin y dy)$. 5 5 3
- d. Using Gauss divergence theorem, evaluate the integral $\iiint_V F \cdot dA$ of $F = [x^3, y^3, z^3]$ and S is the sphere $x^2 + y^2 + z^2 = 9$. 5 5 2
- 4.a. Using Greens theorem evaluate the line integral of $F[x^2 e^y, y^2 e^x]$ over the curve C : the rectangle with vertices $(0,0), (2,0), (2,3), (0,3)$. 5 6 2
- b. Evaluate the Integral $\int_{(0,1,2)}^{(1,-1,7)} (3x^2 dx + 2yz dy + y^2 dz)$ by showing F has potential and integral is path independent. 5 6 2

(OR)

- c. Solve the differential equation by using power series solution method $y'' - 2y' + 3y = 0$. 5 4 2
- d. Find the Radius of convergence of the series
(i) $\sum_{n=0}^{\infty} \frac{1}{\sqrt{n+1}}$ (ii) $\sum_{n=0}^{\infty} \frac{1}{\log n}$ 5 4 2

ans

$$4 + 0e^2 - \frac{9}{3}e^3 = 0$$

$$-5 + 0e^2 - \frac{9}{3}e^3$$

$$\frac{-5e^3}{3}$$

$$-\frac{5e^3}{3}$$





GIET UNIVERSITY, GUNUPUR – 765022
B. Tech –2nd Semester (2023-2024): CYCLE TEST - I
Subject Name– MATH-II
 (Common to all branches)

Time: 1.30 hrs

Maximum: 40 Marks

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

	CO #	Blooms Level
a. Find the inverse Laplace Transformation of $\frac{e^{-5t}}{s^2 + 9}$	3	2
b. Find the Laplace transformation of $e^{2t} * \cos 4t$	3	2
c. State the condition for the existence of Laplace Transformation of $f(t)$.	3	1
d. Define Complete Solution and Particular Solution.	1	1
e. Form a PDE by elimination arbitrary function $z = f(\sin x + \cos y)$	1	2

PART – B (10 x 3 = 30 Marks)

Answer ALL Questions

	Marks	CO#	Blooms Level
2.a. Solve $(D_x^3 - 3D_x^2 D_y + 2D_x D_y^2)Z = 0$	3	1	2
b. Solve the PDE by Charpit's method $qx - p^2y - q^2y = 0$ (OR)	7	1	2
c. Solve $x(y-z)p + y(z-x)q = z(x-y)$ by Lagrange's Method	3	1	2
d. Solve the PDE by Charpit's method $px + qy \pm pq = 0$	7	1	2
3.a. Find the Laplace inverse transformation of the following $\frac{1}{(S^2 + a^2)^2}$ by using Convolution Theorem	5	3	2
b. Solve the differential equation using Laplace Transformation $y'' - 2y' + y = e^t$, $y(0)=2$, $y'(0) = -1$ (OR)	5	3	2
c. Solve the following integral equations $y(t) = te^t - 2e^t \int_0^t e^{-\tau} y(\tau) d\tau$	5	3	2
d. Find the Laplace inverse transformation of the following $\frac{S^2}{(S^4 + a^4)}$ $m^3 - 3m^2 + 2m$	5	3	2

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Formation of PDE by elimination of arbitrary constants

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$$

5 1 2

b

Solve the problem by Lagrange's method

$$(y+z)p + (z+x)q = x+y$$

(OR)

5 1 2

c

Solve the differential equation using Laplace Transformation

$$y'' - 4y' + 3y = 6t - 8, \quad y(0) = 0, \quad y'(0) = -14$$

5 3 2

d

Find the inverse Laplace Transformation of $\ln \frac{(s+2)}{(s+3)}$

5 3 2

$$\begin{aligned} & \frac{1}{s^2+1} = \frac{1}{(s-i)(s+i)} \\ & = \frac{A}{s-i} + \frac{B}{s+i} \\ & \frac{1}{(s-i)(s+i)} = \frac{A(s+i)}{(s-i)(s+i)} + \frac{B(s-i)}{(s+i)(s-i)} \\ & \frac{1}{(s-i)(s+i)} = \frac{A(s+i) + B(s-i)}{(s-i)(s+i)} \\ & 1 = A(s+i) + B(s-i) \\ & 1 = As + Ai + Bs - Bi \\ & 1 = (A+B)s + (A-B)i \end{aligned}$$

$$\frac{1}{(s^2+1)^2}$$

$$\frac{1}{s^2+1} = \frac{1}{(s-i)(s+i)}$$

$$\sin(at+b) = \sin a \cos b + \cos a \sin b$$





GIET UNIVERSITY, GUNUPUR – 765022
B. Tech – 2nd Semester (2023-2024): CYCLE TEST -II
BESBS 2040– Data Structures and Algorithms
(Common to all branches)

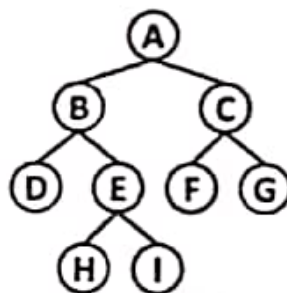
Time: 1.30 hrs

Maximum: 40 Marks

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

	CO #	Blooms Level
a. Write down the steps to find the sum of the info parts of all the nodes in a single linked list.	3	2
b. What is linked Queue?	3	1
c. What is a strictly binary tree?	3	2
d. Write the piece of statements to delete a new node pointed by PTR1 pointer which is present in between the two nodes pointed by PTR2 and PTR3.	4	1
e. Find the in-order, pre-order and post-order sequence of nodes for the given tree below.	4	2



PART – B (10 x 2 = 20 Marks)

Answer ALL Questions

	Marks	CO#	Blooms Level
2. a. Write down the algorithm for implementing radix sort on the elements given: 123, 456, 90, 11, 20, 5, 789, 765, 543, 99, 232, 444, 900, 203, 434	5	3	2
b. Write down the non-recursive in-order traversal algorithm for traversing the nodes of a binary tree.	5	3	3
(OR)			
c. Write down the algorithms to implement the operations on single linked list: 1) insertion of a new node at the end	5	4	2

2) deletion of a node from the end.

- d. Write down the memory representation of a binary tree given below:



5 3 2

- 3.a. Write down the algorithms for implementing linear queue concept using single linked list.

5 4 2

- b. Given a sequence of nodes : 44, 22, 11, 55, 77, 99, 88, 66, 33

5 3 2

Construct a Binary Search Tree and then find the post-order sequence of nodes in the tree.

(OR)

- c. Write down the algorithm to implement bubble sort on the list of elements given: 33, 45, 77, 64, 12, 9, 66, 63, 96, 46, 58

5 4 3

- d. Write down the algorithm to implement deletion of a node from a given location in a double linked list.

5 4 2

- 4.a. Define terminologies: skew binary tree, depth, leaf node, degree, level

5 2 2

- b. Given Binary Tree:

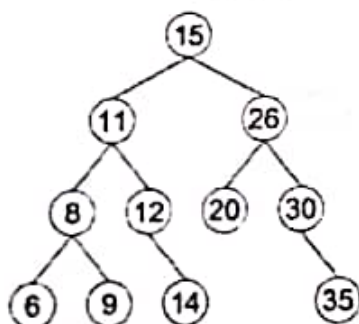
What are the leaf nodes?

5 2 1

What are the non-leaf nodes?

How many levels exist?

What is the maximum degree available in this tree?



(OR)

- c. Write down the algorithm for implementing insertion of a node in Binary Search Tree?

5 4 3

- d. Write down the algorithm to apply searching for a node in a double linked list.

5 4 2

BTB-06



(C)

GIET UNIVERSITY, GUNUPUR - 765022
B. Tech -2nd Semester (2023-2024): CYCLE TEST - I
BESBS 2040- DATA STRUCTURES & ALGORITHMS
 (Common to all branches)

Time: 1.30 hrs

Maximum: 40 Marks

PART - A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

- | | CO # | Blooms Level |
|--|------|--------------|
| a. Define row major order? Consider an matrix A[6][6] which occupies 4 bytes for each memory location. Explain, how to finding the address of a memory location A[2][4] in row major order? | 3 | 2 |
| b. Suppose a stack is implemented using an array STK[3]. Perform the following operations on it: Push(11), Push(22), Push(33), Push(44), Pop(), Pop(), Pop(), Push(66), Push(77).
i) Find the sequence of popped out elements
ii) Find the remaining elements hold by the stack. | 5 | 3, 9 |
| c. List out the common standard notations which are used to write an algorithm. | 1 | 2 |
| d. State the difference between linear queue and circular queue. | 4 | 2, 9 |
| e. Given infix expression: $(a+b*(c-d^e)/f)$
Use general procedure to find its equivalent prefix and postfix expressions. | 4 | 2 |

PART - B (10 x 2 = 20 Marks)

Answer ALL Questions

- | | Marks | CO# | Blooms Level |
|--|-------|-----|--------------|
| 2.a Write down the algorithms for applying the below operations on one dimensional array:
i) insertion of an element at a location,
ii) deletion of an element from a location | 5 | 3 | 2 |
| b Given an infix expression $(A+B/C-D^E*F-G)$.
Briefly elaborate to find its equivalent postfix notation using stack. | 5 | 4 | 3 |
| (OR) | | | 2 |
| | | | 2 |

Ans

Wt

W

W

C

1

Ans

2.a

1

- c. Write down the algorithms for applying the below operations on one dimensional arrays:
- i) Searching for an element in the array
 - ii) Merging two sorted arrays
- d. Write an algorithm to convert an infix expression into its equivalent postfix using stack. 5 5 3
- 3.a. Write algorithms to implement insertion and deletion operations on a circular queue using array. 5 4 2
- b. Write down the algorithm to test a matrix is sparse or not and if sparse store the non-zero information into another 3-column matrix. 5 2 3
- (OR)
- c. Write algorithms to implement insertion and deletion operations on a linear queue using array. 5 2 2
- d. Briefly elaborate the evaluation process of given postfix expression $P = 2, 3, 15, 10, 2, /, -, *, +, 4, +$ using stack. Write down the algorithm for postfix evaluation using stack. 5 4 3
- 4.a. Write an algorithm to apply binary search operation on an array of elements. 5 3 2
- b. Write an algorithm to find greatest among 3 numbers 5 3 1
- (OR)
- c. Write an algorithm to apply sorting on an array of elements using any sorting method. 5 3 2
- d. Write an algorithm to test a number is prime or not. 5 2 1



GIET UNIVERSITY, GUNUPUR – 765022
B. Tech – 1st Semester (2023-2024): CYCLE TEST - I
Dietetics and Nutrition (DN)
(Common to all branches)

Time: 1.30 hrs

Maximum: 40 Marks

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

CO # Blooms
 Level

- | | | |
|---------------------------------|---|---|
| a. What do you mean by health? | 1 | 2 |
| b. What is a balanced diet? | 1 | 2 |
| c. What is nutrition? | 1 | 2 |
| d. Classify components of food. | 2 | 3 |
| e. What is BMI? | 2 | 2 |

PART – B (15 x 2 = 30 Marks)

Answer ALL Questions

Marks CO# Blooms
 Level

- | | | | | |
|---|--|-----|---|---|
| 3 | 2.a. What is the importance of food for maintaining good health? | 7.5 | 1 | 2 |
| | b. Mention the lifestyle that can enable us to maintain good health. | 7.5 | 1 | 3 |

(OR)

- | | | | | |
|---|---|-----|---|---|
| | c. Classify nutrients and mention different food groups with appropriate examples. | 7.5 | 1 | 2 |
| | d. What is a balanced diet and what is its importance in maintaining good health? Which factors are considered for preparing the recommended dietary allowance (RDA)? | 7.5 | 1 | 3 |
| | 3.a. Classify carbohydrates with examples. | 7.5 | 2 | 2 |
| 7 | b. Write about the importance of carbohydrates for maintaining good health. | 7.5 | 2 | 2 |

(OR)

- | | | | | |
|--|---|-----|---|---|
| | c. Classify protein with examples. | 7.5 | 2 | 2 |
| | d. Write about the importance of protein for maintaining good health. | 7.5 | 2 | 2 |





GIET UNIVERSITY, GUNUPUR – 765022
B. Tech – 2nd Semester (2023-2024): CYCLE TEST - II
Dietetics and Nutrition (DN)
(Common to all branches)

Time: 1.30 hrs

Maximum: 40 Marks

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

	CO #	Blooms Level
a. What do you mean by food preservation?	5	2
b. What is a micro-nutrients?	3	2
c. What is malnutrition?	3	2
d. Which structures are found in intestine for effective absorption?	4	3
e. What is menu planning?	4	2

PART – B (15 x 2 = 30 Marks)

Answer ALL Questions

	Marks	CO#	BL
2.a. Define and classify vitamins with their food sources?	7.5	3	2
b. Mention the role and deficiency diseases of different vitamins.	7.5	3	3
(OR)			
c. Define and classify minerals with their food sources?	7.5	3	2
d. Mention the role and deficiency diseases of different minerals?	7.5	3	3
3.a. Explain the importance of diet with respect to physical activity and energy utilization?	7.5	4	2
b. Describe the mechanism of food digestion and absorption.	7.5	4	2
(OR)			
c. What is the importance of menu planning and what are the factors need to be considered at the time of preparing menu planning in a family.	7.5	4	2
d. What is the importance of food preservation? Discuss the food preservation methods.	7.5	5	2



GIET UNIVERSITY, GUNUPUR – 765022
B. Tech – 2nd Semester (2023-2024): CYCLE TEST - II
23BBSES10002 – ELEMENTS OF MECHANICAL ENGINEERING
(Common to all branches)
Time: 1.30 hrs Maximum: 40 Marks

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions	CO #	Blooms Level
a. Define intensive and extensive properties with examples.	CO4	K1
b. What are the similarities between heat and work?	CO4	K2
c. What are the limitations of First law?	CO5	K1
d. What is a nozzle and diffuser ?	CO5	K1
e. Note down the various objectives of FMS.	CO6	K2

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions	Marks	CO#	Blooms Level
2.a. An investigator designed a temperature scale (X) on two fixed points as 60°N and 300°N. What will be the value of temperature 375 K and 85°F in new scale (X). At what temperature, both the new scale and °C Scale have same reading.	5	CO4	K3
b. What is Heat Transfer? Explain different modes of heat transfer.	5	CO4	K2
(OR)			
c. A vessel of capacity 5m ³ contains oxygen at 2bar, 45°C. Calculate the mass of the oxygen.	5	CO4	K3
d. A mass of gas is compressed in a quasi-static process from 80 kPa, 0.1 m ³ to 0.4MPa, 0.03 m ³ . Assuming that the pressure and volume are related	5	CO4	K3



by $PV^n = \text{constant}$, find the work done by the gas system.

- 3.a. With neat sketch Explain the working principle of Steam power plant? 10 CO5 K2

(OR)

- b. A turbine operates under steady flow condition receiving air at pressure 15 bar, internal energy 2700 kJ/kg, specific volume $0.17 \text{ m}^3/\text{kg}$ and velocity 100 m/sec. Exhaust air from the turbine is at 0.1 bar with internal energy 2175 kJ/kg, specific volume $15 \text{ m}^3/\text{kg}$ and velocity 300 m/sec. The turbine develops 35 kw and heat lost over the surface of turbine is 20 kJ/kg. Determine the air flow rate through the turbine. 10 CO5 K3
- 4.a. Convert the following reading of pressure to Kpa assuming that the Barometers reading in 760 mm of Hg a) 40 cm of HG vacuum b) 1.2 met of H_2O gauge 5 CO6 K3
- b. Calculate the Specific weight, Density and weight of one litre of petrol of specific gravity 0.7. 5 CO6 K3

(OR)

- c. Explain briefly about the basic components of robot. 5 CO6 K2
- d. Differentiate between NC and CNC. 5 CO6 K2

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$$165525$$

$$\begin{array}{r} 257700 \\ 152175 \\ \hline 105525 \\ 40000 \\ 20000 \\ \hline 165525 \end{array}$$



GIET UNIVERSITY, GUNUPUR – 765022
B. Tech –1st Semester (2023-2024): CYCLE TEST - I
22BBSES10002– ELEMENTS OF MECHANICAL ENGINEERING
(Common to all branches)
Time: 1.30 hrs Maximum: 40 Marks

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

CO# Blooms
 Level

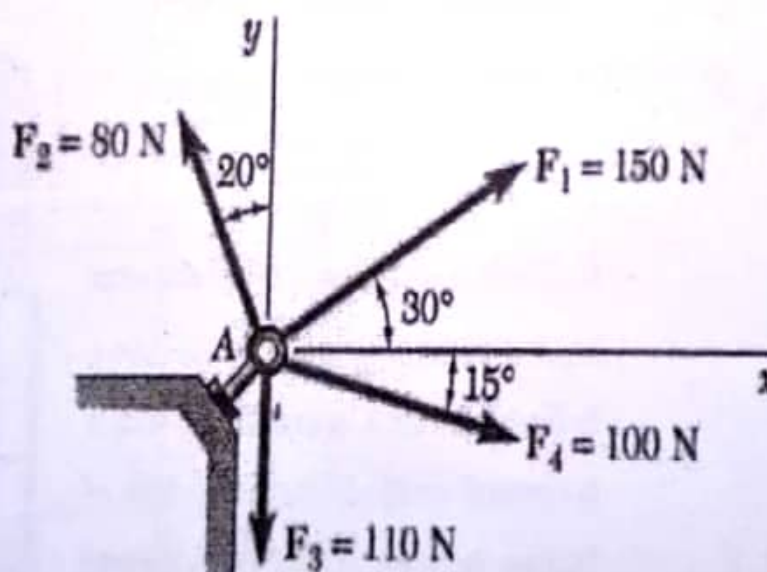
- | | | |
|---|---|---|
| a. What is the free body diagram? Explain it with a suitable example. | 1 | 2 |
| b. State and explain the parallelogram law of force. | 1 | 1 |
| c. Define the term 'centroid' and 'centre of gravity. | 2 | 2 |
| d. A force of 500N is acting at a point making an angle of 60° with the horizontal. Determine the component of this force along X and Y direction. | 1 | 2 |
| e. Differentiate between Static and Kinetic Friction. | 3 | 2 |

PART – B (10 x 3 = 30 Marks)

Answer ALL Questions

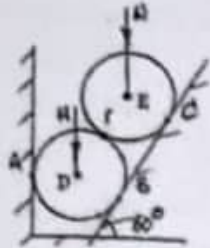
Marks CO# Blooms
 Level

2.a. Determine resultant of following fig.



5 1 2

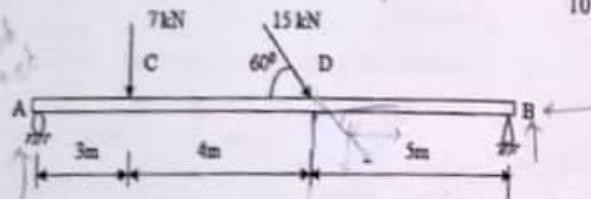
Find the reaction at A, B, C, F. W is 100 N.



5 1 3

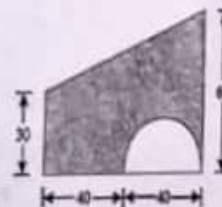
(OR)

- (b) The beam AB of span 12 m as shown in fig. Is hinged at B and on roller at A. Determine the reaction at A and B.



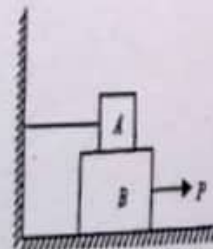
10 1 3

- 3.a Determine the centroid of the given lamina as shown in figure.



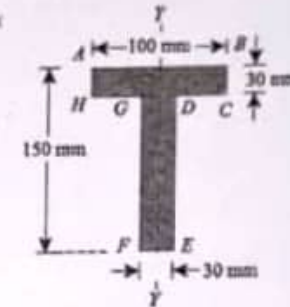
5 2 3

- b. Block A weighing 1000 N rests over block B which weighs 2000 N as shown in figure. Block A is tied to wall with a horizontal string. If the coefficient of friction between A and B is $1/4$ and between B and floor is $1/3$, what should be the value of P to move the block B, if P is applied horizontally.



(OR)

- 3c) Find the centroid of a $100 \text{ mm} \times 150 \text{ mm} \times 30 \text{ mm}$ T-section.



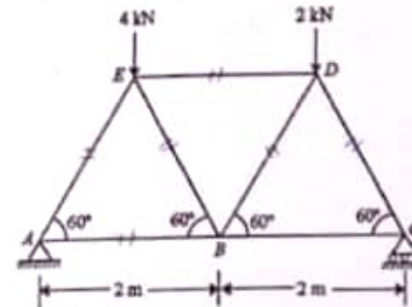
5 2 3

- 3d) Define friction. Write down the various laws of friction.

5 3 1

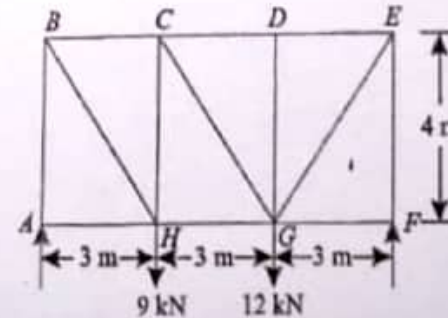
- 4a) Determine the reaction and the forces in each member of a simple triangle truss supporting two loads as shown in figure.

10 2 2



(OR)

- 4 b. A 9 m span truss is loaded as shown in Fig. Find the forces in the members BC, CH and HG of the truss.



10 1 3



GIET UNIVERSITY, GUNUPUR – 765022
B. Tech –2nd Semester (2023-2024): CYCLE TEST - I
Subject Code- CETC
(Common to all branches)

Time: 1.30 hrs

Maximum: 40 Marks

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

	CO #	Blooms Level
a. Define technical communication.	3	2
b. Discuss the role of job portals in the job application process.	3	1
c. What is SWOT analysis?	3	2
d. Mention two important factors for facilitating a productive meeting.	4	1
e. Briefly explain the scope of technical communication.	4	2

PART – B (10 x 3 = 30 Marks)

Answer ALL Questions

	Marks	CO#	Blooms Level
1.a. Explain the scope of technical communication and outline its key characteristics.	5	3	2
1.b. Enumerate the characteristics that distinguish technical communication from other forms of communication.	5	3	2
(OR)			
c. Develop a comprehensive understanding of career-making strategies by explaining the importance of goal-setting and conducting a SWOT analysis.	5	3	2
d. Critically evaluate the elements of a well-crafted résumé and compare the advantages and disadvantages of both chronological and functional résumé.	5	3	2
1.a. Describe the advantages of CALL in developing English language skills for technical communication.	5	4	2
1.b. How does the use of internet contribute to self-learning in the context of technical communication?	5	4	2
(OR)			
c. Describe the intricacies of job interviews, highlighting the essential preparation steps.	5	4	2
d. Analyze the common interview questions and effective communication techniques during an interview.	5	4	2
1.a. Elaborate on how technical communication skills contribute to professional success.	5	4	2
b. Discuss the nature of technical communication.	5	4	2
(OR)			
c. Assess the significance of effective oral presentations in professional settings and the common pitfalls faced in oral presentation.	5	4	2
d. Explain the essential skills and etiquette required for successfully handling a meeting.	5	4	2





GIET UNIVERSITY, GUNUPUR – 765022
B. Tech –2nd Semester (2023-2024): CYCLE TEST - II
23BBSHS12001– CETC

(Common to all branches)

Maximum: 40 Marks

Time: 1.30 hrs

PART – A (2 x 5 = 10 Marks)

Q.1. Answer ALL questions

	CO #	Blooms Level
a. What does SQ4R stand for in the context of reading technique?	3	3
b. Name two common barriers to effective reading.	3	2
c. What is the primary purpose of a cover letter?	4	2
d. Write two key elements of a technical paper.	4	2
e. Name two tips to improve conflict resolution skills.	2	3

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions

	Marks	CO#	Blooms Level
2.a. Describe how knowing your reading speed can enhance your overall reading experience and productivity.	5	3	2
b. Discuss the SQ4R technique in detail, including its steps and how it aids comprehension.	5	3	4

(OR)

c. Explain the differences between intensive and extensive reading techniques.	5	3	4
d. Analyze the concept of barriers to effective reading and suggest strategies to overcome them.	5	3	4
3.a. Describe the key elements of email etiquette that professionals should follow, emphasizing the dos and don'ts.	5	1	2

- b. Provide a step-by-step guide on how to write an effective cover letter, focusing on content, tone, and formatting. 5 4 6

(OR)

- c. Imagine you are an engineering student applying for a summer internship at a leading engineering firm. Write a business letter addressed to the Human Resources Manager of the company, expressing your interest in the internship opportunity and highlighting your relevant skills, academic achievements, and passion for the field of engineering. 10 4 6
- 4.a. Analyze the significance of problem-solving skills in decision-making, and outline three methods to enhance these skills. 5 2 4
- b. Differentiate between conflict resolution and problem-solving skills. 5 1 2

(OR)

- c. You are a senior engineering student organizing a workshop on "Advanced CAD Techniques" for your juniors. Write an email to all engineering students inviting them to participate in the workshop. Include details such as the date, time, venue, topics to be covered, and any registration instructions. Ensure that your email is clear, concise, and persuasive to encourage maximum participation. 10 5 6