



GIET UNIVERSITY, GUNUPUR - 765022

B. Tech (Second Semester Regular) Examinations, May - 2024
23BBSHS12001 - Communicative English and Technical Communication
 (Common to all branches)

Time: 3 hrs

Maximum: 60 Marks

(The figures in the right-hand margin indicate marks)

PART – A**(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

- What is technical communication?
- Write two essential skills needed for an effective job interview?
- What is the purpose of a cover letter?
- What does SQ4R stand for in reading techniques?
- Explain conflict resolution in soft skills development.

CO #	Blooms Level
CO1	K1
CO2	K1
CO2	K2
CO3	K1
CO2	K2

PART – B**(10 x 5 = 50 Marks)**Answer **ALL** questions

Marks	CO #	Blooms Level
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- a. Define technical communication and discuss its nature and scope. How do the characteristics of technical communication contribute to its importance in various fields? 5 CO2 K3
- b. Explain the concept of self-learning through technology, emphasizing the role of the internet in acquiring technical knowledge. 5 CO6 K2
- (OR)
- c. Explain the concept of Computer Assisted Language Learning (CALL) and its significance in developing English language proficiency. 5 CO6 K2
- d. Discuss the critical role of technical communication in career development. How does effective technical communication contribute to professional success and advancement? 5 CO2 K5
- 3.a. Describe the process of setting career goals and explain how SWOT analysis can help in this process. 5 CO2 K2
- b. How can job portals be effectively utilized in the job search process? 5 CO2 K3
- (OR)
- c. What are the key elements that should be included in a resume? Differentiate between a chronological resume and a functional resume. 5 CO4 K1
- d. Describe the steps you would take to prepare for an important meeting, highlighting the key aspects to consider. 5 CO2 K3
- 4.a. Describe the SQ4R techniques of reading and how they can improve comprehension. 5 CO3 K3
- b. Compare and contrast skimming and scanning as techniques of rapid reading. 5 CO3 K2
- (OR)
- c. What are the barriers that can hinder effective reading, and how can they be overcome? 5 CO3 K3

- d. How can extensive reading contribute to overall reading comprehension and knowledge retention? 5 CO3 K3
- 5.a. Discuss the importance of email etiquette in modern professional communication and outline key principles that should be followed when writing professional emails. 5 CO4 K2
- b. Explain the steps involved in preparing a technical proposal. 5 CO4 K2
- (OR)
- c. Imagine you are applying for a marketing assistant position at a tech startup. Write a cover letter that highlights your relevant experience, skills, and enthusiasm for the role. Include specific examples of projects or achievements that demonstrate your ability to contribute to the company's marketing efforts. Use professional language and format, addressing the letter to the hiring manager. 10 CO5 K6
- 6.a. Define conflict resolution and explain its importance in professional environments. 5 CO2 K2
- b. What are the common causes of conflicts in the workplace? Provide examples. 5 CO2 K2
- (OR)
- c. Define problem-solving skills and discuss their significance in professional development. 5 CO2 K2
- d. Why is it essential for individuals to possess both conflict resolution and problem-solving skills in a professional setting? 5 CO2 K5

--- End of Paper ---



Time: 3 hrs

GIET UNIVERSITY, GUNUPUR - 765022

B. Tech (Second Semester Regular) Examinations, May - 2024

23BBSBS12001 - Engineering Mathematics - II

(Common to all Branches except Biotechnology)

Maximum: 60 Marks

(The figures in the right hand margin indicate marks)

(2 x 5 = 10 Marks)

PART - AQ.1. Answer **ALL** questions

- a. State the conditions for the existence of Laplace Transformation of $f(t)$. CO1 K1
- b. Find the unit normal vector to the surface $2x + 3y + 4z = 24$ CO2 K2
- c. Find the Laplace transformation of $e^{2t} * \cos 4t$ CO2 K2
- d. State D'Alembert's Ratio Test. CO2 K1
- e. Form a partial differential equation by Eliminating the arbitrary constants from $2z = \frac{x^2}{a^2} + \frac{y^2}{b^2}$ CO1 K2

PART - B

(10 x 5 = 50 Marks)

Answer ALL questions

2. a. Solve
- $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$
- .

Marks CO # Blooms Level

5 CO3 K3

- b. Solve
- $z - q^2y - p^2x = 0$
- .

5 CO3 K3

(OR)

- c. Solve
- $x(y-z)p + y(z-x)q = z(x-y)$
- by Lagrange's method.

5 CO3 K3

- d. Solve the PDE
- $px + qy + pq = 0$
- by Charpit's method.

5 CO3 K3

- 3.a. Test the Convergence of the series
- $\sum \left[\frac{nx}{n+1} \right]^n$
- , (
- $x > 0$
-).

5 C04 K3

- b. Verify that the series is Convergent or Divergent
- $\sum_{n=0}^{\infty} \frac{(20+30i)^n}{n!}$

5 C04 K3

(OR)

- c. Solve the Differential equation
- $y'' - 4y' + 3y = 0$
- by power series method

5 C04 K3

- d. Test the Convergence of the series
- $\sum (x^n / n)$
- , (
- $x > 0$
-)

5 C04 K3

- 4.a. Find the Laplace transformation of the following function
- $\frac{\cos 2t - \cos 3t}{t}$

5 C05 K3

- b. Find
- $L^{-1} \left[\frac{1-7s}{(s-3)(s-1)(s+2)} \right]$

5 C05 K3

(OR)

- c. Solve the following integral equation
- $y(t) = te^t - 2e^t \int_0^t e^{-\tau} y(\tau) d\tau$

5 C05 K3

- d. Find the inverse Laplace transformation of
- $\frac{s^2}{(s^4+a^4)}$

5 C05 K3

- 5.a. Calculate
- $\oint_C \mathbf{F} \cdot d\mathbf{r}$
- where the Force
- $\mathbf{F} = [xy, x^2y^2]$
- and work in the displacement along C in the quarter - circle from (2,0) to (0,2) with centre at (0,0).

5 C03 K3

- b. Find the Directional derivative of f at the point P in the direction of vector a ,
where $f = \frac{1}{\sqrt{x^2+y^2+z^2}}$, $P: (2, 0, 5)$ and $a = i + j + k$. 5 CO3 K3

(OR)

- ✓ By using Greens theorem evaluate $\oint_C \mathbf{F} \cdot d\mathbf{r}$, where $\mathbf{F} = \frac{e^y}{x}i + (e^y \ln x + 2x)j$
and $R: 1 + x^4 \leq y \leq 2$ 5 CO3 K3

- ✓ d. Evaluate $\int_0^3 \int_{-y}^y (x^2 + y^2) dx dy$ by changing the order of integration. 5 CO3 K3

- 6.a. Using Gauss Divergence theorem, Evaluate the integral $\iint_S \mathbf{F} \cdot \hat{n} dA$, if
 $\mathbf{F} = [x^3, y^3, z^3]$ and S is the sphere $x^2 + y^2 + z^2 = 9$ 5 CO5 K3

- ✓ b. Calculate $\oint_C \mathbf{F} \cdot d\mathbf{s}$ with Arc Length as Parameter where $f = \sqrt{2 + x^2 + 3y^2}$
 $C: r = [t, t, t^2], 0 \leq t \leq 3$ 5 CO5 K3

(OR)

- ✓ c. Using Greens theorem, Evaluate the line Integral over the Curve C , where C is
the rectangle with vertices $(0,0), (2,0), (2,3), (0,3)$ and $F[x^2e^y, y^2e^x]$. 5 CO6 K3

- ✓ d. Evaluate the Integral $\int_{(0,1,2)}^{(1,-1,7)} 3x^2 dx + 2zy dy + y^2 dz$ by showing F has potential and
integral is path independent. 5 CO6 K3

--- End of Paper ---



GIET UNIVERSITY, GUNUPUR - 765022

B. Tech (Second Semester Regular) Examinations, May - 2024

23BBSES12003 - Data Structures & Algorithms

(Common to all Branches)

Time: 3 hrs

Maximum: 60 Marks

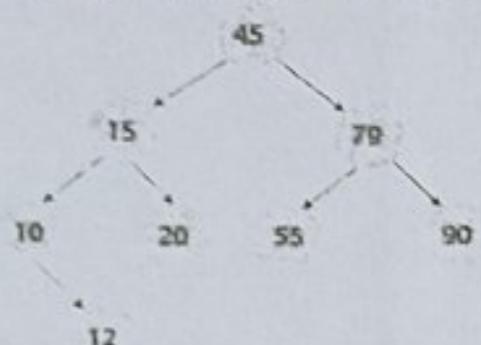
(The figures in the right hand margin indicate marks)

(2 x 5 = 10 Marks)

PART - A

Q.1. Answer ***ALL*** questions

- a. A matrix R [10] [10] has elements given input. How to check whether the matrix is sparse or not? CO2 K2
- b. List out the overflow and underflow conditions in an array of elements that follow the First In First Out Concept. CO1 K1
- c. A double linked list has 10 nodes, where the pointer PTR2 points to the 4th node and pointer PTR3 points to the 6th node. Now write the piece of statements which allows you to insert a new node pointed by PTR1. CO3 K3
- d. Given a Binary Tree below: CO4 K2



Find the in-order, post-order sequence of nodes during traversal.

- c. Define Terms:
 - (i) Weighted Graph
 - (ii) Self-Loop

CO1 K3

PART - B

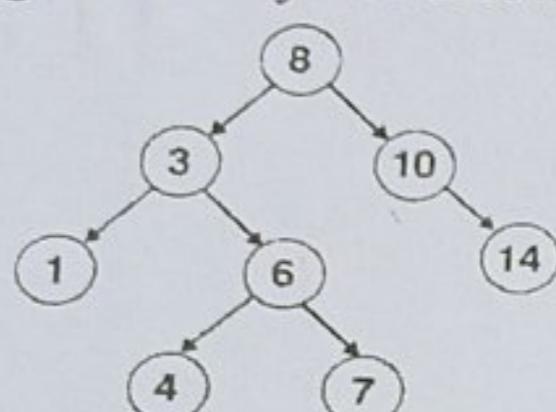
(10 x 5 = 50 Marks)

Answer ***ALL*** questions

Marks CO # Blooms Level

- 2. a. Define row major order and column major order. Given a matrix W [10] [10] with elements having a base address of 10000. If the size of each memory is 10 bytes, then find the address of W[5][5] in row major order and also in column major order. 5 CO2 K3
- b. Given a stack implemented using an array, write down the algorithms for the operations performed on it, such as:
 - (i) Push (ii) pop
 (OR)
- c. Given an infix expression X= Q+W/E-R*T+Y-U
Find its equivalent postfix expression using Stack. 5 CO4 K2
- d. Briefly elaborate the evaluation process of given postfix expression P = 2, 3, 15, 10, 2, /, -, *, +, 4, + using Stack 5 CO3 K3
- 3.a. Given a list of elements: 70, 40, 50, 30, 35, 25, 45. Write down the algorithm for applying insertion sort to the elements to sort them in ascending order. 5 CO4 K3
- b. Write down the algorithm for implementing binary search on a sorted list of elements present in an array. 5 CO3 K3
- (OR)
- c. Write down the algorithms for implementing queue concepts on a single linked list and perform the operations:
 - (i) insertion of a node at the rear-end (ii) deletion of a node from the front-end

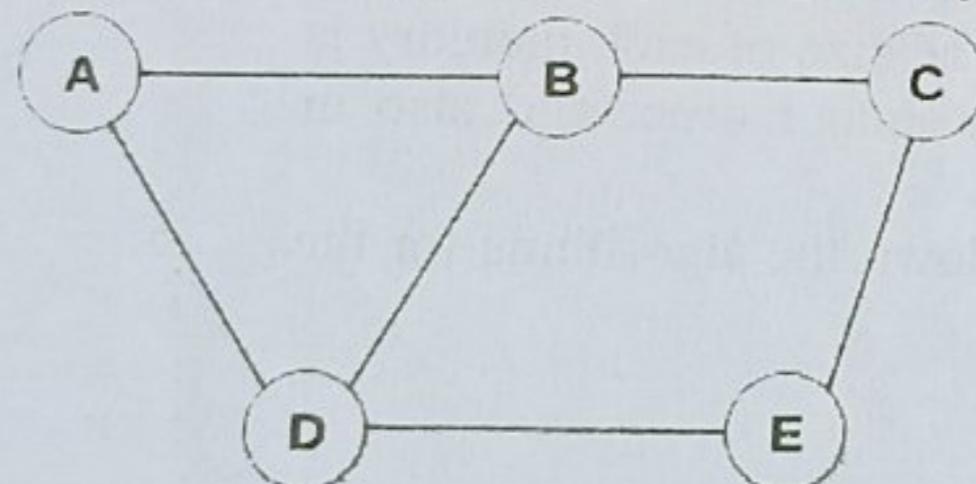
- d. Write down the algorithm from implementing the deletion of a node from the end of a double linked list. 5 CO3 K3
- 4.a. Construct a binary tree using the traversal sequence of nodes given below:
 In-order sequence: F D B E I G J A C H
 Pre-order sequence: F D I J G E B H C A
 Write down the three recursive traversal algorithms to traverse all the nodes of a binary tree. 5 CO3 K3
- b. Given a sequence of numbers: 40, 30, 50, 80, 90, 20, 10, 60, 70, 100
 Construct a Binary Search Tree and then write down the algorithm for applying searching operations to it.
- (OR)
- c. Write down the non-recursive in-order traversal method for traversing all the nodes of a binary tree. 5 CO4 K2
- d. Briefly explain the sequential representation and linked representation of the given binary tree below.



- 5.a. Construct an AVL Tree on the given a sequence of elements: 90, 80, 70, 60, 50, 10, 20, 30, 40, 55 5 CO5 K3
- b. Construct a Max-Heap Tree on the given sequence of elements: 71, 61, 91, 31, 41, 61, 81, 51 5 CO3 K3

(OR)

- c. Given a graph below:
 Represent the graph using an adjacency matrix and an incidence matrix. 5 CO2 K3



- d. Write down the algorithm to traverse all the nodes of a graph using a queue. 5 CO2 K3
- 6.a. Given a list of 6 elements: 30, 32, 45, 65, 57, 99
 Explain the three different hash functions and find the hash addresses using all the hash functions. 5 CO4 K3
- b. Write down the algorithm for applying bubble sort to a list of numbers given input in an array. 5 CO5 K2

(OR)

- c. Write down the algorithm for evaluating postfix expression using stack. 5 CO4 K3
- d. Write down the algorithms to perform the operations on a double linked list:
 (i) count the total no. of nodes (ii) find the sum of all the node values. 5 CO6 K2

--- End of Paper ---



GIET UNIVERSITY, GUNUPUR - 765022

B. Tech (Second Semester) Examinations, May - 2024

23BBSES10001 - Basic Electrical and Electronics Engineering

(Common to all branches)

Time: 3 hrs

Maximum: 60 Marks

PART - A

(The figures in the right hand margin indicate marks)

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

- | | | | |
|----|--|-----|--------------------|
| a. | A resistor of $12\ \Omega$ is connected across a potential difference of 60 volts. Calculate the power dissipated and the energy transferred to heat in 4 minutes. | CO1 | Blooms Level
K3 |
| b. | List any two advantages of 3-phase system over 1-phase system. | CO2 | K1 |
| c. | What are the majority charge carriers in p-type and n-type semiconductors? | CO4 | K1 |
| d. | What are the Universal gates? Explain one Universal gate, providing its truth table as an example. | CO5 | K1,K2 |
| e. | What role does a fuse play, and how does it differ from a Miniature Circuit Breaker (MCB). | CO6 | K2,K3 |

PART - B

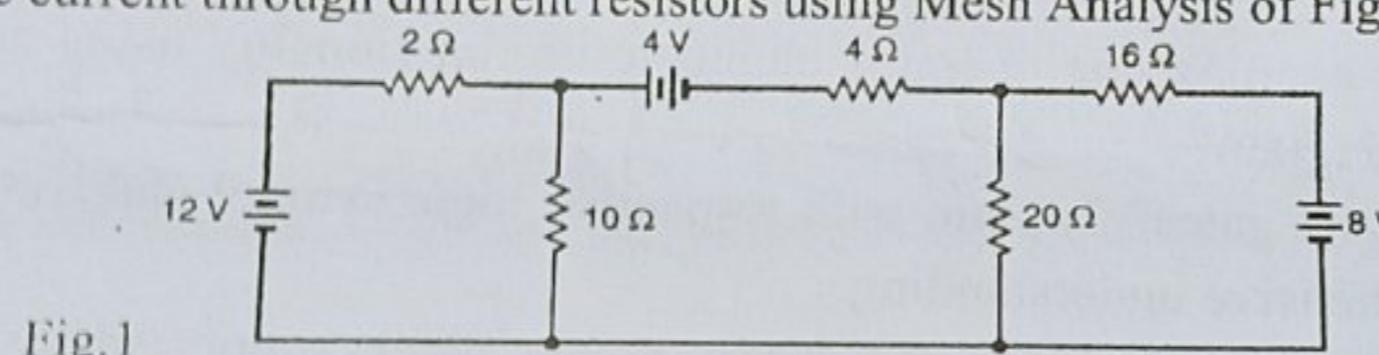
(10 x 5 = 50 Marks)

Answer ALL questions

2. a. Determine current through different resistors using Mesh Analysis of Figure 1.

5

CO1

Blooms Level
K3

- b. A pure resistance of 50 ohms is in series with a pure capacitance of 100 microfarads. The series combination is connected across 100-V, 50-Hz supply. Find (i) the impedance (ii) current (iii) power factor (iv) phase angle (v) voltage across resistor (vi) voltage across capacitor.

5

CO2

K3

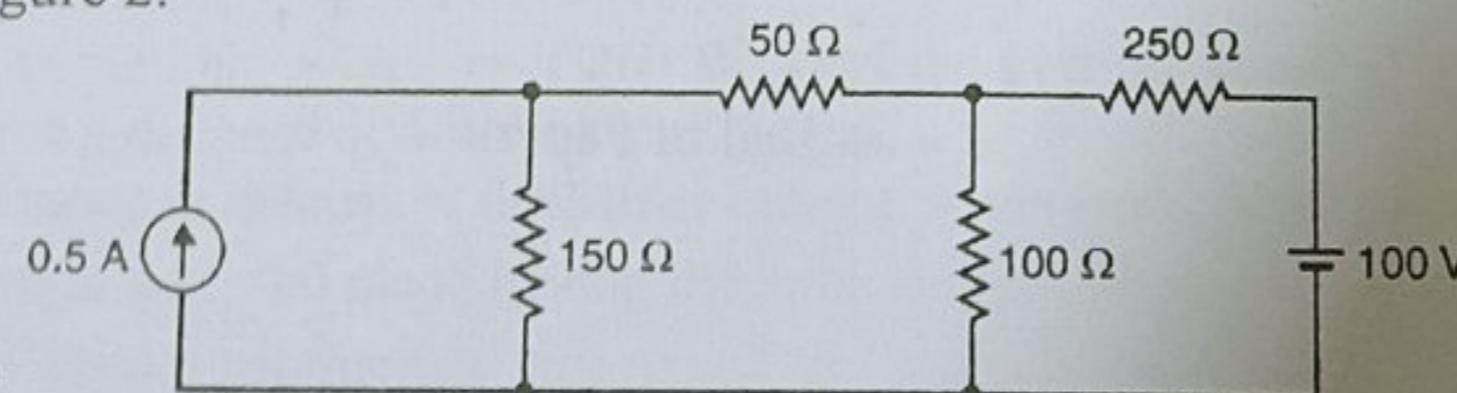
(OR)

- c. By using Nodal analysis, determine the current in each resistor in circuit shown in Figure 2.

5

CO1

K3



- | | | | | |
|------|---|---|-----|-------|
| d. | What is RMS value? Derive the expression for the Root Mean Square (RMS) value of a sinusoidal AC signal. | 5 | CO2 | K1,K3 |
| 3.a. | A balanced 3-phase delta load has load impedance of $(10+j25)\ \Omega$ per phase and is supplied from a balanced 3-phase 400V, 50Hz AC supply. Determine the values for (i) Line voltages, phase voltages and (ii) line currents, phase currents (iii) total real power consumed by the load. Also determine reactive and apparent power. | 5 | CO2 | K3 |
| b. | Describe the construction and operational principles of a DC generator in detail. | 5 | CO3 | K1,K3 |

(OR)

- c. A 6-pole DC shunt generator has 1500 armature conductors in six parallel paths. The average flux per pole in the air gap is 0.065 weber. Calculate the generated emf if the generator runs at a speed of 1500 RPM with the help of a prime mover. 5 CO3 K3
- d. Derive the electromotive force (e.m.f) equation for a single-phase transformer. Determine the transformer's transformation ratio. 5 CO3 K4,K3
- 4.a. Draw the circuit diagram of a full wave bridge type rectifier using diode and explain its operation with suitable waveform. 5 CO4 K2,K3
- b. How does a positive clamper operate? Explain its working with the help of a circuit diagram. 5 CO4 K2,K3
- (OR)
- c. Describe the Voltage-Current (VI) Characteristic of a Semiconductor Diode. Provide a relevant graph to illustrate its behavior. 5 CO4 K2,K3
- d. How does a positive clipper operate? Explain its working with the help of a circuit diagram. 5 CO4 K2,K3
- 5.a. Convert the following: 5 CO5 K3,K4
- (i) $(1011011101.10101)_2 = (?)_{10} = (?)_8 = (?)_{16}$
 - (ii) Compute 1's and 2's complement of $(101110)_2$ and $(101001)_2$
 - (iii) $(7541)_8 = (?)_2 = (?)_{16} = (?)_{10}$.
- b. Describe the various components of a Cathode Ray Oscilloscope (CRO), supported by a relevant block diagram. 5 CO5 K2,3K
- (OR)
- c. How does a digital oscilloscope operate? elucidate its functionality using an appropriate block diagram? 5 CO5 K2,K4
- d. What are the universal gates? Explain with respective logic symbol and truth tables for a comprehensive understanding. 5 CO5 K2,K3
- 6.a. Elaborate the operational principles of a hydro power plant, supported by a schematic block diagram? 5 CO6 K2,K3
- b. Write short note on Temperature Sensor. 5 CO6 K2
- (OR)
- c. How does earthing work? Explain the process of pipe earthing, with a relevant diagram. 5 CO6 K2,K3
- d. Write short note on Force sensors. 5 CO6 K2

--- End of Paper ---



GIET UNIVERSITY, GUNUPUR - 765022

B. Tech (Second Semester Regular) Examinations, May- 2024
23BBSBS10002 - Engineering Physics
 (Common for all Branches)

Time: 3 hrs

Maximum: 60 Marks

(The figures in the right-hand margin indicate marks.)

PART – A**(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

- What is SHM? Mention two examples.
- State Faraday's law of electromagnetic induction.
- Discuss about displacement current.
- What is a dielectric material? Give examples.
- Mention the characteristics of quantum mechanical wave function?

CO #	Blooms Level
CO1	K1
CO2	K2
CO3	K2
CO4	K1
CO6	K1

PART – B**(10 x 5 = 50 Marks)**Answer **ALL** the questions

- | Marks | CO # | Blooms Level |
|-------|------|--------------|
| 7 | CO1 | K1 |
| 3 | CO1 | K2 |
| 6 | CO1 | K1 |
| 4 | CO1 | K1 |
| 7 | CO2 | K2 |
| 3 | CO2 | K1 |
| 6 | CO2 | K1 |
| 7 | CO2 | K1 |
| 3 | CO2 | K1 |
| 4 | CO3 | K1 |
| 4 | CO3 | K2 |
| 6 | CO3 | K1 |
| 4 | CO3 | K1 |
| 6 | CO3 | K2 |
- Discuss with a neat diagram that how interference fringes are produced in Newton's Ring experiment. Mention its applications
 - In a Newton's Ring experiment, the diameters of 9th and 16th dark ring are 0.6cm and 1.5cm respectively. If the radius of curvature of the Plano convex lens is 100cm., then find the wavelength of the light?
 (OR)
 - What is Damped harmonic oscillator? Derive the solution for the under damped oscillation.
 - What is quality factor? Find the velocity of longitudinal wave in a medium of density $\rho = 12 \times 10^3 \text{ Kg/m}^3$ and bulk modulus $B = 8 \times 10^{11} \text{ N/m}^2$
 - a. What is Poynting vector? State and explain Poynting theorem.
 b. (i) Evaluate curl of the vector field, $B = 2i^*xy + 4j^*yz + 5k^*zx$
 (ii) Calculate the gradient of the scalar field, $\phi = x^3y + yz + x^2z^2$.
 (OR)
 - Derive the electromagnetic wave equations for electric field and magnetic field in free space. What is the speed of em wave?
 - A point source emits light with power 260 W. Find the average value of the Poynting vector at a distance of 4 m from the source.
 - a. What are the methods to determine the Miller indices of a crystal plane? Find the Miller indices of a crystal plane having the intercepts 2a, 2b and 4c, where a, b and c are the crystal parameters.
 b. Why X-ray is used for Bragg's experiment? X-ray of wavelength 2.4 Å is used to produce 2nd order diffraction for glancing angle 45°, find the inter-planing spacing between the crystal planes?
 (OR)
 - What is reciprocal lattice? Mention the properties of Reciprocal Lattice.
 - Derive an expression of a SC and BCC lattices?

- 5a. What is isotope effect? The critical temperature for mercury with an isotopic mass of 169.5u is 4.115K . Calculate its critical temperature when its isotopic mass changes to 179.4u . Compare between Type-I and Type-II superconductors. 6 CO4 K2
- b. Write different parts of optical fibre. In an optical fibre, the core material has refractive index 1.6 and refractive index of the cladding material is 1.3. What is the value numerical aperture? 4 CO5 K2
- (OR)
- c. Differentiate between Dia, Para, and ferro-magnetic material with examples? 4 CO5 K1
- d. Sketch the block diagram of Fibre Optics Communication Link and explain its operation? A fibre has core and cladding index 1.68 & 1.5 respectively. Find the acceptance angle of the fibre? 6 CO5 K2
- 6.a. State Heisenberg's Uncertainty principle. Using it prove the non-existence of electron in a Nucleus? 6 CO6 K1
- b. What is photoelectric effect? In a photoelectric experiment, the threshold wavelength of tungsten cathode is 5600\AA^0 . Calculate the work function of the metal if it is irradiated by a light of wavelength 4800 \AA^0 . 4 CO6 K2
- (OR)
- c. Explain Compton Scattering with suitable diagram.? Discuss its different cases. Find the De Broglie's wavelength for an electron whose kinetic energy is 0.05ev. 6 CO6 K1
- d. Using Schrodinger's equation, discuss the case of a one-dimensional potential Step. 4 CO6 K1

--- End of Paper ---



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 $-i+2j+k$ | 4 | 2 |

PART – B (10 x 2 = 20 Marks)

Answer ALL Questions

- | | Marks | CO# | Blooms Level |
|---|-------|-----|--------------|
| 2.a. Prove that $\operatorname{div}(f \nabla g) = f \nabla^2 g + \nabla f \cdot \nabla g$ | 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 , $f = \frac{1}{\sqrt{x^2+y^2+z^2}}$, $P(3,0,4)$ | 5 | 4 | 3 |
| $a = i + j + k$. | 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 $\oint_C \mathbf{F} \cdot d\mathbf{r}$ 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 $\oint_C \mathbf{F} \cdot d\mathbf{r}$ 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 |

$$y = x^2$$

$$2 - 1 =$$

(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 $\iint F \cdot dA$ 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 $F[x^2e^y, y^2e^x]$ over the curve C: the rectangle with vertices $(0,0), (2,0), (2,3), (0,3)$ 5 6 2
- b. Evaluate the Integral $\int_{(0, 1, 2)}^{(1, -1, 7)} (3x^2 dx + 2yzdy + y^2 dz)$ 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 5 4 2
- (i) $\sum_{n=0}^{\infty} \frac{1}{\sqrt{n+1}}$ (ii) $\sum_{n=0}^{\infty} \frac{1}{\log n}$

OR

$$y = Ae^x - \frac{S}{3}e^{-3x} - D$$

$$- S = Ae^x - \frac{S}{3}e^{-3x}$$



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

a.

Find the inverse Laplace Transformation of $\frac{e^{-5t}}{s^2 + 9}$

CO # Blooms
Level

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 $qz - p^2y - q^2y = 0$

7 1 2

(OR)

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

5.b.

Find the Laplace inverse transformation of the following $\frac{1}{(S^2 + a^2)^2}$

5 3 2

by using Convolution Theorem

b. Solve the differential equation using Laplace Transformation

5 3 2

$y'' - 2y' + y = e^t$, $y(0) = 2$, $y'(0) = -1$

(OR)

c. Solve the following integral equations

5 3 2

$$y(t) = te^t - 2e^t \int_0^t e^{-\tau} y(\tau) d\tau$$

d.

Find the Laplace inverse transformation of the following $\frac{S^2}{(S^4 + a^4)}$

5 3 2

$y(t) = ?$



4(a) Formation of PDE by elimination of arbitrary constants

5 1 2

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

(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

5 3 2

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

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

5 1 2



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

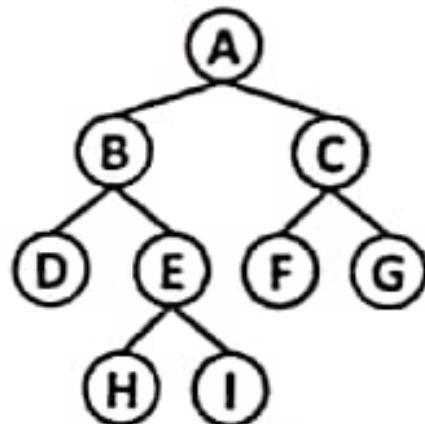
Time: 1.30 hrs

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 |



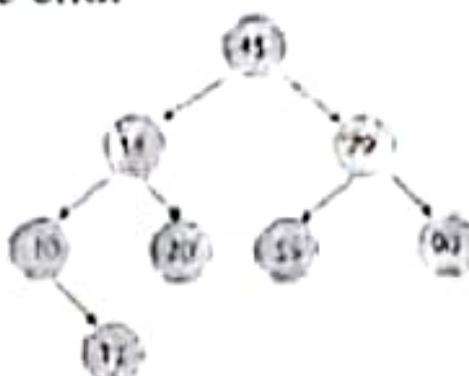
PART – B (10 x 2 = 20 Marks)

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.
(OR) | 5 | 3 | 3 |
| 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

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

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

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

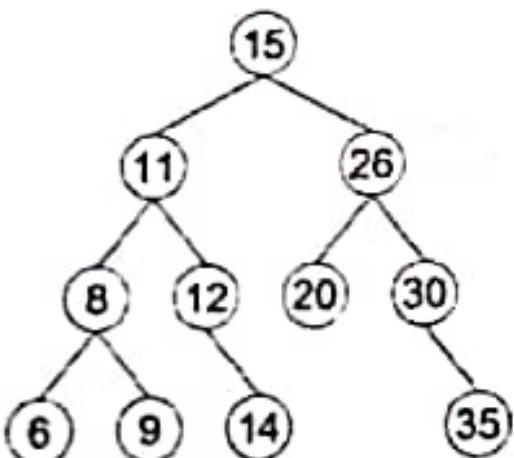
(OR)

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

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

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

- b. Given Binary Tree:



What are the leaf nodes?

What are the non-leaf nodes?

How many levels exist?

What is the maximum degree available in this tree?

5 4 3

5 4 2

5 2 2

5 2 1

(OR)

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

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

5 4 3

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). | 5 | 3, 9 |
| i) Find the sequence of popped out elements
ii) Find the remaining elements hold by the stack. | | |
| 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: | 5 | 3 | 2 |
| i) insertion of an element at a location,
ii) deletion of an element from a location | | | |
| 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

good health.



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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.
- 3.a. Write algorithms to implement insertion and deletion operations on a circular queue using array.
- 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.

(OR)

- c. Write algorithms to implement insertion and deletion operations on a linear queue using array.
- 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.
- 4.a. Write an algorithm to apply binary search operation on an array of elements.
- b. Write an algorithm to find greatest among 3 numbers
- (OR)
- c. Write an algorithm to apply sorting on an array of elements using any sorting method.
- d. Write an algorithm to test a number is prime or not.



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.a. | 7.5 | 1 | 2 |
| b. | 7.5 | 1 | 3 |
| c. | 7.5 | 1 | 2 |
| d. | 7.5 | 1 | 3 |
| 3.a. | 7.5 | 2 | 2 |
| b. | 7.5 | 2 | 2 |

(OR)

- | | | | |
|----|-----|---|---|
| c. | 7.5 | 2 | 2 |
| d. | 7.5 | 2 | 2 |

(OR)

- | | | | |
|----|-----|---|---|
| c. | 7.5 | 2 | 2 |
| d. | 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

- | | | |
|--|---|---|
| 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

- | | | | |
|--|-----|---|---|
| 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 | <i>CO #</i> | <i>Blooms Level</i> |
| 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 $^{\circ}\text{C}$ 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 m³/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 m³/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 H₂O 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

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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

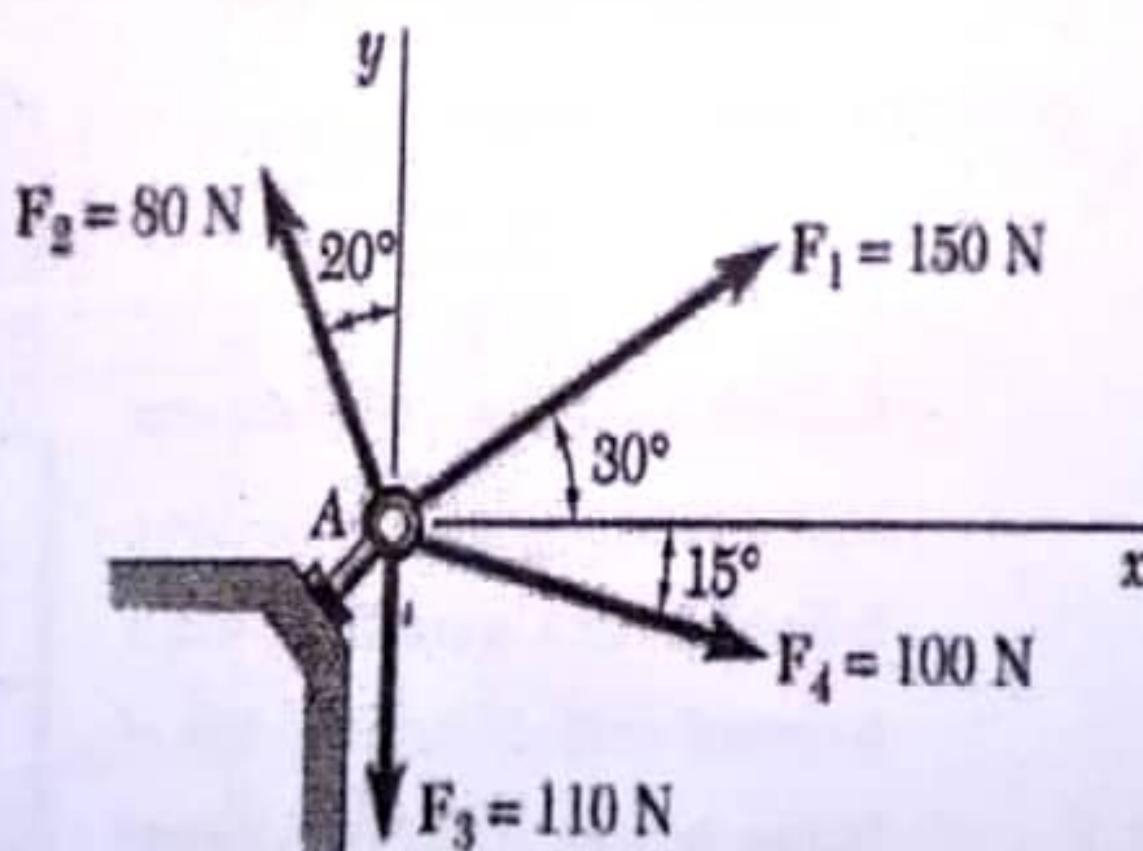
- | | | | |
|----|--|---|---|
| a. | What is the free body diagram? Explain it with a suitable example. | 1 | 2 |
| b. | State and explain the parallelogram law of force. | 1 | 1 |
| c. | Define the term 'centroid' and 'centre of gravity'. | 2 | 2 |
| d. | A force of 500N is acting at a point making 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)

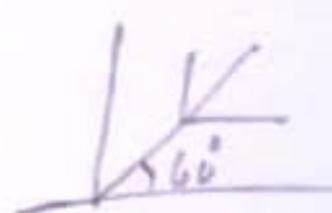
Answer ALL Questions

Marks	CO#	Blooms Level
-------	-----	-----------------

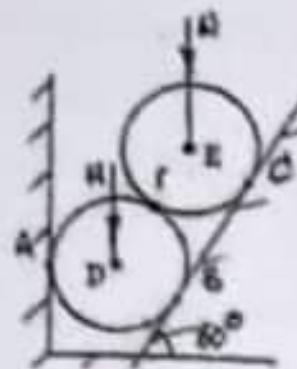
- 2.a. Determine resultant of following fig.



5 1 2



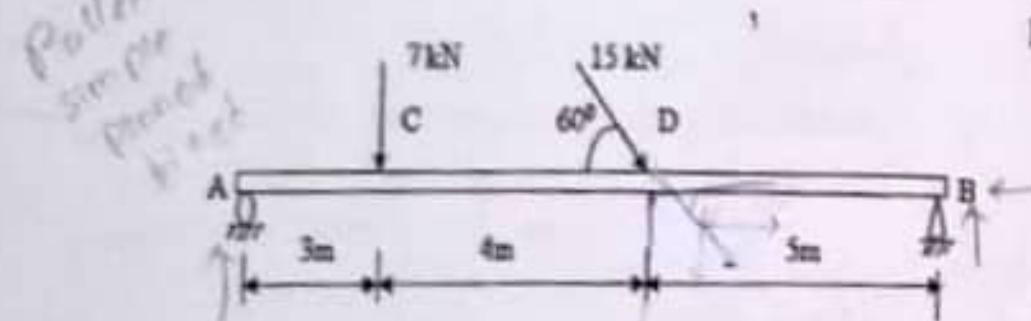
Find the reaction at A, B, C, F. W is 100 N.



5 1 3

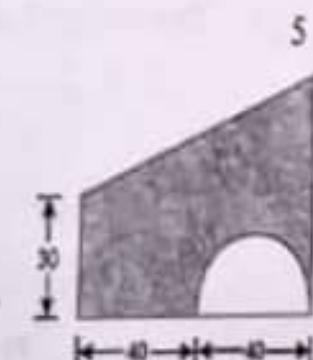
(OR)

- 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.



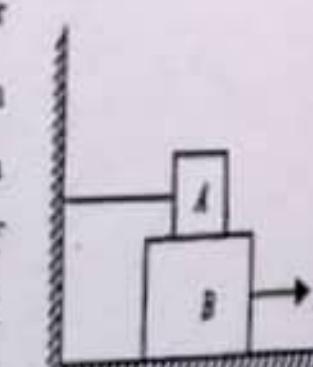
10 1 3

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



5 2 3

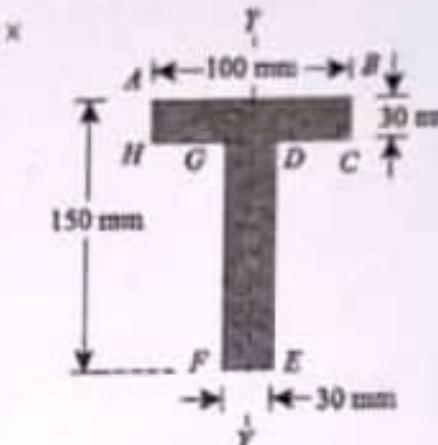
- b. Block A weighing 1000N rests over block B which weights 2000N as shown in figure. Block A is tied to wall with a horizontal string. If the coefficient of friction between A and B is 1/4 and between B and floor is 1/3, what should be the value of P to move the block B, if P is applied horizontally.



(OR)

5 2 3

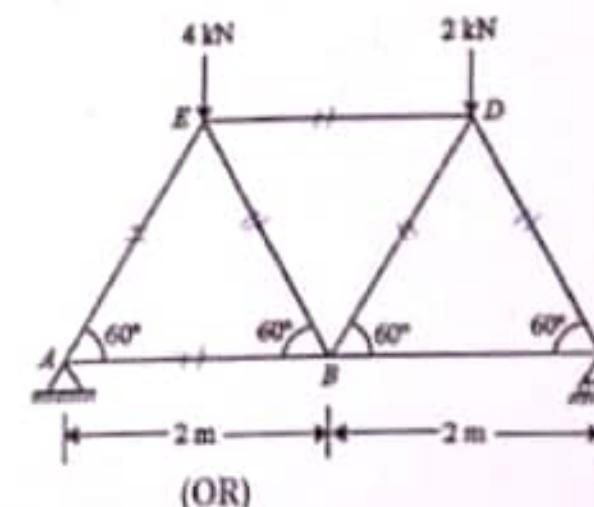
- 3.c Find the centroid of a 100 mm \times 150 mm \times 30 mm T-section.



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

5 3 1

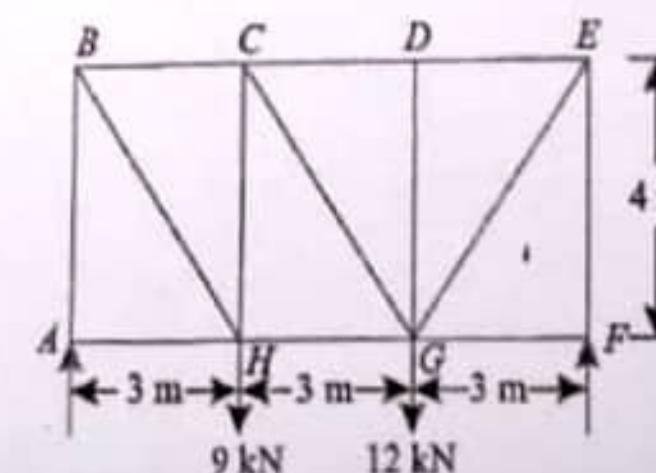
- 4.a Determine the reaction and the forces in each member of a simple triangle truss supporting two loads as shown in figure.



(OR)

10 2 2

- 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

- 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
23BBSHHS12001 – 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. | 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. <input checked="" type="checkbox"/> Describe how knowing your reading speed can enhance your overall reading experience and productivity. | 5 | 3 | 2 |
| b. <input type="checkbox"/> 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. <input type="checkbox"/> 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)

- e. 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