POORNIMA
COLLEGE OF ENGINEERING

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1.1.2 Sample midterm examination question papers

(2023-24)

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I B.TECH. (I Sem.) **Roll No. _____**

POORNIMA COLLEGE OF ENGINEERING, JAIPUR
FIRST MID TERM EXAMINATION 2023-24
Code: 1FY2-03 Category: BSC, Subject Name–ENGINEERING CHEMISTRY

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Describe characteristics of water, fuel and Engineering materials

CO2: Determine of hardness of water and calorific value of fuels for Industrial as well as domestic purposes

CO3: Compare different techniques of water treatment, fuel analysis, and corrosion protection methods.

CO4: Prepare the generic drugs or medicines by understanding the applications of organic reaction mechanism and manufacturing of engineering materials.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	What is degree of hardness? Why water hardness usually expressed in term of equivalent amount of $CaCO_3$?	**2**	1	1	1
Q.2	Define Steam emulsification number (SEN) and its significance.	**2**	1	1	1
Q.3	Why is the EDTA metal ion complex more stable then EBT metal ion complex?	**2**	1	1	1
Q.4	What is the role of Gypsum in Portland cement? Write chemical reaction.	**2**	1	1	1
Q.5	What is viscosity and viscosity index?	**2**	1	1	1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Standard hard water was prepared by dissolving 2.5 gm of and dry $CaCO_3$ in 1L distilled water,80 ml of this required, 30ml EDTA while 100 ml of given hard water sample consumed 20 ml of EDTA solution. The same boiled sample of hard water consumed 10 ml of EDTA solution. Determine the total, permanent & temporary hardness in ppm of $CaCO_3$ equivalent.	**5**	**2**	**2**	**1**
Q.7	What is setting and hardening of cement? Explain chemistry of Setting and hardening of Portland cement.	**5**	**3**	**3**	**1**
Q.8	(a) How is Scale and Sludge problematic for boiler? Explain. (b) A Zeolite softener was 78% exhausted, when **27,000 L** of hard water was passed through it. The softener required **440 L of NaCl solution** of strength **80,000 mg/L.** Calculate hardness of water softened by Zeolite softener.	**5**	**3**	**3**	**1**
Q.9	Calculate the quantity of hydrated lime and sodium carbonate required to soft 5 million liters of water containing the following salts: $Ca(HCO_3)_2$=58.6 mg/L, $Mg(HCO_3)_2$=29.3 mg/L, $MgCl_2$=3.8 mg/L, $CaCl_2$ = 33.3 mg/L, $MgSO_4$=4.8 mg/L,$CaSO_4$ =54.4 mg/L, HCO_3^-.=20 mg/l Assuming the purity of **lime as 90%** and that of **sodium carbonate 75%.**	**5**	**3**	**3**	**1**
Q.10	What is the glassy state of material? Describe manufacturing of coloured glass by tank furnace.	**5**	**4**	**3**	**1**
Q.11	What is the disinfection process? Explain break-point chlorination of water and its advantages.	**5**	**2**	**2**	**1**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				

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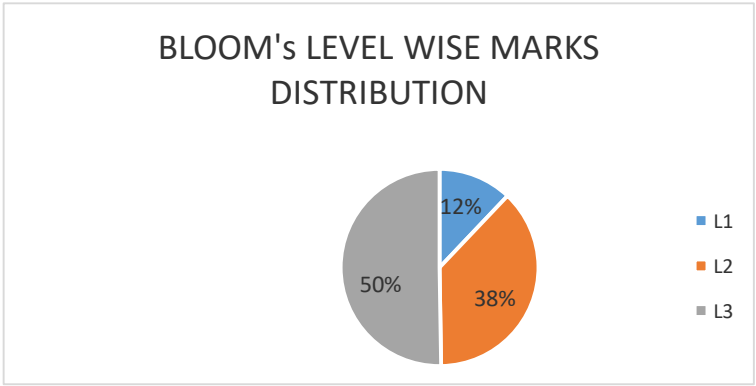
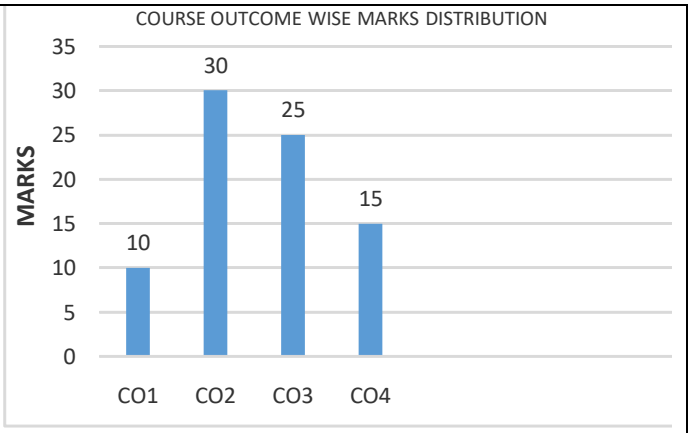
Q.12	(a)What is water softening? Explain softening of water by Demineralization method and give comparison of water softening Demineralization method to zeolite and lime Soda method of water softening.	**10**	**2**	**2**	**1**
Q.13	What is the composition of Portland cement? Explain Manufacturing of Portland cement by Rotary kiln process with labeled diagram and chemical reactions involved.	**10**	**4**	**3**	**1**
Q.14	(a)Why annealing is important during manufacturing of glass? (b)Why is carbonate conditioning is not good for boiler? What is name of boiler trouble that arises due to carbonate conditioning?	**10**	**3**	**3**	**1**
Q. 15	What is the classification of lubricant with example? Describe hydrodynamic and extreme pressure mechanism of lubrication.	**10**	**2**	**2**	**1**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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I B.TECH. (I Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 1FY3-06 Category: ESE Subject Name–PROGRAMMING FOR PROBLEM SOLVING

SECTION-All Branches

Course Credit: 2

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

- **CO1**: Understand the basic concepts of fundamental of computer system, number system and programming. (Remembering)
- **CO2**: Explain various memory units, representation of number system and Conditional, Iterative statements using arrays, string, pointers, file structure. (Understanding)
- **CO3**: Examine the concept of algorithms, flowchart, Operators, Pointer, Array, String, structure, union using modularization to solve complex problems using C Programming (Applying)
- **CO4**: Illustrate the User Defined functions, Memory management and File concepts to solve real time problems using C Programming (Analyzing)

PART - A: (All questions are compulsory) Max. Marks (10)					
		Marks	**CO**	**BL**	**PO**
Q.1	What is the difference between constant and variable?	**2**	1	1	1
Q.2	What is keyword?	**2**	1	1	1
Q.3	What is algorithm?	**2**	2	2	1
Q.4	Write the differences between High Level Language and Low Level Languages.	**2**	2	2	1
Q.5	Write the difference between primary memory and secondary memory.	**2**	1	1	1
PART - B: (Attempt 4 questions out of 6) Max. Marks (20)					
Q.6	Write a program in C to print maximum number among 3 numbers.	**5**	**3**	**3**	**1**
Q.7	Explain the basic structure of a 'C' program.	**5**	**2**	**2**	**1**
Q.8	What do you mean by random, direct and sequential access methods?	**5**	**1**	**1**	**1**
Q.9	Write a C program to swap (interchange) two numbers.	**5**	**4**	**4**	**2**
Q.10	What is variable? Write the rules for variable declaration.	**5**	**3**	**3**	**1**
Q.11	Do the following: (a) $(3482)_{10} = (?)_{16}$ (b) $(10111010)_2 = (?)_8$ (c) 110101 + 100011 (d) 110001 – 101110 (e) Find r's complement of $(101011)_2$	**5**	**2**	**2**	**1**
PART - C: (Attempt 3 questions out of 4) Max. Marks (30)					
Q.12	What are data types in C? Explain with examples.	**10**	**1**	**1**	**1**
Q.13	Write a pseudo code and draw a flowchart to print the numbers from 1 to 10.	**10**	**2**	**2**	**1**
Q.14	Explain stored program architecture (Von Neumann Architecture) of computers.	**10**	**2**	**2**	**1**
Q. 15	If the marks obtained by a student in five different subjects are input through the keyboard, find out the aggregate marks and percentage marks obtained by the student. Assume that the maximum marks that can be obtained by a student in each subject is 100.	**10**	**4**	**4**	**2**

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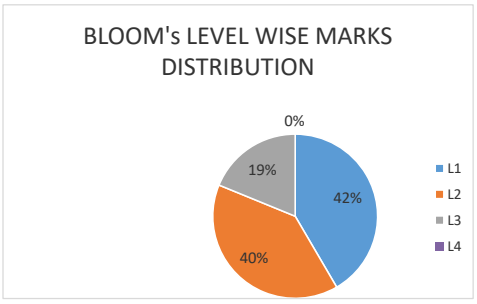

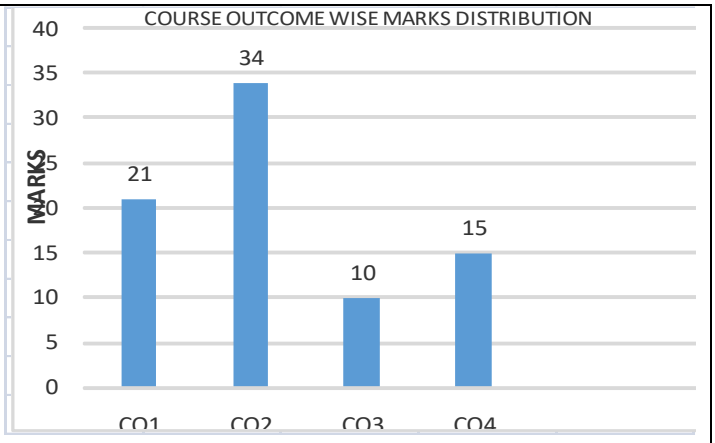

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II B.TECH. (III Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 3CSAI1-03 Category: HSMC Subject Name–MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTING (BRANCH – ADVANCED COMPUTING)

Course Credit: 2

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Describe the fundamental concepts of Economics and Financial Management and define the meaning of national income, demand, supply, cost, market structure, and balance sheet

CO2: Calculate the domestic product, national product and elasticity of price on demand and supply

CO3: Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect market structures.

CO4: Compare the financial statements to interpret the financial position of the firm and evaluate the project investment decisions.

		Marks	CO	BL	PO
	PART - A: (All questions are compulsory) Max. Marks (10)				
Q.1	Why is elasticity of demand for salt almost zero?	**2**	1	1	11
Q.2	Give Condition of consumer's equilibrium.	**2**	1	1	11
Q.3	Differentiate between 'National Product' and 'Domestic Product'.	**2**	1	1	11
Q.4	How is marginal cost calculated, and why is it an important concept in economics and business decision-making	**2**	1	1	11
Q.5	Define the term 'Price Elasticity of Demand'.	**2**	1	1	11
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Differentiate between 'Macro Economics' and 'Micro Economics'.	**5**	**1**	**1**	**11**
Q.7	Calculate Total Cost (TC) if Total fixed Cost (TFC) is Rs 100 at zero level of output.	**5**	**2**	**2**	**11**
Q.8	Calculate the Total Product (TP) and Marginal Product (MP) form the information given below:	**5**	**3**	**3**	**1**
Q.9	Calculate GDP_{FC} , NDP_{FC} and GNP_{FC} from the following data:	**5**	**2**	**2**	**11**

Output (Units)	TVC (RS)
0	0
1	20
2	30
3	35
4	45
5	75

Units of labour	Average Product (AP)
1	10
2	12
3	10
4	8
5	6

Items	(Rs crores)
NNP_{MP}	3080
Depreciation	300
Indirect Taxes	45
Subsidies	35
Net factor income from abroad	-60

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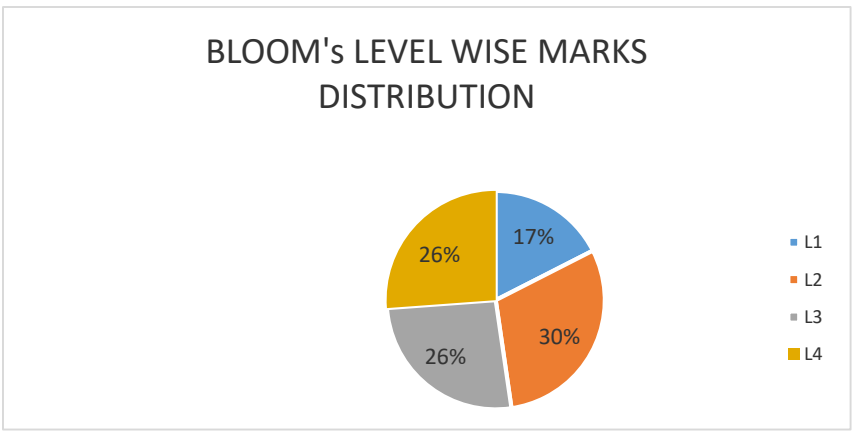
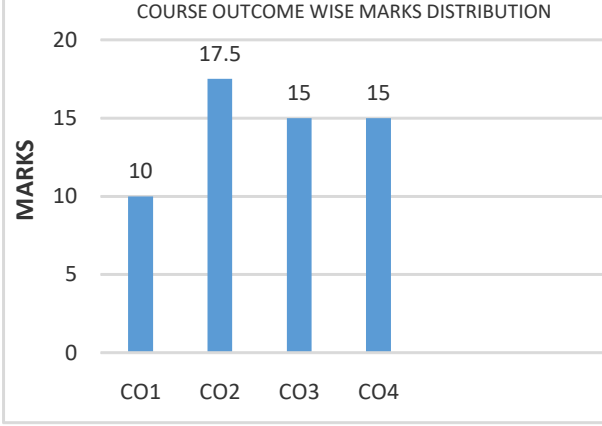
Q.10	When the price of a good X is 5, the consumer buys 100 units of the good X. At what price would he be willing to purchase 140 units of good X? The price elasticity of demand for good X is (-) 2.	**5**	**3**	**3**	**1**
Q.11	Illustrate the determination of the least cost combination of inputs?	**5**	**3**	**3**	**1**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Compare and contrast the circular flow of income in a closed economy with that in an open economy. What are the main differences in terms of leakages and injections in these two scenarios?	**10**	**2**	**2**	**11**
Q.13	(a)Define National Income (NI) and name the various methods of calculating NI. (b) Calculate Domestic income and National income from the following data:	**10**	**4**	**4**	**2**

Items	**Rs in crore**
GDP(mp)	1000
Indirect tax	50
Net factor income to abroad	30
Subsidies	25
Depriciation	60

Q.14	A Publishing company plans to publish a book. It finds from the sales data of other publishers of similar books that the demand function for the book can be expressed as Q= 5000-5P. Find out: a) Demand Schedule and Demand Curve b) Number of books sold when P=rs 25 c) Price for selling 2500 copies d) Price for zero sales e) Point elasticity of demand at price Rs20 f) Price Elasticity for a fall in price from Rs 25 to Rs 20 and for a rise from Rs 20 to Rs 25.	**10**	**4**	**4**	**2**
Q. 15	Suppose a short run production function is given as follows: $Q= 2L^2 + 0.2L^3$ Where Q= output and L= variable unit Find the following Marginal Product function Average product function Value of L that maximizes Q	**10**	**4**	**4**	**2**





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II B.TECH. (III Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 3CS3-04 Category: PCC Subject Name–DIGITAL ELECTRONICS

(BRANCH – COMPUTER ENGINEERING)

Course Credit: 03

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- **Read the guidelines given with each part carefully.**

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Able to understand different coding and number system and its applications.

CO2: Understand the basic concepts of logic gates and minimize the circuit by using the different Boolean algebra.

CO3: Analyze the various logic families and Interfacing between digital and analog components.

CO4:Able to design various combinational and sequential circuits with aspects of Speed, Area, Delay, Power dissipation.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	If $(110)_X = (132)_4$, then find the value of X.	2	CO1	2	PO1
Q.2	Explain how to convert given Binary Code into Gray Code? $(10110)_2 = (\ )_{\text{Gray Code}}$	2	CO1	2	PO1
Q.3	Which one is not a binary operator: (a) Addition (b) Multiplication (c) Subtraction (d) None of These	2	CO2	1	PO2
Q.4	For even number of ones at the inputs, the output of Ex-NOR Gate is : (a) Low (b) High (c) Oscillating (d) None of these	2	CO2	2	PO2
Q.5	Differentiate between FAN-IN and FAN-OUT.	2	CO3	2	PO3
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Differentiate between Positive Logic and Negative Logic with the help of example?	5	CO1	3	PO1
Q.7	Find out the result by using 2's compliment method for given data : -64 - 58 = ?	5	CO1	3	PO2
Q.8	If $A\overline{B} + \overline{A}B = C$, Show that $A\overline{C} + \overline{A}C = B$?	5	CO2	2	PO2

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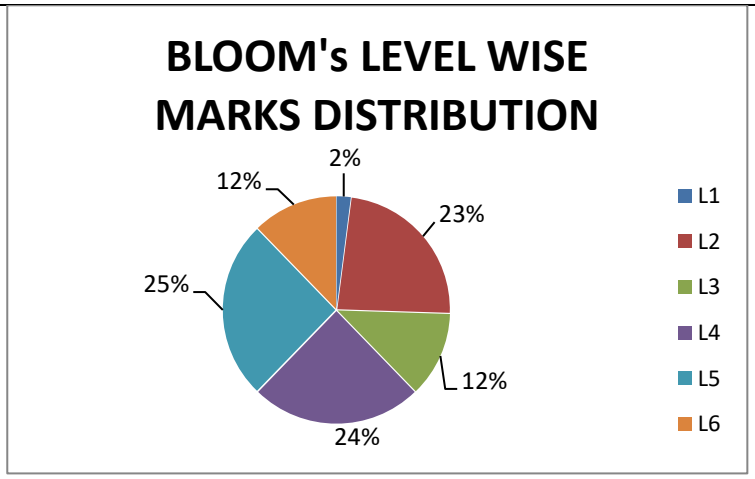
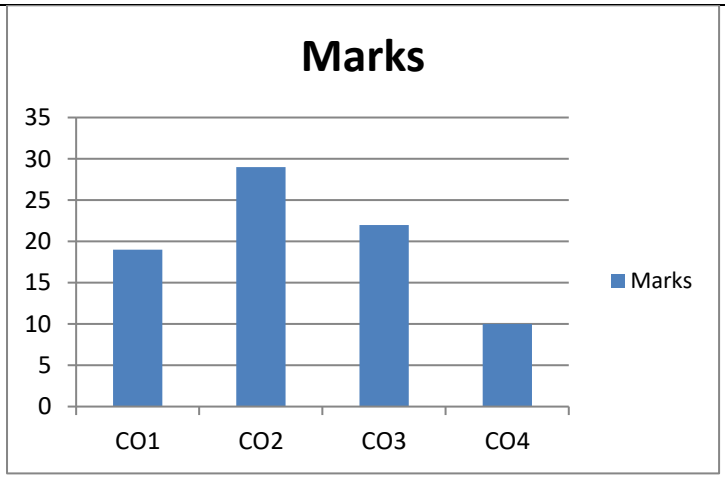
Q.9	Draw logic diagram for given logic function by using NOR Gates only: Y = AB'C + (A + C')B + (A + B'C)	5	CO2	3	PO2
Q.10	How many Minterms will be obtained after simplification of following Boolean function: Y = D' + AB' + A'C + AC'D + A'C'D	5	CO2	3	PO3
Q.11	Explain the Logic Gate Characteristics with neat and clean diagrams.	5	CO3	2	PO3
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Convert the given expression into Canonical Standard POS form: F = A + BC	10	CO2	4	PO4
Q.13	Simplify given function by using Karnaugh- Mapping: F (A, B, C, D) = Σm (0, 1, 2, 3, 7, 8, 10,) + Σd (5. 6, 11, 15)	10	CO2	3	PO2
Q.14	Define following properties of Boolean Algebra with proper examples: (a) Commutative Property (b) Distributive Property (c) Associative Property (d) Consensus Law (e) DeMorgan's Theorem	10	CO2	2	PO1
Q. 15	Simplify following Boolean function by using Karnaugh-Mapping in SOP and POS form: F (A, B, C, D) = Σm (0, 1, 2, 5, 8, 9, 10)	10	CO2	4	PO3





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II B.TECH. (III Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24
Code: 3CE1-02 Category: PCC Subject Name–TECHNICAL COMMUNICATION
(BRANCH – CIVIL ENGINEERING)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO-1 Understand the basic concept of technical writing and genre for written communication in technical fields.

CO-2 Interpret planning, drafting, revising, editing, and critiquing professional documents through individual and collaborative writing between business communication and technical communication.

CO-3 Apply note making, grammar editing, technical style, Project report and LSWR skills in technical communication.

CO-4 Analyzing research and synthesizing emails, resumes, meeting minutes, technical reports, articles and project proposals for business communication.

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	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Define the technical communication.	**2**	**1**	**1**	10
Q.2	Shed light on the nature and purpose of communication.	**2**	**1**	**1**	10
Q.3	Comprehend the sequential stages involved in transmitting information.	**2**	**1**	**1**	10
Q.4	Outline the skills related to LSRW in the context of language proficiency.	**2**	**1**	**1**	10
Q.5	What are the strategies need to adopt for organizing information?	**2**	**1**	**1**	10
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explore techniques for improving language skills and expanding vocabulary.	**5**	**2**	**2**	**10**
Q.7	Discuss the barriers of effective speaking.	**5**	**1**	**1**	**10**
Q.8	Distinguish between communication tailored for technical contexts and communication in general.	**5**	**3**	**3**	**12**
Q.9	What are the approaches to achieve clarity and impact in written communication?	**5**	**3**	**2**	**10**
Q.10	Examine Charting Method along with its advantages and disadvantages.	**5**	**2**	**2**	**10**
Q.11	Elaborate Questionnaire method of research.	**5**	**2**	**1**	**12**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Showcase the technique of creating concise notes while considering its advantages and disadvantages.	**10**	**3**	**3**	**12**
Q.13	Explore the benefits of applying technical communication skills both within and outside professional settings.	**10**	**2**	**2**	**12**

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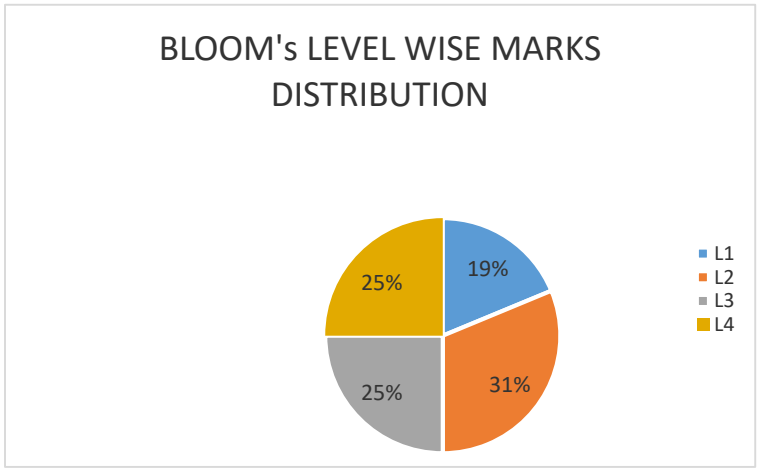
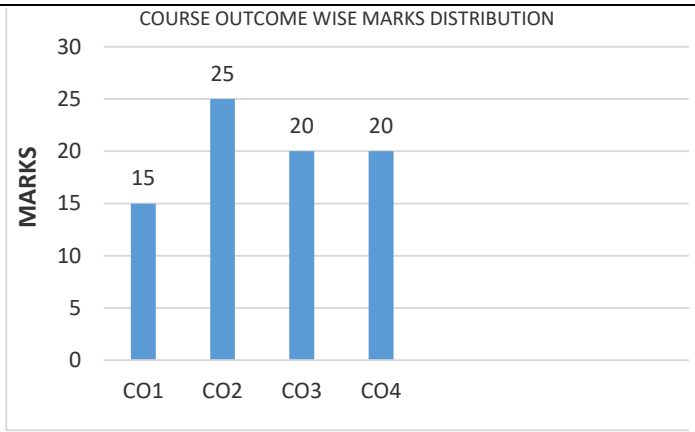
Q.14	Differentiate the below methods i) Qualitative Method ii) Quantitative Method	**10**	**4**	**2**	**10**
Q. 15	Interpret the factors affecting Document Design.	**10**	**4**	**2**	**12**





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II B.TECH. (III Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24
Code: 3CE4-08 Category: PCC Subject Name– Engineering Geology
(BRANCH – CIVIL ENGINEERING)

Course Credit: 02
Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Define the basic concept of geology, GIS and remote Sensing for civil engineering.

CO2: Describe the geological studies, investigation process and their significance in civil engineering.

CO3: Apply the process of Engineering Geology, GIS and remote sensing in civil engineering application.

CO4: Analyze the properties, behavior and engineering significance of rocks, mineral and geological features.

	PART - A: (All questions are compulsory) Max. Marks (5)				
		Marks	**CO**	**BL**	**PO**
Q.1	Describe the scope of engineering geology in civil engineering.	**2**	1	1	1
Q.2	Define the Erosional features formed by wind.	**2**	1	1	1
Q.3	Write the definition of cleavage with suitable examples.	**2**	1	1	1
Q.4	What is a mineral? Write name of 5 minerals.	**2**	1	1	1
Q.5	What is relative hardness of mineral? And how it is measured?	**2**	1	1	1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Discuss the Mohs hardness scale with suitable examples and also draw the scale.	**5**	**2**	**2**	**2**
Q.7	Describe feature formed by river deposition with suitable diagrams.	**5**	**2**	**2**	**2**
Q.8	Differentiate the structures of igneous rocks with suitable diagrams.	**5**	**4**	**4**	**3**
Q.9	Discuss the erosional feature formed by river with suitable diagrams.	**5**	**2**	**2**	**1**
Q.10	Differentiate the textures of Sedimentary rocks using suitable diagrams.	**5**	**4**	**4**	**3**
Q.11	Illustrate the engineering properties of rocks with suitable examples.	**5**	**3**	**3**	**3**
	PART - C: (Attempt 2 questions out of 3) Max. Marks (15)				
Q.12	Demonstrate weathering and illustrate types of weathering with suitable diagrams.	**10**	**3**	**3**	**3**
Q.13	Illustrate the geological work by wind and distinguish the various features formed from wind erosion.	**10**	**3**	**3**	**3**
Q.14	Classify forms of igneous rocks with suitable diagram.	**10**	**4**	**4**	**3**
Q.15	Demonstrate the various process of metamorphism and discuss texture of metamorphic rocks.	**10**	**2**	**2**	**2**

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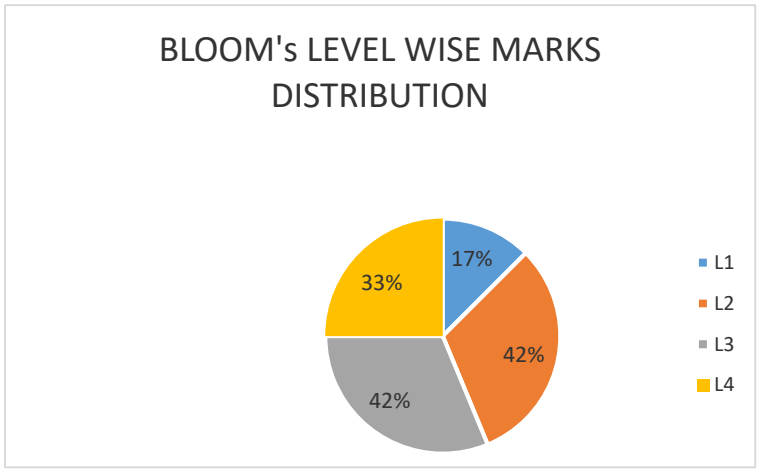

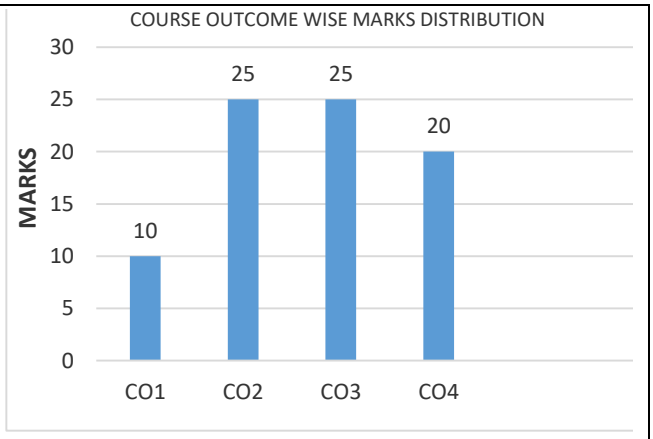

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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II B.TECH. (III Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 3EE1-02 Category: PCC Subject Name–TECHNICAL COMMUNICATION

(BRANCH – ELECTRICAL ENGINEERING)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO-1 Understand the basic concept of technical writing and genre for written communication in technical fields.

CO-2 Interpret planning, drafting, revising, editing, and critiquing professional documents through individual and collaborative writing between business communication and technical communication.

CO-3 Apply note making, grammar editing, technical style, Project report and LSWR skills in technical communication.

CO-4 Analyzing research and synthesizing emails, resumes, meeting minutes, technical reports, articles and project proposals for business communication.

:

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	CO	BL	PO
Q.1	Define Technical communication.	2	1	1	10
Q.2	Shed light on the nature and purpose of communication.	2	1	1	10
Q.3	Comprehend the sequential stages involved in transmitting information.	2	1	1	10
Q.4	Outline the skills related to LSRW in the context of language proficiency.	2	1	1	10
Q.5	What are the strategies for Organizing Information?	2	1	1	10
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explore techniques for improving language skills and expanding vocabulary.	5	2	2	10
Q.7	Discuss the barriers of effective speaking.	5	1	1	10
Q.8	Distinguish between communication tailored for technical contexts and communication in general.	5	4	3	12
Q.9	What are the approaches to achieve clarity and impact in written communication?	5	3	2	10
Q.10	Examine Charting Method along with its advantages and disadvantages.	5	3	3	10
Q.11	Elaborate Questionnaire method of Research.	5	2	1	12
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Showcase the technique of creating concise notes while considering its advantages and disadvantages.	10	3	3	12
Q.13	Explore the benefits of applying technical communication skills both within and outside professional settings.	10	2	4	12
Q.14	Differentiate the below methods	10	4	1	1

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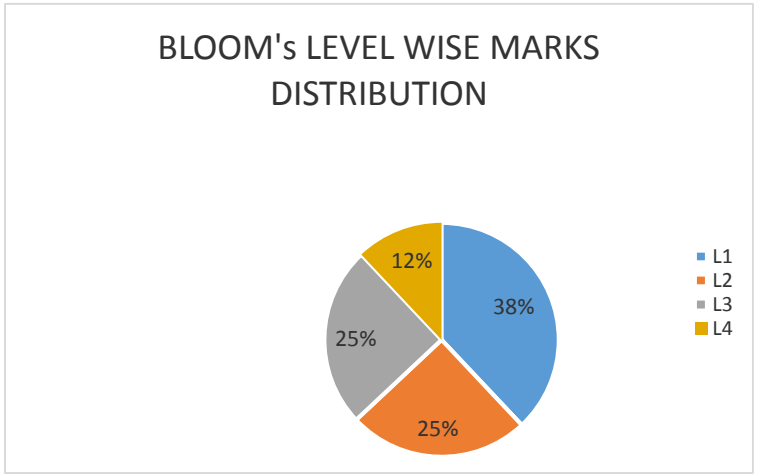
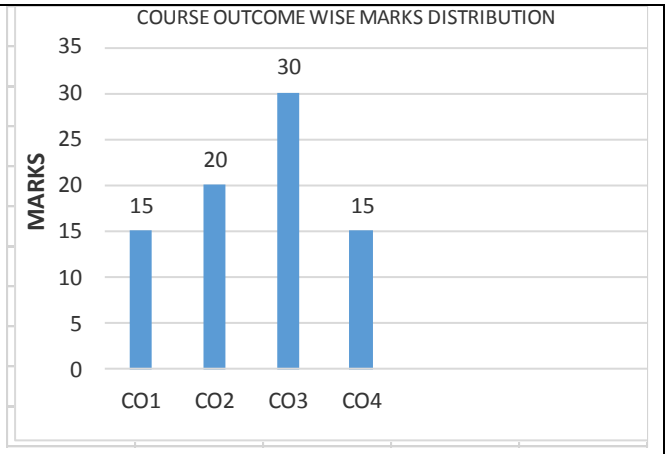
	i) Qualitative Method ii) Quantitative Method				
Q. 15	Interpret the factors affecting Document Design.	**10**	**3**	**2**	**12**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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II B.TECH. (III Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24
Code: 3EE4-06 Category: PCC Subject Name–Analog Electronics
(BRANCH – ELECTRICAL ENGINEERING)

Course Credit: 03
Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- **Read the guidelines given with each part carefully.**

Course Outcomes (CO):

At the end of the course the student should be able to:

CO 1	**Relate** the concept and working of analog circuits comprising diodes, BJT's, MOSFET's and Op-amps **[Apply]**.
CO 2	**Demonstrate** the characteristic and output response of analog circuits comprising diodes, BJT's, MOSFET's and Op-amps. **[APPLY]**
CO 3	**Compare** the relationship between input and output response of analog circuits comprising diodes, BJT's, MOSFET's and Op-amps. **[ANALYZE]**
CO 4	**Select** the appropriate switching, amplifying, voltage regulation, filtering, controller and comparator circuit comprising diode, BJT, MOSFET and Op-amps. **[EVALUATE]**
CO 5	**Design** switching, amplifying, voltage regulation, filtering, controller and comparator circuits comprising diode, BJT, MOSFET and Op-amps. **[CREATE]**

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Distinguish between Zener and Avalanche breakdown.	**2**	**1**	**2**	**1**
Q.2	Compare emitter, base and collector sections of a BJT on the basis of dimensions and doping levels?	**2**	**1**	**2**	**1**
Q.3	Can a circuit comprising of two Diodes connected back to back be used as a transistor? Comment on it with justification.	**2**	**1**	**2**	**1**
Q.4	Differentiate between a clipper and a clamper.	**2**	**1**	**1**	**1**
Q.5	Sketch and explain the I-V characteristics of a P-N junction diode.	**2**	**2**	**2**	**1**
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Enumerate the construction and working of a P-N junction diode with neat diagrams.	**5**	**1**	**1**	**1**
Q.7	Derive an expression for ripple factor, rectification efficiency and PIV for half-wave rectifier.	**5**	**1**	**2**	**1**
Q.8	Enumerate the construction and working of a PNP type BJT with neat diagrams.	**5**	**2**	**3**	**1**
Q.9	Draw the circuit diagrams, input characteristics and output characteristics of CB, CE and CC configurations of BJT amplifiers.	**5**	**1**	**1**	**1**
Q.10	Determine the following parameters for the emitter - bias circuit shown in figure 1. (i) I_B (ii) I_C (iii) V_{CE} (iv) V_C (v) V_E (vi) V_B (vi) V_{BC}	**5**	**3**	**4**	**2**

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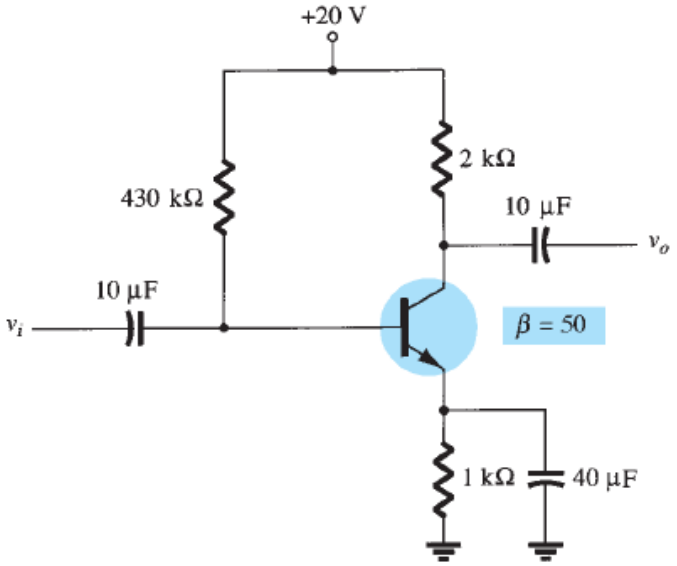
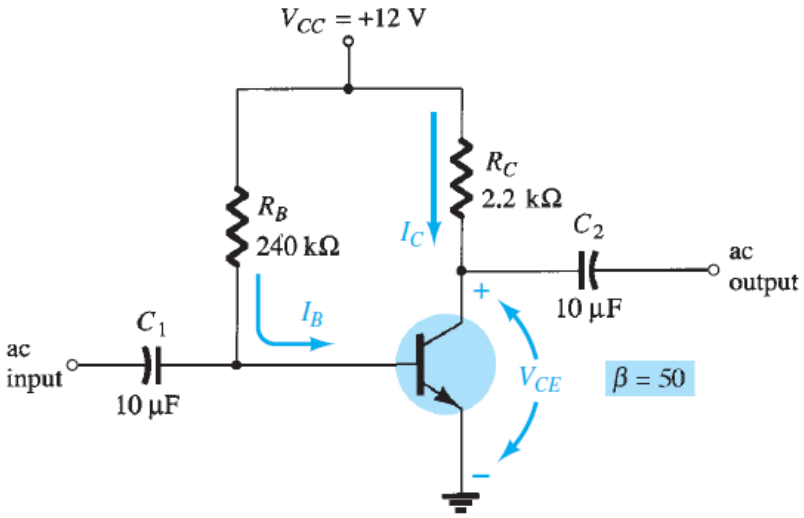
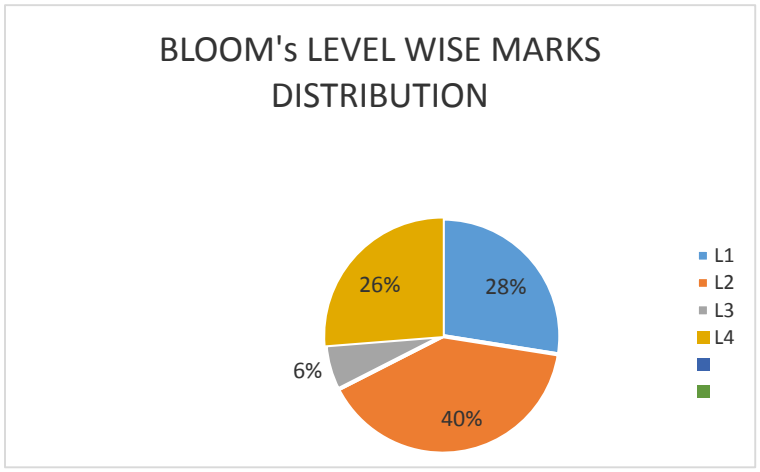
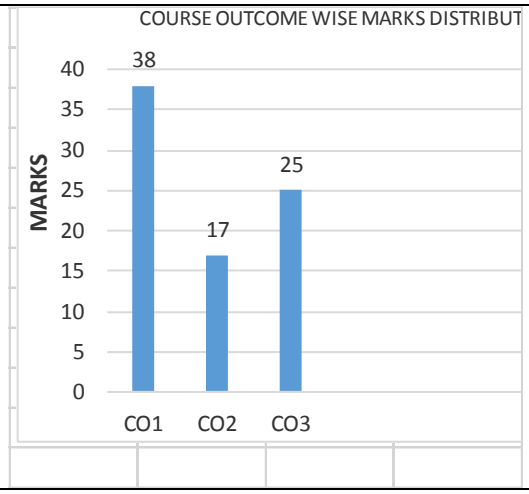
	 Figure 1: Emitter - bias circuit				
Q.11	Classify different types of clipper circuits with appropriate diagrams and waveforms.	**5**	**1**	**2**	**1**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Explain the working of full wave bridge rectifier with necessary circuit diagrams and also categorize different types of filter circuits.	**10**	**1**	**1**	**1**
Q.13	Determine the following parameters for the fixed - bias circuit shown in figure 2. (i) I_{BQ} and I_{CQ} (ii) V_{CEQ} (iii) V_B and V_C (iv) V_{BC}  Figure 2: Fixed - bias circuit	**10**	**3**	**4**	**2**
Q.14	Derive an expression showing relationship between α, β and γ in regard with various configurations of BJT amplifiers.	**10**	**2**	**2**	**1**
Q. 15	Illustrate the usage of exact analysis and approximate analysis with circuit diagrams and equations in regard with voltage-divider biasing in BJT amplifier.	**10**	**3**	**2**	**2**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

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III B.TECH. (V Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 5EC4-02 Category: PCC Subject Name–Electromagnetic Waves

(BRANCH – Electronics & Communication Engineering)

Course Credit: 3

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Explain basic concepts of transmission line, electromagnetic fields, waveguides and radiation parameter.

CO2: Solve specific problems related to transmission line, Maxwell's equation, uniform plane waves for different media interface

CO3: Analyze parameter of transmission line and time varying electromagnetic wave propagation in different media

CO4: Evaluate the nature of electromagnetic wave propagation in guided medium for specific applications'

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Given the two points A (2, 3,-1) and B (4, 25^0, 120^0). Find the Spherical coordinates of A and Cartesian coordinates of B.	**2**	2	2	1
Q.2	Transform the vector $F=(1/r)a_r$ in spherical coordinates into a vector in Cartesian coordinates.	**2**	2	2	2
Q.3	State stockes theorem and use of it.	**2**	2	1	2
Q.4	State divergence theorem and significance of it.	**2**	1	1	3
Q.5	Evaluate the gradient of the scalar field $(3z/\rho)\cos\varphi$	**2**	1	3	2
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	A transmission line has R=30Ω/km, L=100mH/km, G=0 and C=20μF/km. At a frequency of 1 kHz, calculate the characteristic impedance and propagation constant of the line.	**5**	**2**	**3**	**2**
Q.7	Define standing wave ratio. How is it related to voltage reflection coefficient?	**5**	**1**	**1**	**1**
Q.8	Derive the wave equation for electric field in phasor form.	**5**	**1**	**3**	**2**
Q.9	An airline has characteristic impedance of 70 ohm, and phase constant of 3 rad/m at 100 MHz. Calculate the inductance per meter and capacitance per meter of the line.	**5**	**1**	**3**	**3**
Q.10	A 70 ohm lossless line is terminated with 60+j60 ohm load. Find reflection coefficient and SWR.	**5**	**2**	**5**	**3**
Q.11	A loosless line of 60 ohm terminated with 60+j 50 ohm and input impedance is 120-j60 ohm find how far (in terms of wavelength) is the load from the generator.	**5**	**2**	**4**	**3**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	A 30 m long lossless transmission line with characteristic impedance of 50 ohm operating at 2 MHz is terminated with a load ZL=60 +j 40 Ohm. Find the reflection coefficient, standing wave ration, and input impedance using formula approach.	**10**	**1**	**4**	**4**

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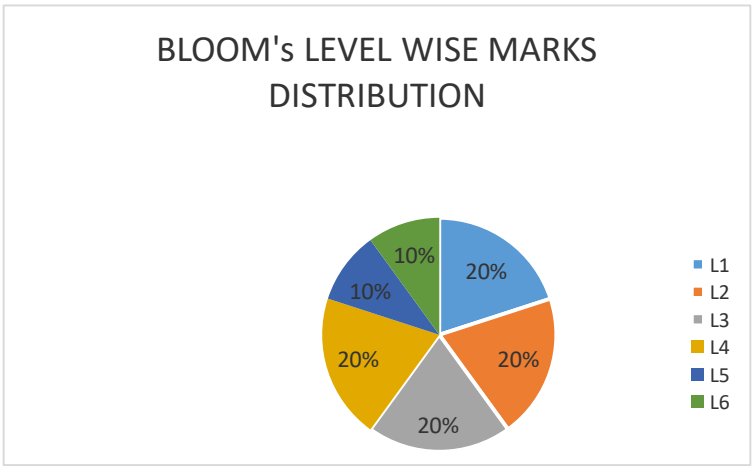
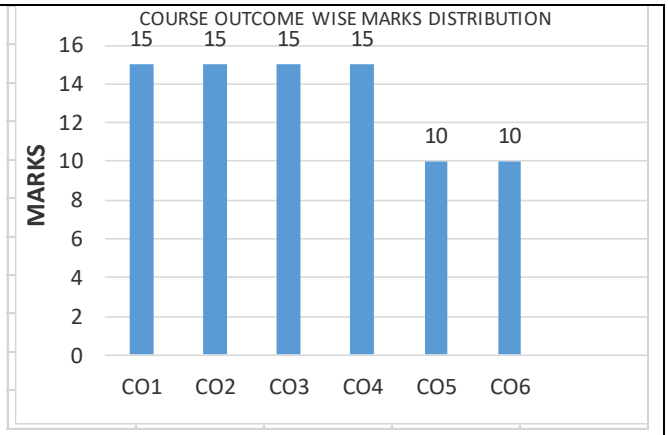
Q.13	A 30 m long lossless transmission line with characteristic impedance of 50 ohm operating at 2 MHz is terminated with a load ZL=60 +j 40 Ohm. Find the reflection coefficient, standing wave ration, and input impedance using Smith chart.	**10**	**1**	**4**	**4**
Q.14	A certain transmission line operating at w=106 rad/sec has α=8 dB/m, β=1 rad/m and characteristic impedance 60+j40 ohm and is 2 m long. If the line is connected to a souce of 10∟00 V, Zg=40 ohm and terminated by a load of 20+j50 ohm, determine a) The input impedance b) The sending end current c) The current at the middle of line	**10**	**2**	**5**	**3**
Q. 15	Antenna with impedance 40+j30 ohm is to be matched to a 100 ohm lossless line with a shorted stub. Determine a) The required stub admittance b) The distance between the stub and the antenna c) The stub length d) The SWR	**10**	**2**	**5**	**4**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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III B.TECH. (V Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 5EC5-14 Category: PCC Subject Name– SATELLITE COMMUNICATION

(BRANCH – ELECTRONICS AND COMMUNICATION ENGINEERING)

Course Credit: 02

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Able to understand the dynamic & architecture of Satellite.

CO2: Solve numerical problems related to Orbital motion.

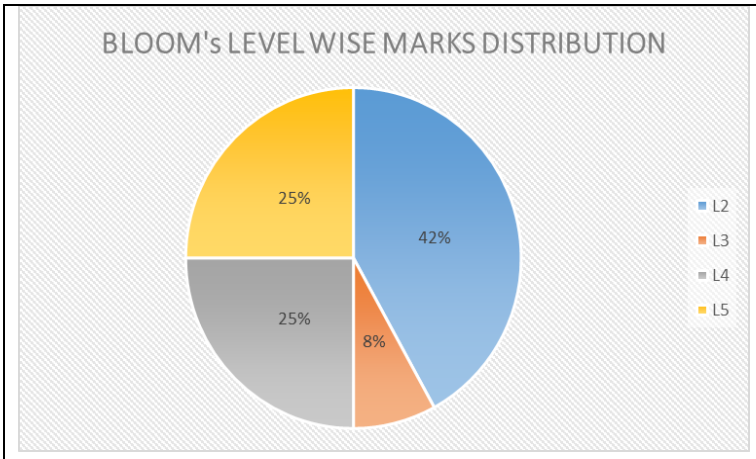
CO3: Examine the design of earth station & tracking of Satellite.

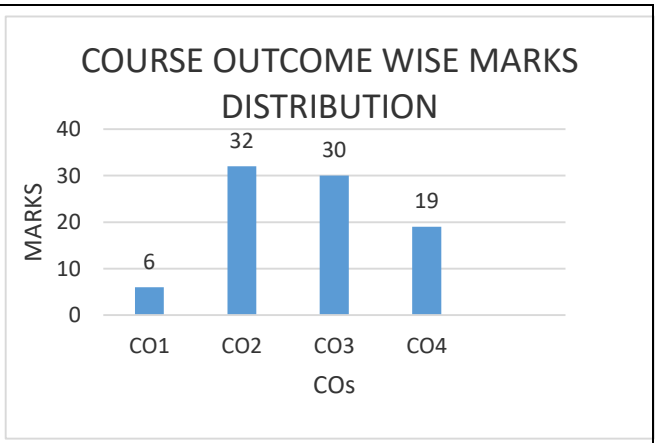
CO4: Evaluate & design link power budget for the Satellite.

CO5: Analyze the analog & Digital technologies used for satellite Communication.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Define the history of communications satellite development.	**2**	1	3	1
Q.2	Describe the basic difference LEO and MEO in term design.	**2**	2	1	1
Q.3	Describe the basic need of orbital mechanics.	**2**	1	2	1
Q.4	List the all advantages of GEO satellite over other available satellites.	**2**	1	2	1
Q.5	Discuss the basic difference between satellite and mobile communication.	**2**	1	2	1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Calculate the period of GEO orbit if $\mu = 3.986X10^5$ km^3/s^2 & a=42164.17 KM.	**5**	**2**	**5**	**2**
Q.7	Design for space shuttle is orbiting at an altitude of 250 Km above the earth surface. The mean earth radius is approx. 6378.14 Km. Calculate the period of the shuttle orbit.	**5**	**2**	**5**	**2**
Q.8	Describe the frequency band used in satellite communication and also list all advantages and disadvantages?	**5**	**2**	**6**	**1**
Q.9	Discuss about the Communication sub-system, power sub-systems for satellite communications	**5**	**3**	**2**	**1**
Q.10	Define the orbit? Drive the expression for the equation of satellite orbit.	**5**	**2**	**4**	**1**
Q.11	Evaluate the mathematical equations of velocity, orbital period, angular velocity of a satellite.	**5**	**2**	**5**	**1**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Describe the difference b/w Geostationary, Geo-synchronous & Polar Satellite with suitable diagram.	**10**	**2**	**4**	**1**
Q.13	A satellite is in elliptical orbit with a perigee of 1000 km & an apogee of 4000 km. Using a mean earth radius of 6378.14 km, find the period of the orbit in hours, minutes & seconds & the eccentricity of the orbit.	**10**	**3**	**4**	**1**
Q.14	Describe about TTC&M subsystem also and explain the architecture of Satellite Communication System.	**10**	**3**	**5**	**2**
Q. 15	Explain following terms by mathematical equations and analyze with	**10**	**2**	**4**	

	consideration of satellite communication Sub-system- (A) Kepler's Law (B) Apogee & perigee				





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III B.TECH. (V Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 5IT3-01 Category: PCC Subject Name– MICROPROCESSOR & INTERFACE

(BRANCH – INFORMATION TECHNOLOGY)

Course Credit: 02

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

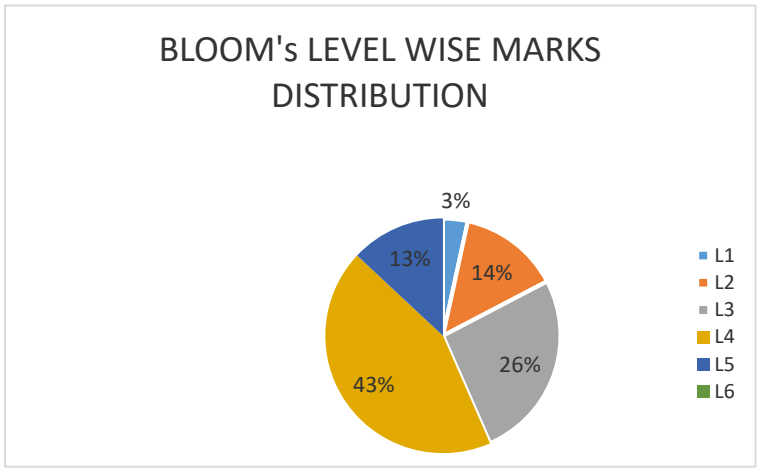
Course Outcomes (CO):

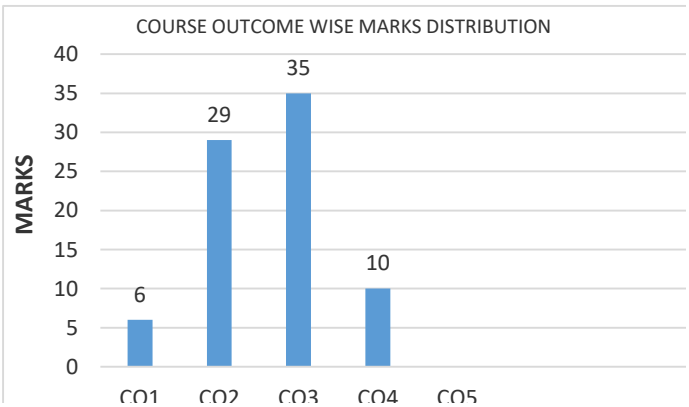
At the end of the course the student should be able to:

CO1: Describe the architecture and organization of Microprocessor along with Instruction Set format.
CO2: Illustrate the operation of various instructions and addressing modes.
CO3: Compare the various interrupts and Delay Techniques.
CO4: Develop assembly language program using various programming tools for given problem.
CO5: Design Interfacing of Microprocessor with External Device.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Explain the Role of Program Counter in Microprocessor?	**2**	**CO1**	**LO1**	**PO1**
Q.2	Write any four application of Microprocessor in daily life.	**2**	**CO1**	**LO1**	**PO1**
Q.3	Differentiate between Microprocessor and Microcontroller?	**2**	**CO1**	**LO2**	**PO1**
Q.4	Why Address and Data Lines are multiplexed and demultiplexed?	**2**	**CO2**	**LO2**	**PO2**
Q.5	Describe the role of Flag Register in Microprocessor?	**2**	**CO2**	**LO2**	**PO2**
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Draw the architecture diagram of 8085. Explain usability of temporary registers and instruction register in architecture of 8085.	**5**	**CO2**	**LO3**	**PO2**
Q.7	Find the stored value in accumulator after executing the given program. Assume value of the carry flag is 1? MVI A, DC H ADD A RAL HLT	**5**	**CO2**	**LO3**	**PO2**
Q.8	What is stack in 8085? Describe different stack instruction used in 8085 with suitable process diagram between programing model and stack memory.	**5**	**CO2**	**LO3**	**PO2**
Q.9	How Addressing Modes can be used to define any instruction? Write different type of Addressing Modes with suitable example.	**5**	**CO2**	**LO3**	**PO2**
Q.10	Explain different type of software and hardware interrupts present in 8085 Microprocessor.	**5**	**CO3**	**LO4**	**PO3**
Q.11	Categorize different types of memory used with microprocessor. Explain each type in detail.	**5**	**CO2**	**LO2**	**PO2**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	How many machine cycle used by the STA 3000? Draw the timing diagram of this instruction.	**10**	**CO3**	**LO4**	**PO3**
Q.13	Explain pin description diagram of 8085. Also describe each signal usage.	**10**	**CO3**	**LO4**	**PO3**
Q.14	Start instructions for below programs at 2000H and write XXH for hex code for each instruction. (a) Write a program to add two 16 bit numbers using 8 bit instructions. Two 16	**10**	**CO4**	**LO5**	**PO3**

	bit numbers are given as 1631 H and 3456 H. Store the result at memory location starting from 5000 H. (b) Write a program to find smallest number among 10 numbers stored at memory location started from 3500H and store the result at 3600H.				
Q. 15	Explain all the data copy instructions used by 8085 with suitable notations and examples.	**10**	**CO3**	**LO4**	**PO3**





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III B.TECH. (V Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 5IT5-11 Category: PCC Subject Name– WIRELESS COMMUNICATION

(BRANCH – INFORMATION TECHNOLOGY)

Course Credit: 02

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: To analyze the Mobile radio propagation, fading, diversity concepts and the channel modeling.

CO2: To design cellular system and analyze technical challenges.

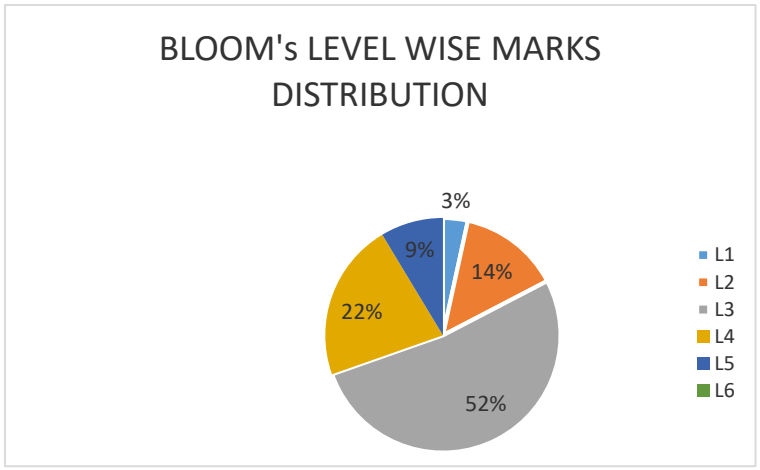
CO3: To apply the Digital Signaling concept for fading channels.

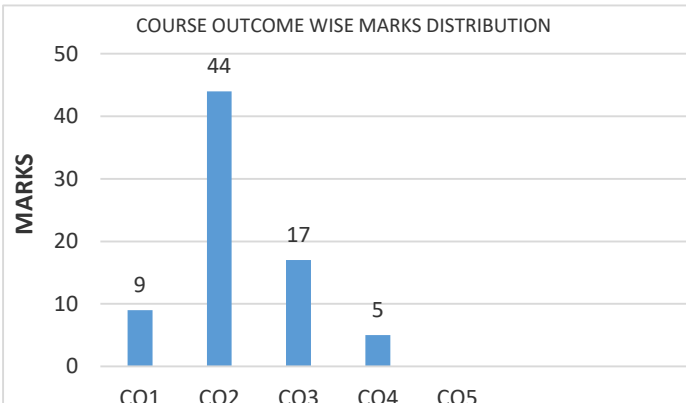
CO4: To apply the equalization techniques in wireless communication and calculate error probability in fading channels

CO5: To analyze the design parameters, beam forming and MIMO systems.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	What do you understand by wireless communication?	**2**	**CO1**	**LO1**	**PO1**
Q.2	What is fading and why it occurs?	**2**	**CO1**	**LO1**	**PO1**
Q.3	How mobile users share the available spectrum?	**2**	**CO2**	**LO2**	**PO2**
Q.4	Why cell shape is hexagonal in cellular network?	**2**	**CO2**	**LO2**	**PO2**
Q.5	What do you understand by subcarriers in OFDM?	**2**	**CO3**	**LO2**	**PO2**
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain each propagation mechanism effects.	**5**	**CO1**	**LO2**	**PO1**
Q.7	If the transmit power is 1 W and carrier frequency is 2.4 GHz, and the receiver is at a distance of 1 Mile from the transmitter. Assume that the transmitter and receiver antenna gains are 1.6. I. Find received power in dBm in the free space of a signal? II. What is the Path Loss in dB.	**5**	**CO4**	**LO5**	**PO3**
Q.8	What do you understand by Frequency Reusing? Also describe different mathematical terminology used in it.	**5**	**CO2**	**LO3**	**PO2**
Q.9	Describe OFDM in wireless communication and its advantages. Explain cyclic prefix and its usability.	**5**	**CO3**	**LO4**	**PO3**
Q.10	Describe the difference among FDMA, TDMA and CDMA on the basis of different parameters.	**5**	**CO2**	**LO3**	**PO2**
Q.11	Explain small scale and large scale fading with suitable comparison tables and diagrams.	**5**	**CO3**	**LO3**	**PO3**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Describe Two-Ray Propagation model in detail. Derive the expression for path loss and phase difference with the help of suitable diagram.	**10**	**CO2**	**LO3**	**PO2**
Q.13	Describe Code Division Multiple Access in detail. Also explain Near-Far problem and capacity of CDMA systems.	**10**	**CO3**	**LO4**	**PO3**

Q.14	Explain cellular architecture with suitable diagram and its technical terminologies in detail.	**10**	**CO2**	**LO3**	**PO2**
Q. 15	Describe Free Space Path Loss Model for wave propagation. Derive the Frii's equation and the expression for calculating power in dB.	**10**	**CO2**	**LO4**	**PO2**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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III B.TECH. (V Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2022-23

Code: 7CE4-01 Category: PCC Subject Name–TRANSPORTATION ENGINEERING

(BRANCH – CIVIL ENGINEERING)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Understand the basics of highway engineering, railway engineering, airport engineering for planning and construction.

CO2: Apply the concepts of planning and construction in development of highways, railways, airports.

CO3: Analyze the construction process for highways, railways, airports.

CO4: Designing of rigid and flexible pavements.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Discuss the role of transportation in the economic and social activities of the country.	**2**	1	1	1
Q.2	Explain the role of transportation in rural development in India.	**2**	1	1	1
Q.3	What is the difference between National Highways and State Highways?	**2**	1	1	1
Q.4	Define Camber or Cross Slope in a road.	**2**	1	1	1
Q.5	Summarize highway geometric design.	**2**	1	2	1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain the necessity and objects of highway planning.	**5**	**2**	**3**	**2**
Q.7	What are the various requirements of an ideal highway alignment? Discuss briefly.	**5**	**2**	**2**	**2**
Q.8	Describe obligatory points with sketches and discuss how these control the alignment.	**5**	**2**	**3**	**2**
Q.9	What is the importance of Nagpur road plan in highway planning of our country? Explain the plan formulae and the salient features of the plan.	**5**	**2**	**2**	**2**
Q.10	Calculate the extra width of pavement required on a horizontal curve of radius 700 m on a two lane highway, the design speed being 80 kmph. Assume wheel base l = 6 m.	**5**	**3**	**3**	**2**
Q.11	Design the super elevation required at a horizontal curve of radius 300 m for speed of 60 kmph. Assume suitable data.	**5**	**4**	**4**	**3**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Explain Super elevation. What are the factors on which the design of super elevation depends?	**10**	**2**	**3**	**2**
Q.13	Enumerate the factors governing the width of the carriage way. State the IRC specifications for width of carriage way for various classes of roads.	**10**	**3**	**3**	**2**
Q.14	A vertical summit curve is formed at the intersection of two gradients, + 3.0 and – 5.0 percent. Design the length of summit curve to provide a stopping sight distance for a design speed of 80 kmph. Assume other data.	**10**	**4**	**4**	**3**
Q. 15	Explain CBR and the test procedure in the laboratory. How are the results of the test obtained and interpreted?	**10**			

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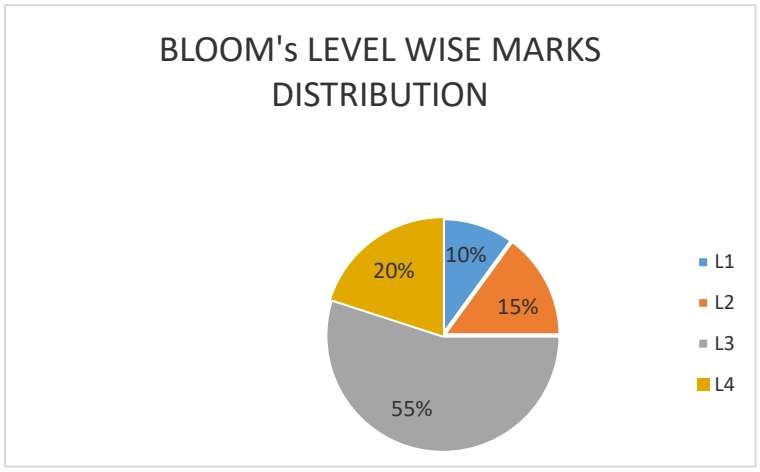

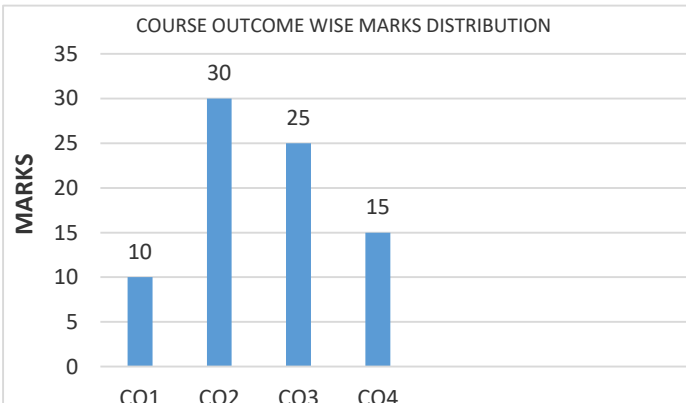

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IV B.TECH. (VII Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2022-23

Code: 7CS6-60.1 Category: PCC Subject Name–Quality Management

(BRANCH – CIVIL/Electrical/Electronics ENGINEERING)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:
CO1: To apply Quality Tools to monitor the overall operation and continuous process improvement.
CO2: To Analyse systematic methods in identifying where and how it might fail and relative impacts of different failures
CO3: To formulate effectively customer requirements and convert them into detailed engineering
CO4: To Measure themselves against internal or external standards and to improve the capability of their business processes.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	What is the fundamental concept of quality in the context of products and services?	**2**	1	3	1
Q.2	Explain the difference between quality control and quality assurance.	**2**	1	3	1
Q.3	Describe the key dimensions of product quality.	**2**	1	3	1
Q.4	Discuss the importance of customer satisfaction in the concept of quality.	**2**	1	4	1
Q.5	Define the concept of Total Quality Management (TQM) and its core principles.	**2**	3	3	3
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Discuss the eight dimensions of quality proposed by David A. Garvin and provide examples for each dimension.	**5**	**2**	**4**	**2**
Q.7	Compare and contrast the philosophies of Juran and Deming regarding quality management, highlighting their key principles and approaches.	**5**	**2**	**4**	**2**
Q.8	Explain the concept of Six Sigma and its applications in achieving high-quality processes and products.	**5**	**3**	**4**	**3**
Q.9	Describe the PDCA (Plan-Do-Check-Act) cycle and its significance in quality management and continuous improvement.	**5**	**1**	**4**	**1**
Q.10	Explain the concept of benchmarking in quality management and how it can be effectively utilized to improve organizational performance and quality.	**5**	**1**	**5**	**1**
Q.11	Elaborate on the concept of sampling distribution, emphasizing its importance in statistical quality control. Discuss how sample size and standard deviation affect the shape and characteristics of the sampling distribution. Provide mathematical explanations and relevant examples.	**5**	**2**	**4**	**2**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Describe in detail the purpose and application of graphical tools such as Pareto charts, Ishikawa diagrams, and scatter plots in identifying and addressing quality issues within a manufacturing process. Provide a real-world example illustrating the effective use of these tools.	**10**	**3**	**5**	**3**
Q.13	Explain the concept of hypothesis testing in the context of quality improvement. Outline the steps involved in hypothesis testing, including specifying null and alternative hypotheses, choosing the significance level, conducting the test, and making conclusions based on the results. Illustrate with an example.	**10**	**2**	**4**	**2**
Q.14	Describe the role of regression analysis in quality improvement, emphasizing how it	**10**	**2**	**4**	**2**

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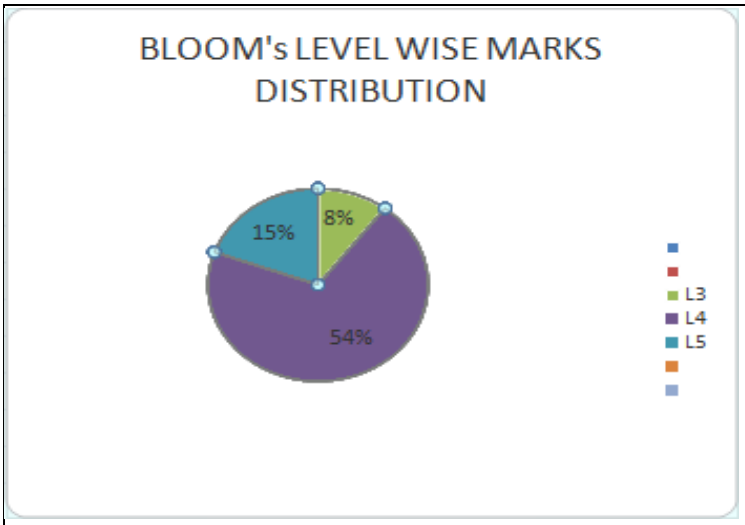
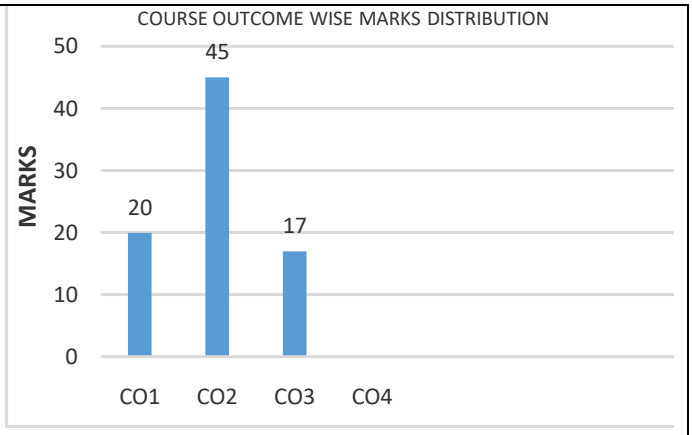
	helps identify relationships between variables. Explain the steps involved in conducting regression analysis and interpreting the results. Use a practical case study to demonstrate its application.				
Q. 15	Discuss in detail the Seven Basic Quality Tools (7QC tools), their individual purposes, and how they contribute to quality improvement. Provide examples of situations where each tool would be effectively applied to solve quality-related problems.	**10**	**2**	**4**	**2**





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III B.TECH. (V Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24

Code: 7EC6.60.1 Category: PCC Subject Name–PRINCIPLE OF ELECTRONIC COMMUNICATION

(BRANCH –ELECTRONICS & COMMUNICATION ENGINEERING)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: To Explain the working principle of Analog and digital modulation, PCM, Mobile communication, satellite and optical fiber communication and GSM Services.

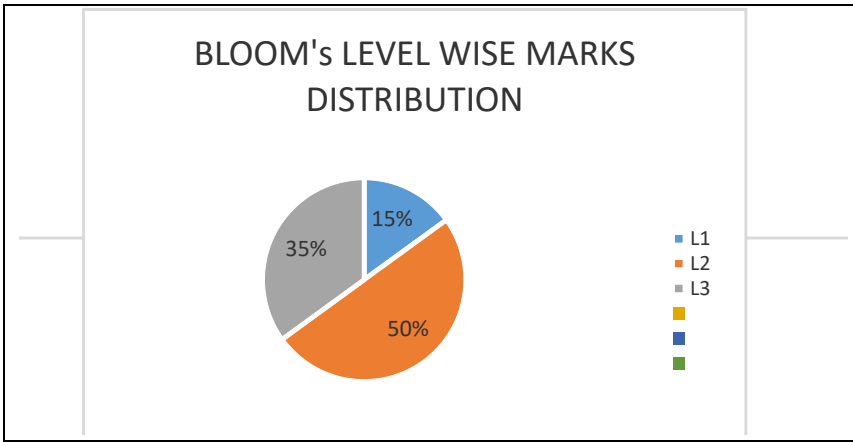
CO2: To illustrate the architecture, functioning, protocols, capabilities and application of various wireless communication networks.

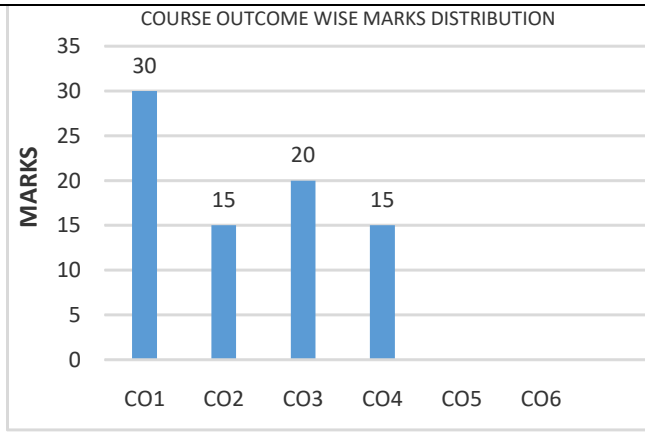
CO3: To Analyze the performance of modulation and demodulation techniques in various transmission environments.

CO4: To compare the performance of AM, FM and PM schemes with reference to SNR

CO5: To Design a cellular link and estimate the power budget.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Define the need of modulation.	2	1	1	1
Q.2	Differentiate between amplitude modulation and frequency modulation techniques.	2	1	2	1
Q.3	List the benefits of a digital modulation over analog modulation.	2	1	1	1
Q.4	Explain the type's digital modulation.	2	1	2	1
Q.5	Define token ring LAN.	2	1	2	1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Draw and explain the waveform of amplitude Modulation and its generation method.	5	3	2	1
Q.7	Describe the working of paging system with the suitable diagram.	5	4	2	1
Q.8	Compare the different pulse modulation techniques and describe PCM in details.	5	3	3	1
Q.9	How can you define electromagnetic spectrum and what do you mean by attenuation?	5	2	2	1
Q.10	State the definition of digital modulation and which parameters are very critical for designing an efficient systems.	5	1	2	1
Q.11	Describe the network fundamentals.	5	1	1	1
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	What is the difference between PSK and QPSK and also explain the need of QPSK.	10	2	2	1
Q.13	Draw the block diagram of delta modulation and explain the function of all components.	10	1	3	1
Q.14	Compare the different AM demodulation techniques with block diagram.	10	3	3	1
Q. 15	Describe the LAN hardware designing with the help of block diagram.	10	4	2	1





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IV B.TECH. (VII Sem.) **Roll No. _____**

FIRST MID TERM EXAMINATION 2023-24
Code: 7IT4-01 Category: PCC Subject Name–BIGDATA ANALYTICS
(BRANCH – INFORMATION TECHNOLOGY)

Course Credit: 03

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: **Understand** the key issues in big data management and its associated applications in intelligent business and scientific computing.

CO2: **Differentiate** various big data technologies like Hadoop, MapReduce, Pig, Hive, Hbase and No-SQL

CO3: **Apply** tools and techniques to analyze Big Data

CO4: **Design** a solution for a given problem using suitable Big Data Techniques

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	What do you mean by schema on write and schema on read?	2	1	1	2
Q.2	Why we need to analyze Big Data?	2	1	2	2
Q.3	What is the role of driver code and Mapper code in a map reduce model?	2	1	1	2
Q.4	Discuss Big data in terms of V4 dimensions.	2	1	2	2
Q.5	What are the common attributes of Big Data?	2	1	1	2
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain the HDFS architecture with the help of neat block diagram.	5	1	3	3
Q.7	What do you mean by a custom writable? Explain the implementation of a custom writable with an example.	5	4	2	4
Q.8	Discuss the applications of big data analytics in weather forecasting.	5	3	3	3
Q.9	Write the difference between Old and New Hadoop API for MapReduce Framework.	5	2	2	3
Q.10	Describe in brief about the implementation of a raw comparator and custom raw comparator with suitable examples.	5	2	3	4
Q.11	What is the role of Combiner and Partitioner in map reduce application?	5	1	2	2
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	What is data serialization? Discuss and differentiate structured, unstructured and semi-structured data with proper examples. Make a note on how type of data affects data serialization.	10	2	4	3
Q.13	Define Map Reduce. Explain the implementation of a map reduce with suitable example.	10	4	3	4
Q.14	How Google file system differ from the Hadoop file system? Explain the Google file system architecture with a neat sketch.	10	3	4	3
Q. 15	What are the advantages of Hadoop? Explain Hadoop Architecture and its Components with proper diagram.	10	3	3	3

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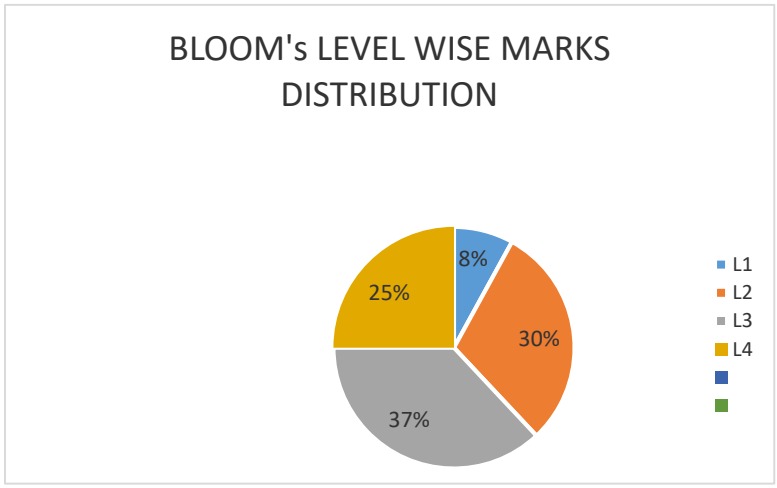

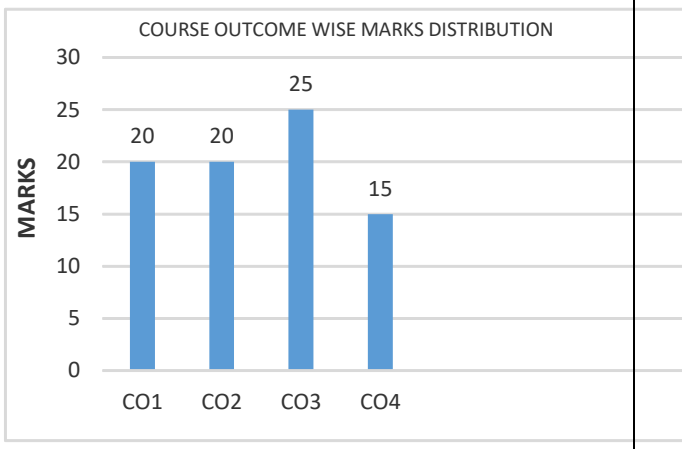

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I B.TECH. (I Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24

Code: 1FY1-04 Category: HSMC Subject Name–COMMUNICATION SKILLS

(SECTION: A to E)

Course Credit: 2

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- **Read the guidelines given with each part carefully.**

Course Outcomes (CO):

At the end of the course the student should be able to:

CO 1 Describe the process of communication, basics of Grammar and Writing and Literary Aspects. **(Recall)**

CO 2 Explain the types of communication, barriers and channels of communication and the concept of Literature through Short Stories and poetry. **(Examine)**

CO 3 Write and prepare professional reports, paragraphs and business letters with the correct use of grammar**. (Recall)**

CO 4 Discuss and illustrate the impact of social and moral values through short stories. **(Apply)**

CO 5 Restate and outline the basic concepts of English Literature through poetry. **(Examine)**

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Write four objectives of Communication.	**2**	1	L1	10
Q.2	Define Haptics.	**2**	1	L1	10
Q.3	Differentiate Physical Media and Mechanical Media.	**2**	1	L1	10
Q.4	What is Grapevine?	**2**	1	L1	10
Q.5	"To the customer, you are the company" comment.	**2**	1	L1	10
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	What do you understand by Communication? State the qualities of Good Communication? Support your answer elaborating the seven C's of Communication.	**5**	**2**	L2	**10**
Q.7	Elaborate Non-verbal and Verbal Communication by commenting on their patterns.	**5**	**2**	L2	**8**
Q.8	Illustrate the types of Formal Communication on the basis of flow. Suggest suitable examples to support your answer.	**5**	**2**	L2	**10**
Q.9	The poem 'If' concludes with the assertion 'you'll be a man', What kind of a man is implied?	**5**	**3**	L3	**10**
Q.10	Explain the following lines with reference to the context: "Remember, no men are strange, no countries foreign Beneath all uniforms, a single body breathes Like ours: the land our brothers walk upon Is earth like this, in which we all shall lie"	**5**	**3**	L3	**10**
Q.11	Write a paragraph on any one of the following topics:	**5**	**3**	L3	**8**

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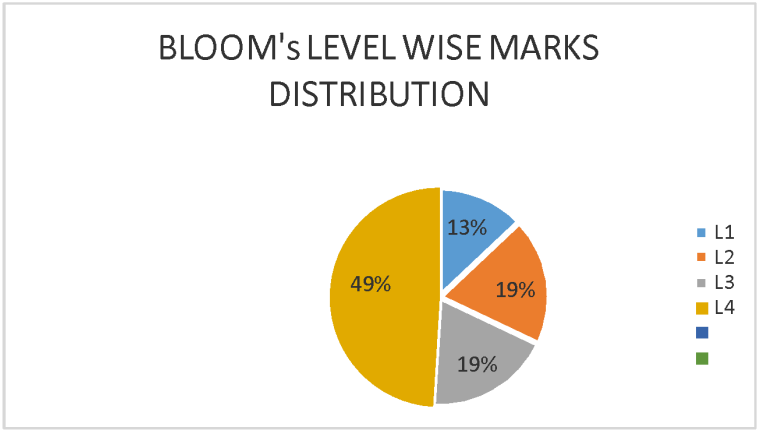
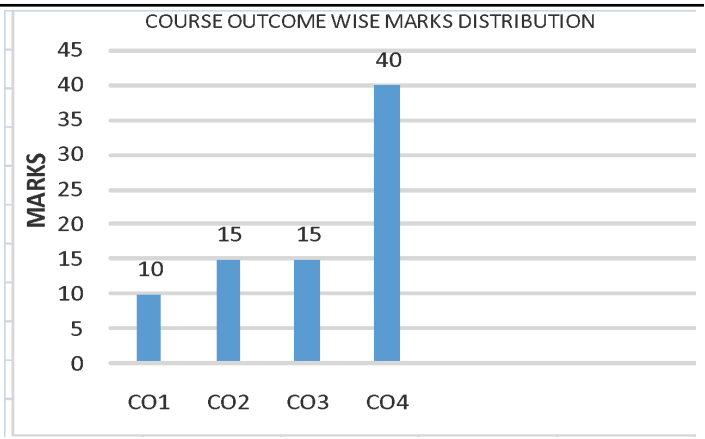
	i) Importance of Good Reading Habits ii) Handsome is that handsome does iii) Instagram: Writing Prompts				
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Identify different Barriers to Communication. Explain them with suitable examples. State any four methods to overcome the barriers.	**10**	**4**	L4	**8**
Q.13	Distinguish between a Report and a Proposal? What are the features or structures of a long report? Draft sample pages of Content and Acknowledgement.	**10**	**4**	L4	**10**
Q.14	You are a sales representative of your company. Write a letter to Mike Mason of ABC Enterprises, introducing one of your new products or services. Be sure to give important details about your product/service.	**10**	**4**	L4	**10**
Q. 15	Draft a CV in order to apply for the post of Software Analyst in one of the reputed MNC's in India.	**10**	**4**	L4	**10**





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I B.TECH. (I Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24
Code: 1FY1-05 Category: HSMC Subject Name–Human Values
(Section- F to J)

Course Credit: 2
Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- **Read the guidelines given with each part carefully.**

Course Outcomes (CO):

After completion of this course, students will be able to –

CO 1 Relate sustained happiness through identifying the essentials of human values and skills **(Recall).**

CO 2 Find the happiness and human values in terms of personal and social life to create harmony in them **(Recall).**

CO 3 Use and understand practically the importance of trust, mutually satisfaction and human relationship **(Apply).**

CO 4 Identify the orders of nature for the holistic perception of harmony for human existence **(Analyze).**

CO 5 Understand the professional ethics and natural acceptance of human values **(Evaluate).**

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	What do you mean by co-existence?	**2**	1	L1	10
Q.2	Differentiate between 'units' and 'space'.	**2**	1	L1	10
Q.3	What is justice? How does it lead to mutual happiness?	**2**	1	L1	10
Q.4	What is ethical human conduct?	**2**	1	L1	10
Q.5	Define harmony in nature.	**2**	1	L1	10
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	What do you mean by definitiveness of ethical human conduct? How can it be ensured?	**5**	**2**	L2	**10**
Q.7	There is a common saying; if you trust everybody, people will take undue advantage of you. What is the basic error in this statement?	**5**	**2**	L2	**10**
Q.8	What is sanskaar? Explain its effects or the conformance of the human order.	**5**	**2**	L2	**10**
Q.9	Differentiate between intention and competence, when you have to judge the other? Why is it important?	**5**	**1**	L1	**9**
Q.10	Explain 'Existence is Gathansheel and Gathanpurna and also there is Kriyapurnata and Acharanpurnata in existence'.	**5**	**2**	L2	**9**
Q.11	Elucidate the criteria for evaluation of holistic technology.	**5**	**2**	L2	**9**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	There is recyclability in nature. Explain this statement with examples. How does it help in production activity?	**10**	**3**	L3	**9**
Q.13	Elaborate four orders of nature and their subtle aspects in detail.	**10**	**3**	L3	**9**

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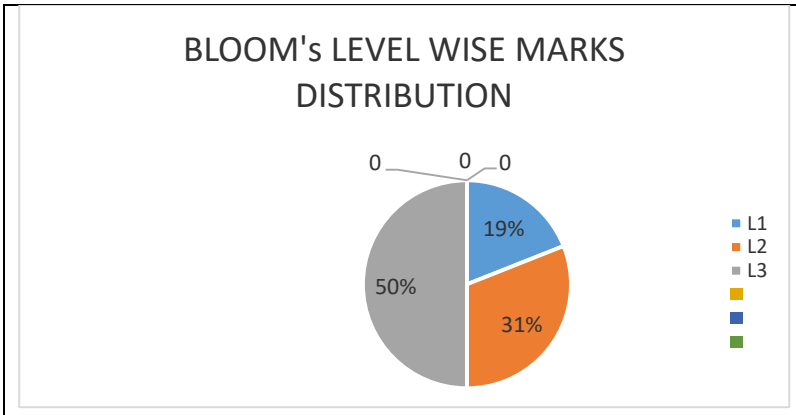
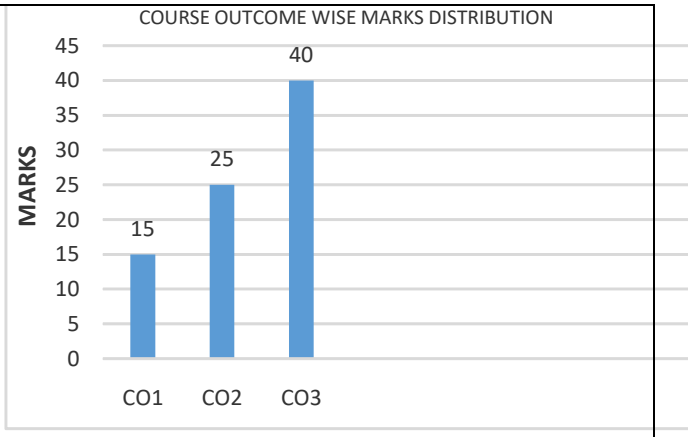
Q.14	Briefly define the pragmatic implications of value-based living at the four levels.	**10**	**3**	L3	**8**
Q. 15	Critically examine the issues in professional ethics in the current scenario.	**10**	**3**	L3	**8**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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I B.TECH. (I Sem.) **Roll No.** _____

SECOND MID TERM EXAMINATION 2023-24

Code: 1FY2-01 Category: PCC Subject Name–ENGINEERING MATHEMATICS-I

(BRANCH – ALL BRANCHES)

Course Credit: 4

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Students will be able to define and explain basic concepts definite integrals, sequence and series, periodic functions and multivariable functions.

CO2**:** Students will be able to understand properties of beta and gamma function, convergence of sequence and series.

CO3: The students will be able to apply properties of beta and gamma functions and definite integrals to find surface area and volumes of revolution. They will be able to apply partial derivatives and multiple integrals to solve many problems in science and engineering.

CO4: Students will be able to analyze Fourier series to make many useful deductions which lay down foundation of signal processing and image processing.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Define Beta function and Gamma Function	**2**	1	1	1
Q.2	Test the convergence of the series $\sqrt{\frac{1}{4}}+\sqrt{\frac{2}{6}}+\sqrt{\frac{3}{8}}+\cdots\cdots\cdots\sqrt{\frac{n}{2(n+1)}}+\cdots\cdots\cdots\cdots$	**2**	1	1	1
Q.3	If x and y are functions of t, then write the formula for volume of solid generated by revolution about x-axis.	**2**	1	1	1
Q.4	Evaluate: $\int_0^{\pi/2} sin^5\theta\, cos^6\theta\, d\theta$.	**2**	2	2	1
Q.5	Change the order of integration in.. $\int_{-a}^{a}\int_{0}^{\sqrt{a^2-y^2}} f(x,y)dxdy$	**2**	2	2	1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Test the convergence of series whose general term is $[\sqrt{(n^3+1)}-\sqrt{(n^3-1)}]$.	**5**	**2**	**2**	**1**
Q.7	Show that: $\int_0^1 \frac{dx}{\sqrt{1-x^n}}=\frac{\sqrt{\pi}\sqrt{\frac{1}{n}}}{n\sqrt{\frac{1}{2}+\frac{1}{n}}}$	**5**	**3**	**3**	**1**
Q.8	Find the surface area of the solid formed by revolving the cardioid	**5**	**3**	**3**	**1**

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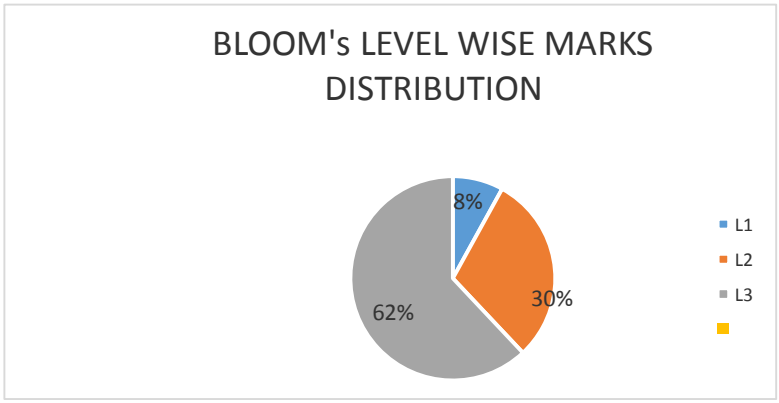
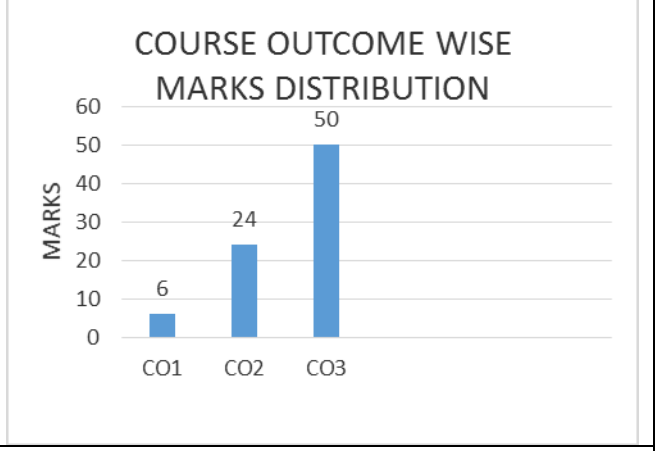
	r=a (1+cosθ) about the initial line.				
Q.9	Evaluate the following integral by changing into polar coordinates. $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)}\,dx\,dy$	**5**	**3**	**3**	**1**
Q.10	Find the work done in moving particle in the force field $\vec{F} = 3x^2\hat{i} + (2xz - y)\hat{j} + z\hat{k}$, along the curve $x^2 = 4y$ and $3x^3 = 8z$ from x=0 to x=2.	**5**	**3**	**3**	**1**
Q.11	Expand $log_e x$ in powers of (x-1)and hence evaluate $log_e(1.1)$ correct up to 4 decimal places.	**5**	**2**	**2**	**1**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Use Stoke's theorem to evaluate $\int_C (x+y)dx + (2x-z)dy + (y+z)dz$ where C is boundary of triangle with vertices (2,0,0), (0,3,0) and (0,0,6).	**10**	**3**	**3**	**1**
Q.13	Prove that the surface area of the solid generated by revolution of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ about the major axis is $2\pi ab\left[\sqrt{1-e^2} + \frac{1}{e}(\sin^{-1} e)\right]'$, where $b^2 = a^2(1-e^2)$.	**10**	**3**	**3**	**1**
Q.14	Test the convergence of: $\sum \frac{(n!)^2}{(2n!)^2} x^{2n}$	**10**	**2**	**2**	**1**
Q. 15	.Prove the relation between beta and Gamma function.	**10**	**3**	**3**	**1**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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POORNIMA COLLEGE OF ENGINEERING, JAIPUR

II B.TECH. (III Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24
Code: 3CAI1-03 Category: PCC Subject Name–MANAGERIAL
(BRANCH – ADVANCED COMPUTER)

Course Credit: 2

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:
CO1: Describe the fundamental concepts of Economics and Financial Management and define the meaning of national income, demand, supply, cost, market structure, and balance sheet.
CO2: Calculate the domestic product, national product and elasticity of price on demand and supply.
CO3: Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect markets.
CO4: Compare the financial statements to interpret the financial position of the firm and evaluate the project investment decisions

		Marks	CO	BL	PO
	PART - A: (All questions are compulsory) Max. Marks (10)				
Q.1	"Assets put money in your pocket, whether you work or not, and liabilities take money from your pocket." State the meaning of the term 'Assets' in light of the given statement and also give examples any two assets of a firm.	**2**	1	1	11
Q.2	How many sellers are there in 'Oligopoly' market structure?	**2**	1	1	11
Q.3	Give the formula for calculating Price/Earning (P/E) Ratio?	**2**	1	1	11
Q.4	Which profit do you calculate by preparing Profit & Loss Account? Is it Gross or Net Profit?	**2**	1	1	11
Q.5	Give any two examples of industries that come under 'Monopolistic Market Structure'.	**2**	1	1	11
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Distinguish between Funds flow statement and Cash Flow Statement.	**5**	1	1	11
Q.7	Briefly explain Profitability Ratios. Calculate the Gross Profit ratio from the following figures:	**5**	2	2	11
Q.8	Classify the Current Assets, Current Liabilities and Fixed Assets from the following items: Furniture, Share Capital, Cash, Debtors, Plant & Machinery, Creditors, Bills Payable, Bills Receivables, Stock, Prepaid Expenses, Bank.	**5**	3	3	1
Q.9	Giving reason, distinguish between the behavior of demand curves of firms under perfect competition and monopolistic competition	**5**	2	2	11
Q.10	"The lower the Debt-Equity ratio the higher is the degree of protection enjoyed by creditors" Comment on the above statement and explain any two Leverage Ratios.	**5**	3	3	1

	Rs		Rs
Sales	100000	Purchase	60000
Sales return	10000	Purchase returns	15000
Opening Stock	20000	Closing Stock	5000

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Q.11 Calculate Current ratio from the following details: **5** 3 3 1

	Rs		Rs
Sundry Debtors	40000	Sundry Creditors	20000
Prepaid Expenses	20000	Debentures	100000
Short term investments	10000	Inventories	20000
Loose Tools	5000	Outstanding expenses	20000
Bills Payables	10000	Bank Overdraft	10000

PART - C: (Attempt 3 questions out of 4) Max. Marks (30)

Q.12 "Under perfect competition the seller is a price taker, under monopoly he is the price maker," Explain **10** 2 2 11

Q.13 Explain the different parts of cash flow statement and draw the format of a cash flow statement using Direct/Indirect method. **10** 4 4 2

Q.14 From the following balance sheet of Nyaka Ltd. As on 31 December 2020 and 31 December 2021 prepare a Comparative Balance Sheet and interpret the changes. **10** 4 4 2

Liabilities	2020	2021	Assests	2020	2021
Current Liabilities	200000	400000	Fixed Assets	1200000	1800000
			Less : Depreciation	20000	30000
Reserves	300000	200000			
Loan	500000	800000	Current Assets	500000	900000
Share Capital	500000	1000000			
	1500000	2400000		1500000	2400000

Q. 15 Tesla Ltd is considering purchase of a machine. There are two possible machine alternatives. Details are given below: **10** 4 4 2

	MACHINE X	MACHINE Y
Cost of machine	60000	60000
Sales	100000	100000
Cost:		
Labor	10000	6000
Material	8000	10000
Factory overhead	12000	10000
Administrative Cost	4000	2000
Selling Cost	2000	2000
Expected life (in years)	2	3

Help the manager choose the best machine.

You are required to find the best option using
- i) Pay Back Period Method
- ii) Average rate of return Method
- iii) Net Present Value Method

Assume the tax rate to be 50%
Use Straight line method for calculating depreciation of the machine
The sales are expected to remain unchanged for next 5 years

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II B.TECH. (III Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24

Code: 3CAI4-05 Category: PCC Subject Name–DATA STRUCTURES & ALGORITHMS

(BRANCH – ADVANCED COMPUTER)

Course Credit: 3

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: To explain data structures and their use in daily life.

CO2: To analyze the Linear and non-Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.

CO3: To develop searching and sorting algorithms on predefined data

CO4: To create the data structures in specific areas like DBMS, Compiler, and Operating system.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Explain Double hashing.	**2**	4	2	4
Q.2	Distinguish between AVL Tree and B- Tree.	**2**	3	4	3
Q.3	Discuss the properties of B+ Tree.	**2**	3	2	3
Q.4	How to represent graph in memory? Explain.	**2**	2	1	2
Q.5	Illustrate B-Tree by giving an example.	**2**	3	2	3
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Demonstrate Prims shortest path algorithm with the help of suitable example.	**5**	2	3	2
Q.7	Prove that the maximum number of edges that a graph with n Vertices is n*(n-1)/2.	**5**	2	4	2
Q.8	Explain how minimal spanning trees are constructed with the help of a suitable example.	**5**	2	2	2
Q.9	What is Threaded Binary tree? Explain the advantages of using a Threaded Binary tree.	**5**	3	2	3
Q.10	The in-order and pre-order traversal sequence of nodes in a binary tree are given below: In-order : E A C K F H D B G Pre-order: F A E K C D H G B Draw tree for above traversal.	**5**	3	3	3
Q.11	Explain the concept of balance factor. Create an AVL tree using following sequence: 68, 35, 45, 70, 15, 91, 40, 73, 20, 79.	**5**	3	2	3
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	What do you mean by hash function? Example common hashing function along with all address calculation techniques.	**10**	4	3	4

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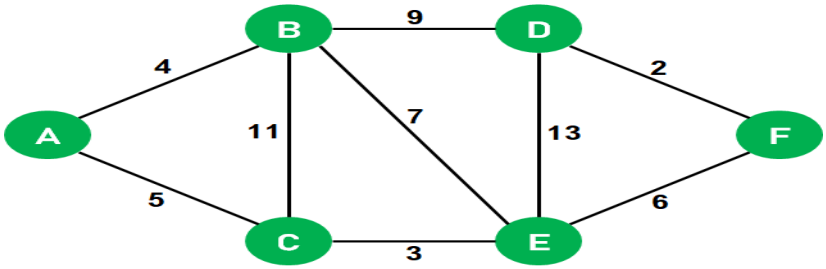
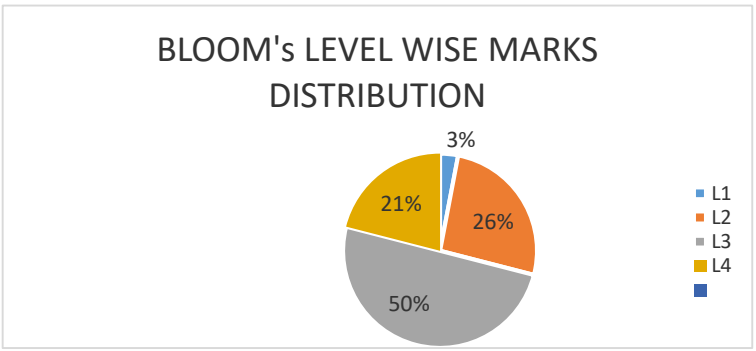
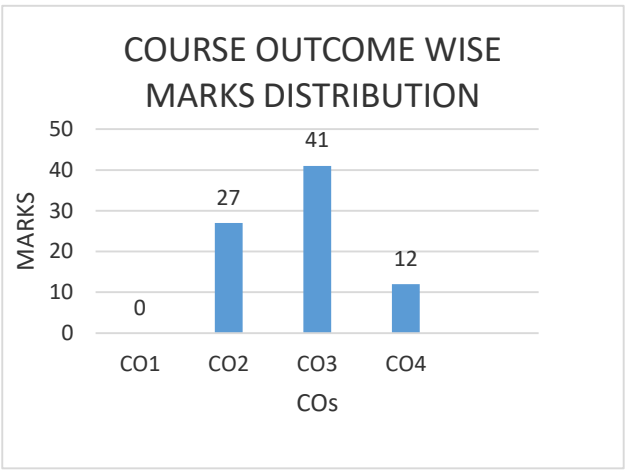
Q.13	Discuss Breadth first search and Depth first search traversal with Suitable Example.	**10**	3	3	3
Q.14	Draw a B-tree of order four(4).Why insertion of the following keys in order? Z,U,A,I,W,L,P,X,C,J,D,M,T,B,Q,E,H,S,K,N,R,G,Y,F,O,V	**10**	3	4	3
Q. 15	Demonstrate Dijkstra algorithm and find the minimum spanning tree for the following graph.  .	**10**	2	3	2





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II B.TECH. (III Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24
Code: 3CS1-03 Category: PCC Subject Name–MANAGERIAL
(BRANCH – COMPUTER SCIENCE ENGINEERING)

Course Credit: 2

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- **Read the guidelines given with each part carefully.**

Course Outcomes (CO):

At the end of the course the student should be able to:
CO1: Describe the fundamental concepts of Economics and Financial Management and define the meaning of national income, demand, supply, cost, market structure, and balance sheet.
CO2: Calculate the domestic product, national product and elasticity of price on demand and supply.
CO3: Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect markets.
CO4: Compare the financial statements to interpret the financial position of the firm and evaluate the project investment decisions

<table>
<tr><td></td><td colspan="5">PART - A: (All questions are compulsory) Max. Marks (10)</td></tr>
<tr><td></td><td></td><td>Marks</td><td>CO</td><td>BL</td><td>PO</td></tr>
<tr><td>Q.1</td><td>Define the term ‘Market Structure’.</td><td>2</td><td>1</td><td>1</td><td>11</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Q.2</td><td>What is meaning of the term ‘Assets’? Give one example.</td><td>2</td><td>1</td><td>1</td><td>11</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Q.3</td><td>What is the difference between Debtors and Creditors?</td><td>2</td><td>1</td><td>1</td><td>11</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Q.4</td><td>Which profit do you calculate by preparing Profit & Loss Account? Is it Gross or Net Profit?</td><td>2</td><td>1</td><td>1</td><td>11</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Q.5</td><td>Give any two examples of industries that come under ‘Monopolistic Market Structure’.</td><td>2</td><td>1</td><td>1</td><td>11</td></tr>
<tr><td></td><td colspan="5">PART - B: (Attempt 4 questions out of 6) Max. Marks (20)</td></tr>
<tr><td>Q.6</td><td>Distinguish between Funds flow statement and Cash Flow Statement.</td><td>5</td><td>1</td><td>1</td><td>11</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Q.7</td><td>Briefly explain Profitability Ratios. Calculate the Gross Profit ratio from the following figures:
<table>
<tr><td></td><td>Rs</td><td></td><td>Rs</td></tr>
<tr><td>Sales</td><td>100000</td><td>Purchase</td><td>60000</td></tr>
<tr><td>Sales return</td><td>10000</td><td>Purchase returns</td><td>15000</td></tr>
<tr><td>Opening Stock</td><td>20000</td><td>Closing Stock</td><td>5000</td></tr>
</table></td><td>5</td><td>2</td><td>2</td><td>11</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Q.8</td><td>Classify the Current Assets, Current Liabilities and Fixed Assets from the following items:
Furniture, Share Capital, Cash, Debtors, Plant & Machinery, Creditors, Bills Payable, Bills Receivables, Stock, Prepaid Expenses, Bank.</td><td>5</td><td>3</td><td>3</td><td>1</td></tr>
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<tr><td>Q.9</td><td>Giving reason, distinguish between the behavior of demand curves of firms under perfect competition and monopolistic competition</td><td>5</td><td>2</td><td>2</td><td>11</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Q.10</td><td>“The lower the Debt-Equity ratio the higher is the degree of protection enjoyed by creditors” Comment on the above statement.</td><td>5</td><td>3</td><td>3</td><td>1</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Q.11 Calculate Current ratio from the following details: — **5** — 3 — 3 — 1

	Rs		Rs
Sundry Debtors	40000	Sundry Creditors	20000
Prepaid Expenses	20000	Debentures	100000
Short term investments	10000	Inventories	20000
Loose Tools	5000	Outstanding expenses	20000
Bills Payables	10000	Bank Overdraft	10000

PART - C: (Attempt 3 questions out of 4) Max. Marks (30)

Q.12 Differentiate between different forms of Market Structures. — **10** — 2 — 2 — 11

Q.13 Explain the different parts of cash flow statement and draw the format of a cash flow statement. — **10** — 4 — 4 — 2

Q.14 — **10** — 4 — 4 — 2

From the following balance sheet of Nyaka Ltd. As on 31 December 2020 and 31 December 2021 prepare a Comparative Balance Sheet and interpret the changes.

Liabilities	2020	2021	Assests	2020	2021
Current Liabilities	200000	400000	Fixed Assets	1200000	1800000
Reserves	300000	200000	Less : Depreciation	20000	30000
Loan	500000	800000	Current Assets	500000	900000
Share Capital	500000	1000000			
	1500000	2400000		1500000	2400000

Q. 15 — **10** — 4 — 4 — 2

ABC Ltd. intends to choose between two competing projects which require an equal investment of Rs 50000 and are expected to generate net cash inflows as under:

Suggest which project the company should accept and which one to reject.

Year	1	2	3	4	5	6
Project A	25000	15000	10000	--Nil--	12000	6000
Project B	10000	12000	18000	25000	8000	4000

The cost of capital of the company is 10%. The following are the Present Value Factors @ 10% per annum

Year	P V factor @10%
1	0.909
2	0.826
3	0.751
4	0.663
5	0.621
6	0.564

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II B.TECH. (III Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24

Code: 3CS3-04 Category: PCC Subject Name–DIGITAL ELECTRONICS

(BRANCH – COMPUTER ENGINEERING)

Course Credit: 03

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE: - **Read the guidelines given with each part carefully.**

Course Outcomes (CO):

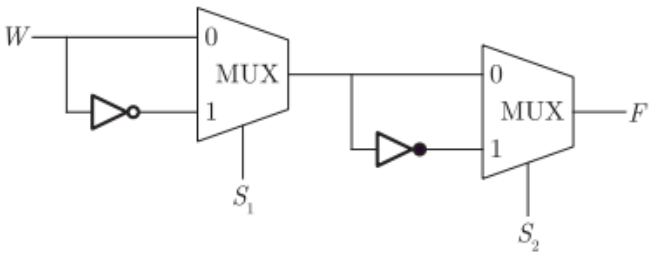
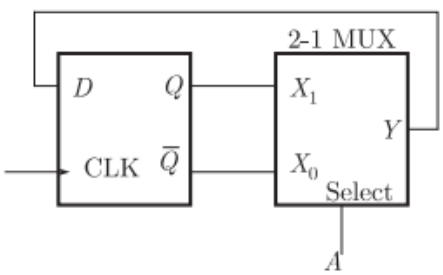
At the end of the course the student should be able to:

CO1: Able to understand different coding and number system and its applications.

CO2: Understand the basic concepts of logic gates and minimize the circuit by using the different Boolean algebra.

CO3: Analyze the various logic families and Interfacing between digital and analog components.

CO4: Able to design various combinational and sequential circuits with aspects of speed, delay, energy Dissipation and power.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	CO	BL	PO
Q.1	Consider the multiplexer-based logic circuit shown in the figure. 	2	CO4	L1	PO3
Q.2	Write the three conditions for occurrence of Race-Around condition in J-K Flip-Flop.	2	CO4	L3	PO4
Q.3	If there are m number of input and n number of select line, then n in terms of m is _____.	2	CO4	L2	PO4
Q.4	How many number of clock pulses are required for storing the n number of input bits in Parallel input Serial output (PISO) register?	2	CO4	L2	PO4
Q.5	Implement the full adder circuit using half adder.	2	CO4	L4	PO4
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain 4-bit Carry look ahead adder with neat diagram and relevant expressions.	5	CO2	L4	PO4
Q.7	Implement the J-K flip flop using S- R Flip Flop.	5	CO4	L3	PO3
Q.8	Identify the state transition diagram for the logic circuit shown in figure 	5	CO4	L2	PO3

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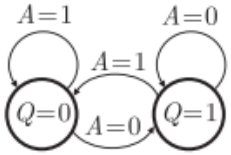
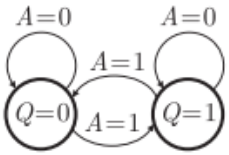
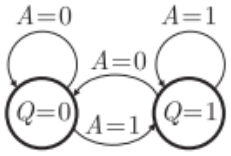
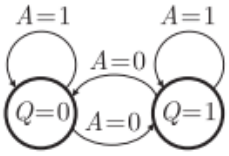
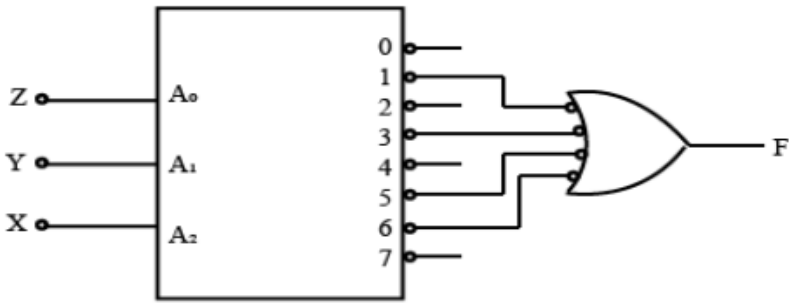
	(A)  (B)  (C)  (D) 				
Q.9	Implement the Parallel input and Serial output (PISO) using MUX and D-Flip-Flop and write the timing diagram for the same.	**5**	**CO4**	**L4**	**PO2**
Q.10	Implement the AND, OR, NAND, NOR gate using 2:1 MUX.	**5**	**CO4**	**L5**	**PO4**
Q.11	Draw and explain the working of DTL-NAND gate.	**5**	**CO3**	**L2**	**PO3**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Find all the prime implicants of the function using Q-M Method. $F(a,b,c,d) = \Sigma m\ (0,2,3,4,8,10,12,13,14)$	**10**	**CO4**	**L5**	**PO3**
Q.13	Design a 3-bit counter which count in the sequence: 001, 011, 010,110,111,101,100, (Repeat) 001…. Use J-K Flip Flop.	**10**	**CO4**	**L5**	**PO3**
Q.14	A 3-line to 8-line decoder, with active low outputs, is used to implement a 3-variable Boolean function as shown in the figure 	**10**	**CO4**	**L4**	**PO4**
Q. 15	With the help of a neat diagram, explain the working of a two - input ECL OR/NOR gate. How open collector TTL is different from normal TTL circuit.	**10**	**CO3**	**L4**	**PO4**

POORNIMA COLLEGE OF ENGINEERING, JAIPUR

III B.TECH. (V Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24

Code: 5AID3-01 Category: PCC Subject Name– Data Mining-Concepts and Techniques

(BRANCH – ADVANCED COMPUTER)

Course Credit: 03

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Interpret the contribution of data warehousing and data mining to the decision-support systems.

CO2: Prepare the data needed for data mining using pre-processing techniques.

CO3: Extract useful information from the labelled data using various classifiers.

CO4: Compile unlabeled data into clusters applying various clustering algorithms.

CO5: Discover interesting patterns from large amounts of data using Association Rule Mining

CO6: Demonstrate capacity to perform a self-directed piece of practical work that requires the application of data mining techniques.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	CO	BL	PO
Q.1	List out the data mining processing steps. Define data transformation.	2	CO1	L1	PO1
Q.2	Differentiate between Supervised, Unsupervised and Reinforcement Learning.	2	CO2	L1	PO2
Q.3	Discuss the need of human intervention in data mining process.	2	CO3	L2	PO3
Q.4	Identify the key issues in data Mining? Explain the issues regarding classification and prediction?	2	CO2	L4	PO2
Q.5	What is the relation between data warehousing and data mining?	2	CO2	L2	PO2
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain the differences between “Explorative Data Mining” and “Predictive Data Mining” and give one example of each.	5	CO3	L2	PO3
Q.7	Explain briefly the differences between “classification” and ‘’clustering” and give an informal example of an application that would benefit from each techniques.	5	CO3	L2	PO3
Q.8	Diagrammatically illustrate and discuss the following preprocessing techniques: (a) Binning (b) regression (c) Clustering (d) Smoothing (e) Generalization (f) Aggregation	5	CO4	L3	PO4
Q.9	Describe the essential features of decision trees in context of classification.	5	CO4	L3	PO4
Q.10	Specify the 5 criteria for the evaluation of classification & prediction? Explain the Classification by Back propagation algorithm?	5	CO2	L4	PO2
Q.11	Illustrate various steps involved in Data Mining in OLAP and OLTP? List the five primitives for specification a data mining task.	5	CO3	L3	PO3
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Describe Bayes classification methods with suitable example and explain the Knowledge Discovery in Databases (KDD) process and architecture of Data mining.	10	CO3	L4	PO3

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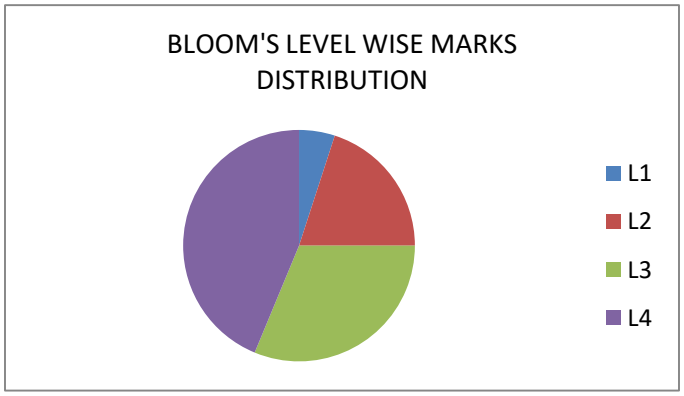
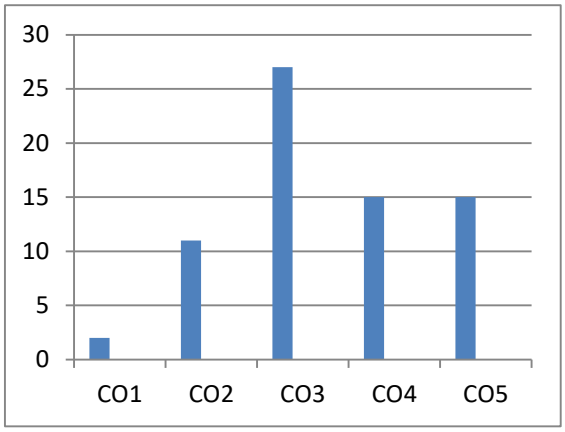
Q.13	What is predictive modeling? How it is different from traditional statistical modeling. Also describe regularization and why is it important in predictive modeling?	**10**	**CO5**	**L4**	**PO5**
Q.14	How data wrangling and data preprocessing helps to solve major issues in Data Mining explain it with suitable example. Why do we need to preprocess data? What are the different forms of preprocessing?	**10**	**CO4**	**L3**	**PO4**
Q. 15	Illustrate Lazy Learners (or Learning from Your Neighbors) with suitable example. What is called Bayesian Classification and how it helps to solve problem come in data mining.	**10**	**CO6**	**L4**	**PO5**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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III B.TECH. (V Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24
Code: 5AID4-03 Category: PCC Subject Name–OPERATING SYSTEM
(BRANCH – ADVANCED COMPUTER)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Will be able to control access to a computer and the files that may be shared.

CO2: Demonstrate the knowledge of the components of computer and their respective roles in computing.

CO3: Ability to recognize and resolve user problems with standard operating environments

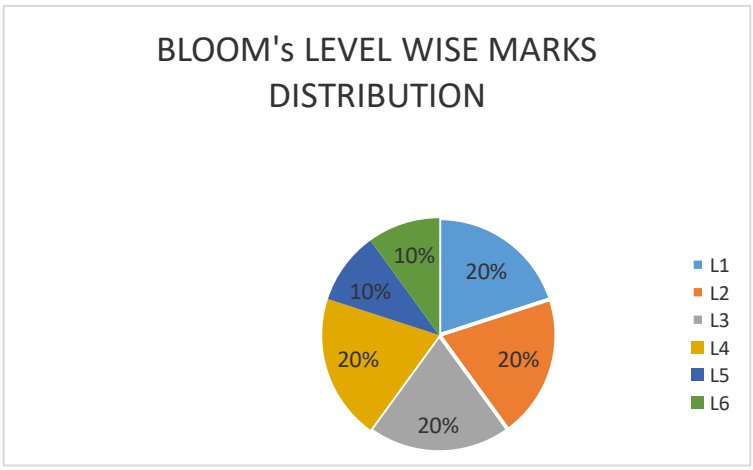
CO4: Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively

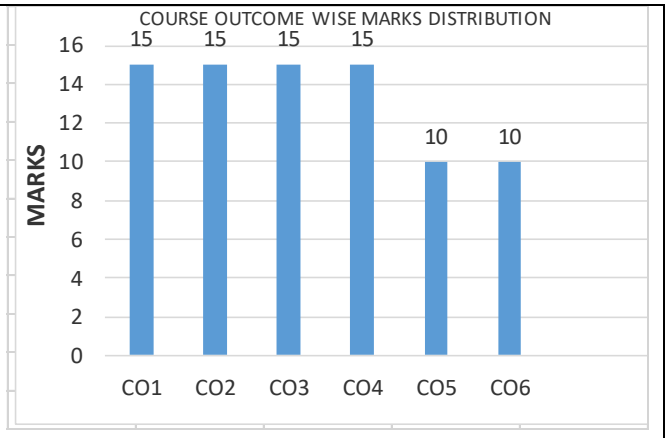
CO5: To understand I/O management and File systems.

CO6: To be familiar with the basics of Linux system and Mobile OS like iOS and Android.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	CO	BL	PO
Q.1	Differentiate between deadlock detection and deadlock prevention.	2	CO1	BL2	PO1
Q.2	Briefly explain the characteristics of devices in the context of device management.	2	CO1	BL2	PO1
Q.3	Define the file concept and its significance in an operating system.	2	CO1	BL2	PO1
Q.4	Explain the purpose of file security and user authentication in file management.	2	CO1	BL2	PO1
Q.5	Briefly describe the key features of UNIX and Linux operating systems.	2	CO1	BL2	PO1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Discuss the pros and cons of using the FIFO page replacement policy.	5	CO1	BL2	PO2
Q.7	Provide a real-world case study illustrating the importance of efficient page replacement policies.	5	CO1	BL2	PO2
Q.8	Discuss the challenges in resource allocation and scheduling that may lead to deadlocks.	5	CO1	BL2	PO2
Q.9	Compare and contrast deadlock detection and deadlock prevention approaches.	5	CO1	BL2	PO2
Q.10	Discuss the importance of disk scheduling algorithms in optimizing I/O performance.	5	CO1	BL2	PO2
Q.11	Given a file with a block size of 512 bytes and a record size of 64 bytes, calculate the number of records that can be stored in a block.	5	CO1	BL2	PO2
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Analyze the role of file management in supporting the organization and retrieval of data in an operating system.	10	CO2	BL3	PO3
Q.13	Analyze the role of file management in supporting the organization and retrieval of data in an operating system.	10	CO2	BL3	PO3
Q.14	Consider a file system with a block size of 4 KB and an inode size of 256 bytes. Calculate the maximum number of inodes that can be accommodated in a single block.	10	CO2	BL3	PO3

Q. 15	**Consider a system with a page table of size 256 entries and a page size of 4 KB. Calculate the total virtual address space.**	**10**	**CO2**	**BL3**	**PO3**





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III B.TECH. (V Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2022-23
Code: 5AID4-05 Category: PCC Subject Name– Analysis of Algorithms
(BRANCH – ADVANCED COMPUTER)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- **Read the guidelines given with each part carefully.**

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Understand complexity of an algorithm, asymptotic notation and divide and conquer method for developing an algorithm.

CO2: Analyze the algorithm design using greedy algorithm and dynamic programming.

CO3: To Create search for problem solution using backtracking, branch and bound and pattern matching algorithm

CO4: To synthesize the randomized algorithm, assignment problem and types of classes such as P, NP, and NP Complete.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Explain the difference between Las Vegas and Monte Carlo algorithms.	**2**	1	3	1
Q.2	Define P, NP-Hard, and NP-Complete problems.	**2**	1	3	1
Q.3	What is Cook's Theorem, and how does it relate to NP-Completeness?	**2**	1	3	1
Q.4	Given the text "ABABCABABABABCABAB" and the pattern "ABAB", apply the Naïve string matching algorithm to find all occurrences of the pattern within the text. Show the step-by-step process, including comparisons and positions of matches.	**2**	1	4	1
Q.5	Explain lower bound theory in Brief.	**2**	3	3	3
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain how backtracking is applied to solve the N-Queens problem.	**5**	2	4	2
Q.7	Discuss the concept of approximation algorithms in the context of the Vertex Cover problem	**5**	2	4	2
Q.8	Solve the following assignment problem. Cell values represent cost of assigning job A, B, C and D to the machines I, II, III and IV. machines jobs I II III IV A 10 12 19 11 B 5 10 7 8 C 12 14 13 11 D 8 15 11 9 Find the optimal assignment (minimum) cost	**5**	3	4	3
Q.9	Discuss Boyer Moore pattern matching Algorithm. Also explain Bad character Heuristics and Good suffix heuristic with the help of any suitable Example.	**5**	1	4	1

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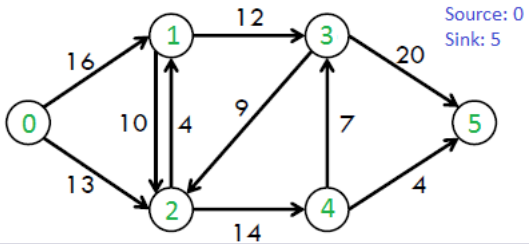
Q.10	Calculate the prefix value of given Pattern P = a b e a b fin Knouth-Morrish- pattern string matching Algorithms. Find out the pattern is Exist in given text T = a b d a b e a b f a b c d. also writes down the explanation.	**5**	**1**	**5**	**1**
Q.11	Using the Rabin-Karp string matching algorithm, search for the pattern "101" within the text "110101010110". Assume a rolling hash function with a prime number base (let's say base = 3) and a modulus value (let's say modulus = 11). Show the hash values at each step, the comparisons made, and the positions where matches occur.	**5**	**2**	**4**	**2**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Using the Ford-Fulkerson algorithm, calculate the maximum flow from node S to node T in the given network graph. Provide the step-by-step iterations, residual capacities, and the final maximum flow value for the below graph: 	**10**	**3**	**5**	**3**
Q.13	Given two strings, one is a text string, **txt** and other is a pattern string, **pat**. The task is to print the indexes of all the occurences of pattern string in the text string. For printing, Starting Index of a string should be taken as 1. Example: Input: txt = "batmanandrobinarebat", pat = "bat" Output: 1 18 **Your Task:** You don't need to read input or print anything. Your task is to complete the function **search()** which takes the string txt and the string pat as inputs and returns an array denoting the start indices (1-based) of substring pat in the string txt. **Note:** Return an empty list incase of no occurences of pattern. Driver will print -1 in this case.	**10**	**2**	**4**	**2**
Q.14	Outline a randomized algorithm for solving 2-SAT instances, discussing how randomness is employed to find a satisfying assignment or determine unsatisfiability. Or Define the Flow Shop Scheduling problem in the context of job scheduling and manufacturing processes. Describe the objective and constraints involved in Flow Shop Scheduling, including the nature of operations, processing times, and machine scheduling across multiple stages.	**10**	**2**	**4**	**2**
Q. 15	Demonstrate the process of proving NP-Completeness for problems like Satisfiability and 3CNF, utilizing reduction techniques and showing their transformations.	**10**	**2**	**4**	**2**

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III B.TECH. (V Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24

Code: 5AD5-11 Category: PCC Subject Name–Fundamentals of Block chain

(BRANCH – Advance Computer Engineering)

Course Credit: 02

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: To understand blockchain systems working and Distributed Consensus of block chain technology.

CO2: To Analyze Block Chain Technology with Crypto currency and Bitcoin.

CO3: Design and built smart contracts and Ethereum Structure of Block chain.

CO4: To Analyze the Block chain Types and Consensus Algorithms.

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	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Distinguish between centralized and decentralized system.	**2**	C01	4	2
Q.2	Illustrate how a bitcoin handles double-spending.	**2**	CO2	2	2
Q.3	Why Do We Need Different Types of Block chain?	**2**	CO4	1	2
Q.4	Explain the concept of Consensus algorithm in block chain.	**2**	CO1	2	1
Q.5	How DApps different from a normal application?	**2**	CO4	1	2
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain the various application areas of Block chain Technology.	**5**	**CO1**	**2**	**1**
Q.7	Identify two major properties of a blockchain network.	**5**	**CO2**	**3**	**2**
Q.8	Distinguish between a public/permission less and a private/permissioned Blockchain.	**5**	**CO4**	**4**	**2**
Q.9	Explain the concept of EVM and How does EVM Work in blockchain technology.	**5**	**CO3**	**2**	**2**
Q.10	Distinguish between Smart Contracts and Traditional Contract Systems.	**5**	**CO3**	**4**	**2**
Q.11	What is encryption? What is its role in Blockchain?	**5**	**CO1**	**1**	**3**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Define the need for predefined mechanisms and rules to modify a public blockchain's protocols.	**10**	**CO4**	**2**	**3**
Q.13	Analyze and write Relationship between Hashing and Digital Signatures	**10**	**CO2**	**4**	**2**
Q.14	Justify about Hybrid Blockchain and also explain their advantage, disadvantage and Use case.	**10**	**CO4**	**5**	**2**
Q. 15	Give an explanation of Ethereum Block Structure with the help of neat and clean diagram.	**10**	**CO3**	**2**	**3**

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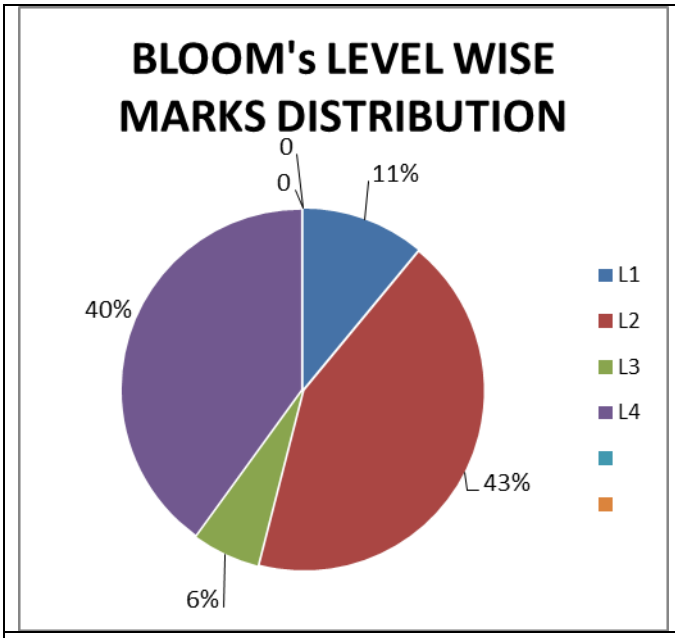

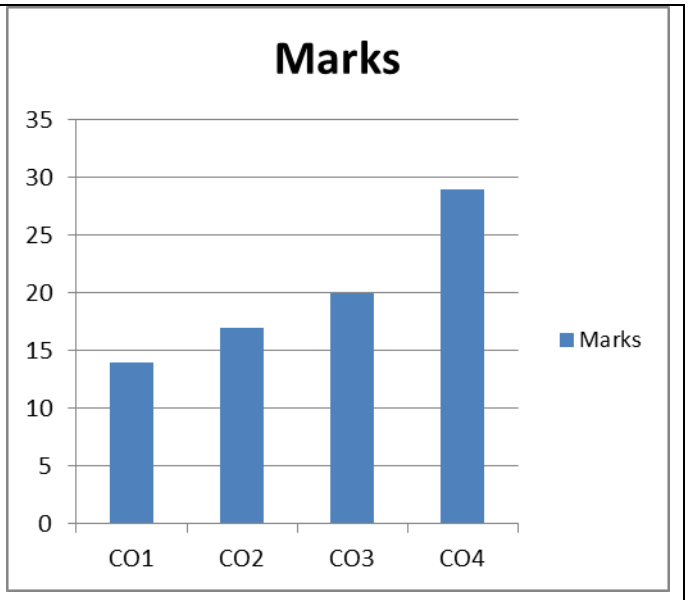

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III B.TECH. (V Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24

Code: 5CE4-05 Category: PCC Subject Name– Water Resources Engineering

(BRANCH – CIVIL ENGINEERING)

Course Credit: 2

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Understand different methods of irrigation technique & evaluate water requirements for crop production.

CO2: Apply appropriate water application in respective areas for channel.

CO3: Analyse various dams in respective areas.

CO4: Differentiate various cross drainage structures & rainfall intensity in respective areas

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	State the outcome of dam.	**2**	**1**	**1**	**1**
Q.2	Define the term transpiration.	**2**	**1**	**1**	**1**
Q.3	Write down the relationship between transmissivity and hydraulic conductivity.	**2**	**1**	**1**	**1**
Q.4	Name various types of rain gauges which is used for the collection of precipitation.	**2**	**1**	**1**	**1**
Q.5	Write a short note on flow net.	**2**	**1**	**1**	**1**
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Mention the various advantages and disadvantages of well irrigation over canal irrigation.	**5**	**1**	**2**	**1**
Q.7	Explain the various causes of failure of dam in detail.	**5**	**4**	**1**	**1**
Q.8	Differentiate between open well and tube well in detail.	**5**	**3**	**3**	**1**
Q.9	Design an open well in fine sand to give a discharge of 0.003 cumecs when worked under a depression head of 2.5 meters.	**5**	**2**	**4**	**2**
Q.10	Demonstrate the various assumptions that are necessary for plotting unit hydrograph & also give a short note on hyetograph.	**5**	**3**	**3**	**2**
Q.11	A precipitation station X was inoperative for some time during which a storm occurred. At three stations A, B & C surrounding X the total precipitation recorded during storm are 75, 58 & 47 mm respectively. The normal annual precipitation amounts at stations X, A, B and C are respectively 757, 826, 618 & 482 mm. Estimate the storm precipitation for station X.	**5**	**3**	**3**	**2**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Differentiate with schematic diagram and its types between recording and non-recording rain gauges for the measurement of rainfall? A catchment has five rain gauge stations. In a year, the annual rainfalls recorded by a gauge are 78.8 cm, 90.2 cm, 98.6 cm, 102.4 cm and 70.4 cm. For a 6% error in the estimation of the mean rainfall, determine the additional number of gauges needed.	**10**	**4**	**4**	**2**

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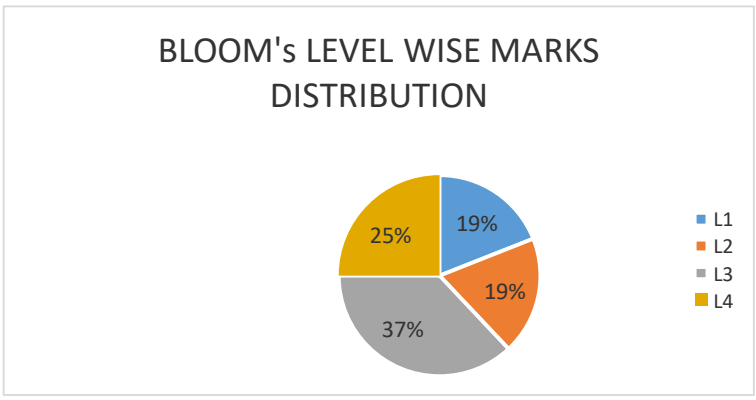
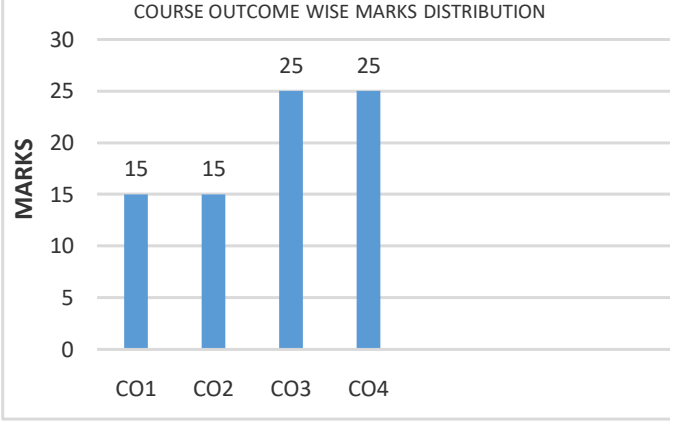
Q.13	Suppose you are junior engineer at water resource engineering department, so how you analyse the necessity of cross drainage structure at site considering various factors of it and also compare its merits and demerits of it.	**10**	**4**	**3**	**2**
Q.14	Calculate the average precipitation by Arithmetic average method, Theissen polygon method and Isohytal method of the following data Station | Precipitation(mm) | Area of Theissen Polygon | Isohyets 1 | 12.6 | 45 Sq.Km | 9 2 | 18.8 | 38 Sq.Km | 10 3 | 14.8 | 30 Sq.Km | 11 4 | 10.4 | 40 Sq.Km | 12 5 | 16.2 | 20 Sq.Km | 13 The area between Isohyets of station 1 to 2 is 22 sq.km, area between Isohyets of station 2 to 3 is 80 sq.km, area between Isohyets of station 3 to 4 is 105 sq.km, and area between Isohyets of station 4 to 5 is 98 sq.km. Assume suitable data if required.	**10**	**3**	**4**	**2**
Q. 15	Describe flood hydrograph in detail. Explain with diagram how you implement the different segment and factors affecting of flood hydrograph.	**10**	**2**	**2**	**2**





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POORNIMA COLLEGE OF ENGINEERING, JAIPUR

III B.TECH. (V Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24

Code: 7CE4-01 Category: PCC Subject Name–TRANSPORTATION ENGINEERING

(BRANCH – CIVIL ENGINEERING)

Course Credit: ___

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Understand the basics of highway engineering, railway engineering, airport engineering for planning and construction.

CO2: Apply the concepts of planning and construction in development of highways, railways, airports.

CO3: Analyze the construction process for highways, railways, airports.

CO4: Designing of rigid and flexible pavements.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Discuss the basic function of ballast in railway construction?	**2**	1	1	1
Q.2	Explain the term flexible and rigid pavements as per IRC.	**2**	1	1	1
Q.3	What do you understand by rail fastenings?	**2**	1	1	1
Q.4	Define the terminal area in construction of an airport.	**2**	1	1	1
Q.5	Summarize the uses of bulldozer in the road construction.	**2**	1	2	1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Give the name of various test carried out on bitumen. Explain ductility test on bitumen.	**5**	**2**	**3**	**2**
Q.7	What are the factors which affect the output of a power shovel?	**5**	**2**	**2**	**2**
Q.8	Describe the working of a hot mix plant.	**5**	**2**	**3**	**2**
Q.9	What factors need to be considered while selecting a site for an airport?	**5**	**2**	**2**	**2**
Q.10	Write about types and selection of gauge in railway construction with specifications.	**5**	**3**	**3**	**2**
Q.11	Explain various types of road rollers used for compaction during road construction.	**5**	**4**	**4**	**3**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	What are the various methods of flexible pavement design? Explain CBR method of flexible pavement design. What are the limitation of the method?	**10**	**2**	**3**	**2**
Q.13	What is the difference between flexible and rigid pavements in terms of load distribution pattern? Also discuss the design data required for rigid pavements.	**10**	**3**	**3**	**2**
Q.14	Design a new flexible pavement for a two-lane undivided carriageway using the following data: Design CBR value of subgrade = 8.0%, Initial traffic on completion of construction = 1800 cv per day, Average growth rate = 6.0% per year, Design life = 15 Years, VDF value = 2.5.	**10**	**4**	**4**	**3**
Q. 15	Design the total thickness of flexible pavement assuming single layer elast theory and using the following data:				

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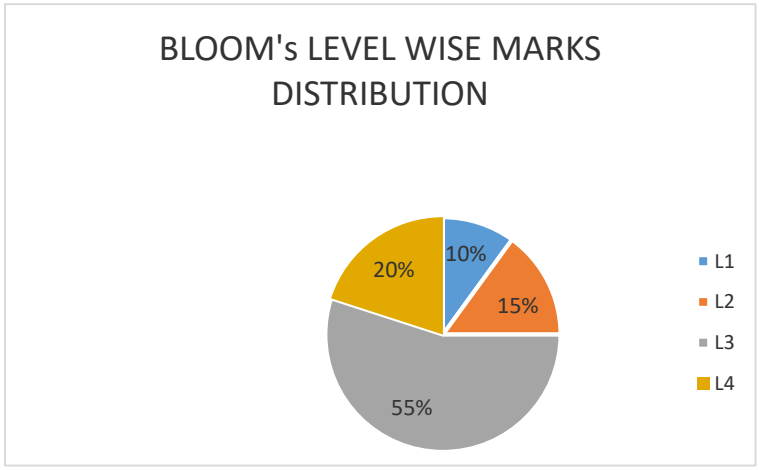
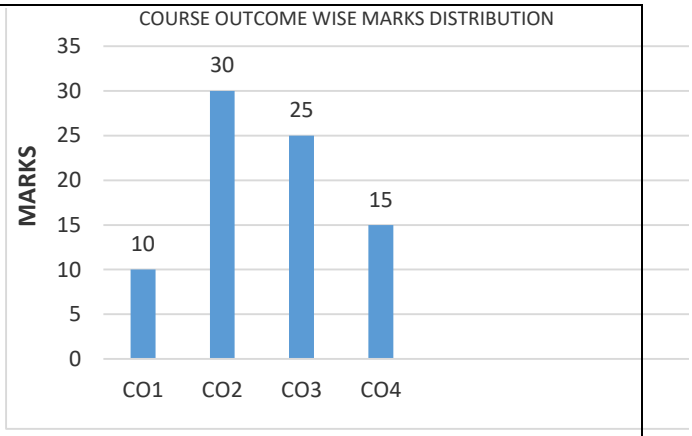
	Design wheel load = 5100 kg, Tyre pressure = 7.0 kg/cm^2, Elastic modulus = 180 kg/cm^2, Permissible deflection = 0.25 cm.				





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

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POORNIMA COLLEGE OF ENGINEERING, JAIPUR

IV B.TECH. (VII Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24
Code: 7CS6-60-02 Category: PCC Subject Name–CYBER SECURITY
(BRANCH – COMPUTER ENGINEERING)

Course Credit: 03

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: To Apply basic concepts of Cybercrime and legal Perspectives of Security Implications for Organizations in respect to the Mobile and Wireless Devices.

CO2: To analyze offences, attacks and Criminals plan for the cyber space.

CO3: To compose the cyber security solutions and cyber security Tools in Cybercrime.

CO4: To Select the Management Perspective human role in security systems with an Organizational, emphasis on ethics, social engineering vulnerabilities and training.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	The characteristics of the system can be analyzed for cyber security risk assessment through the answers to some questions, what are those questions?	**2**	**CO4**	**BL3**	**PO4**
Q.2	Write the name of server, which is an intermediary server that retrieves data from an Internet source, such as a webpage, on behalf of a user? Is this server capable to act as additional data security boundaries protecting users from malicious activity on the internet?	**2**	**CO3**	**BL3**	**PO3**
Q.3	Write the name of activity done by cyber criminals to attempt to trick users into doing 'the wrong thing', such as clicking a bad link that will download malware, or direct them to a dodgy website. Also write type of these activities.	**2**	**CO3**	**BL5**	**PO3**
Q.4	Name the detection system that is a device or software application which monitors a network or systems for malicious activity or policy violations. Also, describe the working of such systems using a neat diagram.	**2**	**CO2**	**BL5**	**PO2**
Q.5	If Antesh's mother wants to record the screenshots and keystrokes of Antesh's computer system for the monitoring without awareness of Shyam. Then what and how should she do.	**2**	**CO3**	**BL5**	**PO3**
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Suggest a type of malware to bypasses the system's customary security mechanisms including detailed description of backdoors.	**5**	**CO3**	**BL4**	**PO3**
Q.7	Security Policies are needed in cyber security but why? Which security policies are available?	**5**	**CO4**	**BL4**	**PO4**
Q.8	In what ways can steganographic techniques be utilized to conceal information in digital media?	**5**	**CO3**	**BL2**	**PO3**
Q.9	Shyam wishes to hack the computer system of Ram. What two kinds of methods would you suggest to hack the computer system of Ram, If Shyam wants to use multiple computers and doesn't want to use multiple computers? Explain both the methods and also highlight the difference between both methods.	**5**	**CO2**	**BL5**	**PO2**
Q.10	If any spyware has entered your computer, what will it do, what should you do to avoid its damage?	**5**	**CO3**	**BL3**	**PO3**
Q.11	How to operate an information system that satisfies the user and the security professional by balancing information security and access.	**5**	**CO4**	**BL3**	**PO4**

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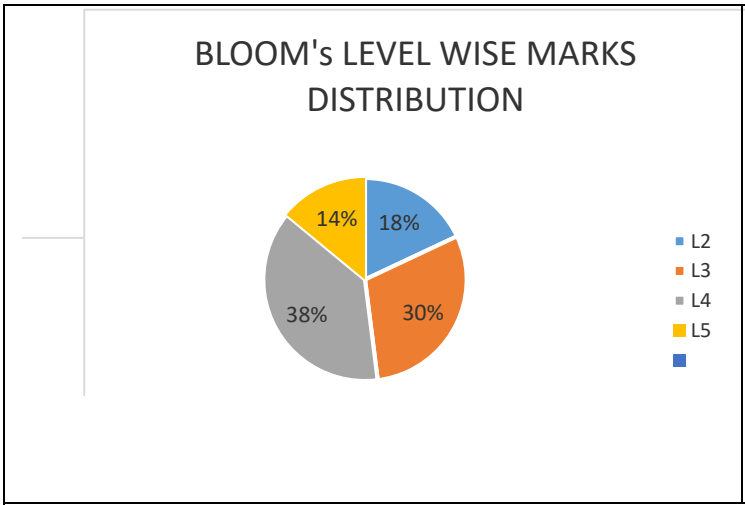
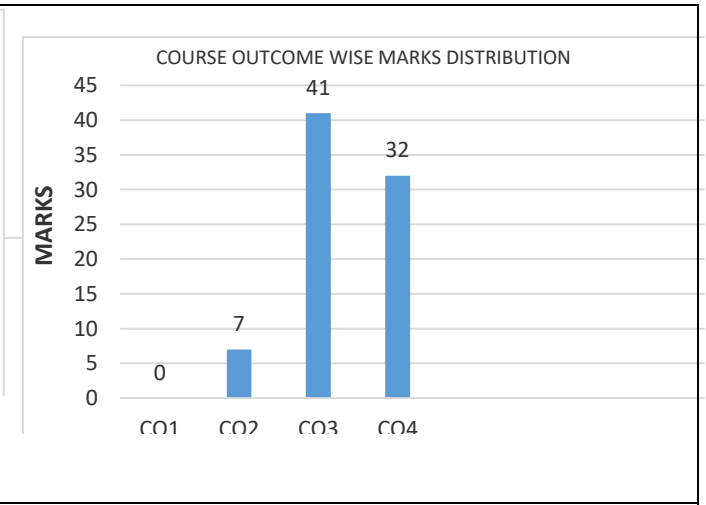
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	By what means can attacks on computer-based systems be categorized into distinct types?	**10**	**CO3**	**BL4**	**PO3**
Q.13	If you want to steal a website's backend data then what will your steps be to perform an SQL injection attack?	**10**	**CO3**	**BL3**	**PO3**
Q.14	How can organizations make use of social computing applications? Explain with example.	**10**	**CO4**	**BL4**	**PO4**
Q. 15	What is intellectual property (IP)? Is it afforded the same protection in every country of the world? What laws currently protect it?	**10**	**CO4**	**BL2**	**PO4**





BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analyzing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes; PO – Program Outcomes

POORNIMA COLLEGE OF ENGINEERING, JAIPUR

IV B.TECH. (VII Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24
Code: 7EC5-11 Category: PEC Subject Name–VLSI DESIGN
(BRANCH – ELECTRONICS AND COMMUNICATION ENGINEERING)

Course Credit: 03

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:
CO1: Explain about the various MOSFET parameters.
CO2: Describe about the various memories and the scaling effects for the MOS transistor technology.
CO3: Analyze the effect of various parameters on MOS inverters.
CO4: Analyze the design layout and EDA tools for the VLSI circuit design.
CO5: Assess the various reliability issues in VLSI technology.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Explain the critical voltage V_{OH}, $V_{OL.}$	**2**	**CO1**	L1	**PO1**
Q.2	Explain briefly Domino CMOS logic.	**2**	**CO1**	L1	**PO1**
Q.3	What is the Noise Margin? Write the expression for logic 1 and logic 0.	**2**	**CO1**	L1	**PO1**
Q.4	Explain briefly NORA CMOS logic.	**2**	**CO1**	L1	**PO1**
Q.5	Explain briefly Zipper CMOS logic.	**2**	**CO2**	L2	**PO1**
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain the voltage transfer characteristic of an ideal inverter.	**5**	**CO1**	L1	**PO1**
Q.7	Calculate the noise margin of a digital logic circuit having the following information: V_{IL} = 0.6 V, V_{IH} = 1.5 V, V_{OL} = 0.2 V, and V_{OH} = 1.8 V. The power supply voltage is 2.0 V.	**5**	**CO4**	L3	**PO2**
Q.8	Explain the calculation of V_{OH} and V_{OL} for basic MOS Inverter.	**5**	**CO3**	L3	**PO2**
Q.9	Write short note on Pull up to Pull down ratio for an NMOS Inverter.	**5**	**CO3**	L3	**PO2**
Q.10	What is Miller effect in transient characteristics of a CMOS inverter? Explain	**5**	**CO3**	L3	**PO2**
Q.11	Explain the working principle of a resistive load inverter circuit. Derive the expressions for noise margins of a resistive load inverter.	**5**	**CO2**	L2	**PO2**
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	What are the different techniques of CMOS transistor fabrication? Explain one in detail.	**10**	**CO2**	L2	**PO2**
Q.13	Calculate the critical voltages and noise margins of a resistive load inverter, using the following information: V_{DD} = 5.0 V, R_L = 100 kΩ, βn = 50 μA/ V^2, V_{tn} = 0.5 V.	**10**	**CO1**	L1	**PO1**

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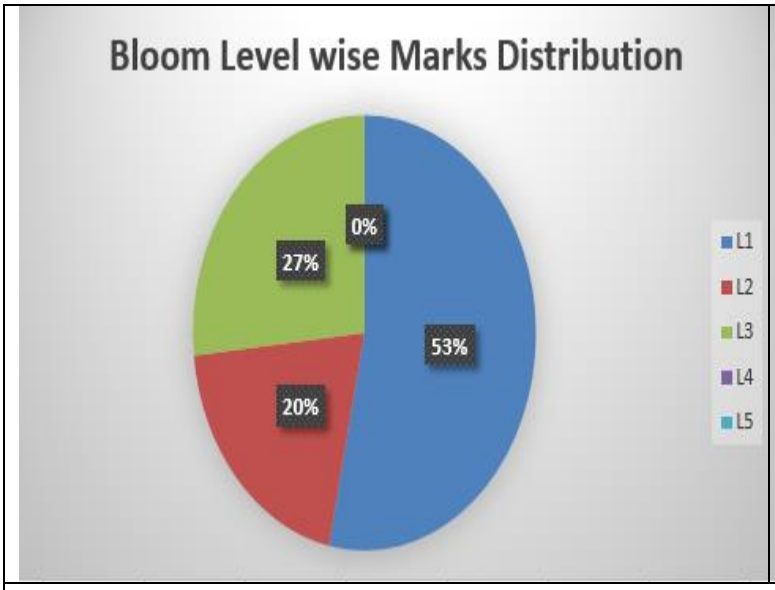
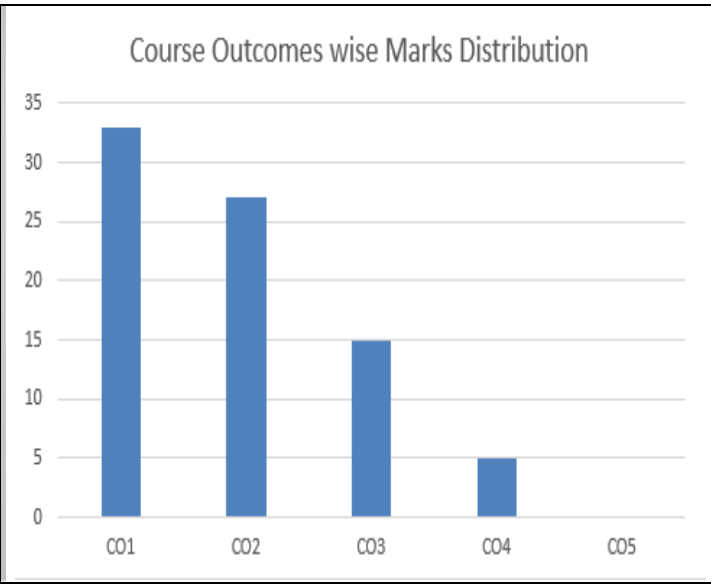
Q.14	Derive β_n/β_p ratio of CMOS Inverter.	**10**	**CO1**	L1	**PO2**
Q. 15	Realize the following expression using CMOS inverter i) AB + A'B' ii) AB + BC + AC	**10**	**CO2**	L1	**PO2**





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POORNIMA COLLEGE OF ENGINEERING, JAIPUR

IV B.TECH. (VII Sem.) **Roll No. _____**

SECOND MID TERM EXAMINATION 2023-24
Code: 7IT4-01 Category: PCC Subject Name–BIG DATA ANALYTICS
(BRANCH – INFORMATION TECHNOLOGY)

Course Credit: 03

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE:- Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Understand Big Data features, challenges and different big data systems like Google File System and Hadoop Distributed File System (HDFS).

CO2: Explain HDFS concepts, interfaces, and basic file system operations, fundamentals of Hadoop I/O, Pig and Hive in Hadoop eco-system.

CO3: Apply Map Reduce Framework to write basic data intensive programs using Hadoop API.

CO4: Process and Analyze large datasets using scripting language Pig and data warehouse tool Hive in Hadoop.

CO5: Develop applications using Map Reduce programming model, Pig and Hive tools in Hadoop ecosystem to solve problems involving massive amounts of data and computation.

	PART - A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	What is the writable interface?	**2**	CO1	BL1	PO1
Q.2	How do you execute a Pig program in local and Hadoop mode?	**2**	CO1	BL1	PO1
Q.3	What are the functions of DUMP and STORE statements in Pig?	**2**	CO1	BL1	PO1
Q.4	Write any two advantages and disadvantages of Hive.	**2**	CO1	BL1	PO1
Q.5	Explain Pig Architecture with their application.	**2**	CO1	BL1	PO1
	PART - B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Explain the basic flow of a Pig program using a sample Pig code.	**5**	CO4	BL3	PO3
Q.7	Differentiate ETL and ELT with respect to traditional RDBMS and Big Data processing.	**5**	CO2	BL2	PO2
Q.8	What is SerDe (Serializer-Deserializer) in Apache Hive? Explain	**5**	CO4	BL3	PO3
Q.9	Explain the Pig architecture with the help of a diagram and show how Pig relates to the Hadoop ecosystem.	**5**	CO2	BL2	PO2
Q.10	Explain the Apache Hive architecture with the help of a neat diagram.	**5**	CO2	BL2	PO2
Q.11	What is a Metastore in Hive? Explain the three Metastore configurations – embedded, local and remote with the help of suitable diagrams.	**5**	CO2	BL2	PO2
	PART - C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Write a complete program in Pig Latin to calculate the maximum recorded temperature by year for the weather dataset. Explain the different phases of the program like loading dataset, filtering, grouping and displaying and storing the output. Assume that the input is tab-delimited text, with each line having just year, temperature, and quality fields.	**10**	CO5	BL4	PO3
Q.13	(i) Construct the Hive commands to perform the following (make necessary assumptions wherever required). a) Create a table 'etable' with columns - Name, Age and Salary. b) Load the data from local file 'sample.txt' into the 'employee' table in Hive's managed storage.	**6**	CO5	BL4	PO3

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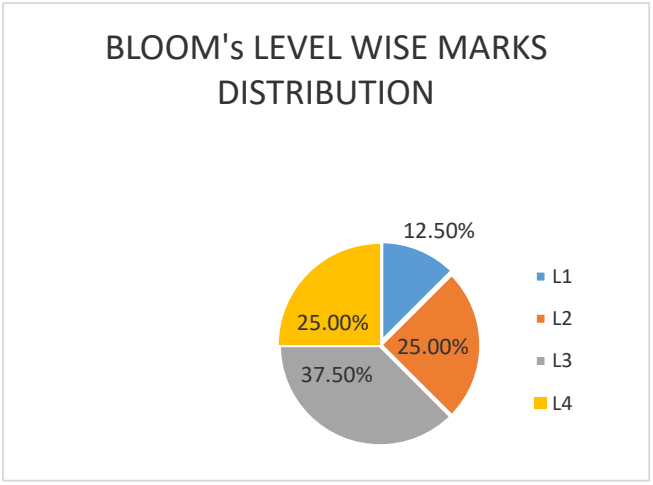
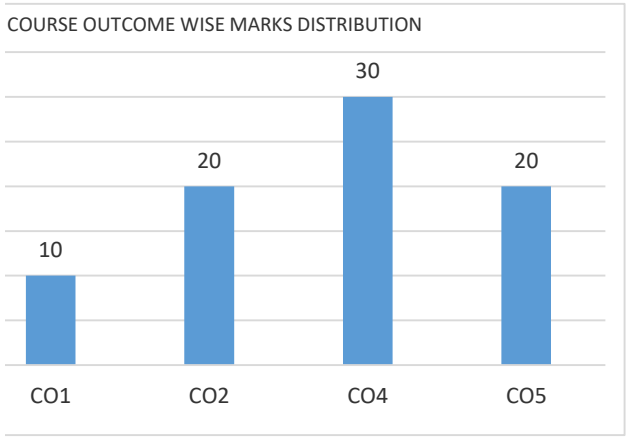
	c) Copy the created table to new table 'ptable' d) Return 5 rows from 'etable'. (ii) Give examples of primitive data types and complex data types in Hive.	**4**			
Q.14	How to evaluating local and distributed models of running pig scripts, checking out the Pig Scripts interfaces.	**10**	CO4	BL3	PO3
Q.15	Creating and managing database and Tables, Seeing how the Hive Data Manipulation language works, Querying and applying data.	**10**	CO4	BL3	PO3





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IV B.TECH. (VII Sem.) **Roll No. _____**

SECOND MIDTERM EXAMINATION 2023-24

Code: 7ME6-60.1 Category: PCC Subject Name–FINITE ELEMENT ANALYSIS

(BRANCH: All branches, except ME)

Course Credit: 3

Max. Time: 2 hrs. **Max. Marks: 60**

NOTE: - Read the guidelines given with each part carefully.

Course Outcomes (CO):

At the end of the course the student should be able to:

CO1: Apply FEM mathematical models to solve complex engineering problems.

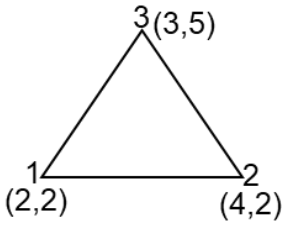
CO2: Analyze 1D and 2D problems of Mechanical and Allied engineering.

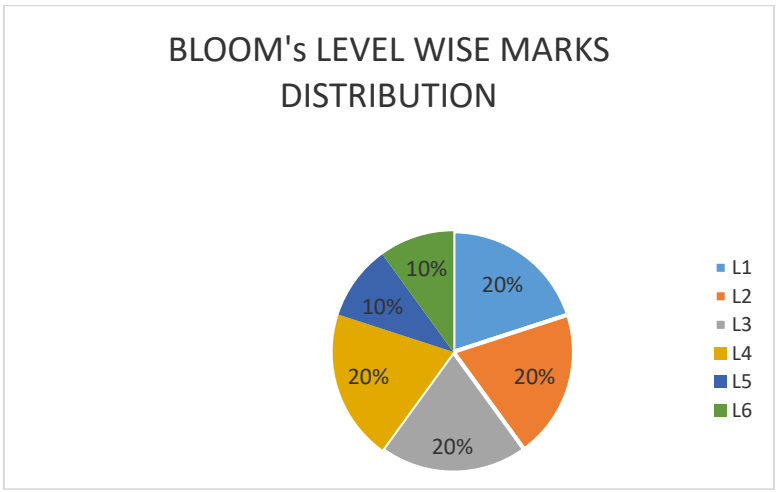
CO3: Evaluate suitable mathematical models to solve real problems of industry.

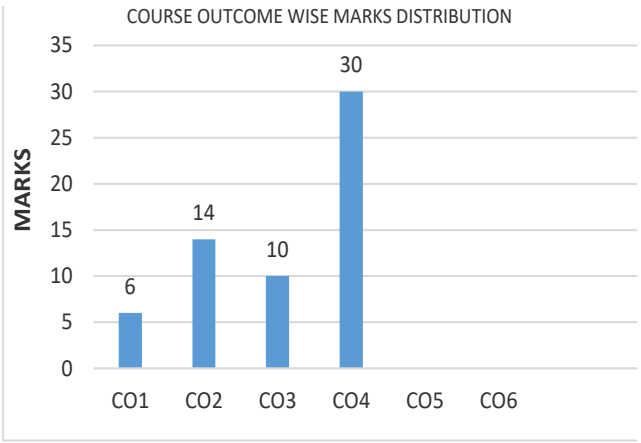
CO4: Create solutions for higher-order complex engineering problems.

	PART-A: (All questions are compulsory) Max. Marks (10)				
		Marks	**CO**	**BL**	**PO**
Q.1	Explain the application of FEA for the analysis of scientific problems.	**2**	1	1	1
Q.2	What are the advantages of the Lagrange interpolation formula?	**2**	1	1	1
Q.3	What is global stiffness matrix used in FEA	**2**	2	1	1
Q.4	Give various applications of finite element analysis.	**2**	1	1	1
Q.5	Explain the *p* and *h* methods of mesh refinement.	**2**	2	1	1
	PART-B: (Attempt 4 questions out of 6) Max. Marks (20)				
Q.6	Determine the shape function of the constant strain triangle (three nodded) element in terms of the natural coordinate system.	**5**	1	1	1
Q.7	Write down the difference between local and natural coordinate systems used in FEA	**5**	3	2	2
Q.8	Use the Quadratic function and derive the shape function bar element using the local coordinate system function.	**5**	3	3	1
Q.9	Sketch and name different 1D, 2D, and 3D elements used in finite element analysis.	**5**	1	1	1
Q.10	What is continuity, completeness, and compatibility?	**5**	2	4	1
Q.11	Explain the difference between plain stress and plain strain problems in brief.	**5**	2	1	2
	PART-C: (Attempt 3 questions out of 4) Max. Marks (30)				
Q.12	Explain the procedure to solve problems using finite element methods	**10**	3	4	3
Q.13	Uset the Lagrange interpolation formula to find the value of $x = 9$ from the table below	**10**	4	4	1
Q.14	Using the least square method find the values of y (0.2) and y (0.1) for the following function $\frac{d^2y}{dx^2} - 10x^2 - 5 = 0;\ 0 < x < 1;$ if $y(0) = 0$ and $y(1) = 0$	**10**	4	5	3
Q.15	Calculate the shape function matrix at all the node and centre of the triangle shown in the figure below	**10**	4	5	3

x	7	8	9	10	11
$F(x)$	3	4	4	7	9





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