R20

III B.TECH I SEM

REGULAR & SUPPLEMENTARY

OCT./NOV. - 2023

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

(R20) III B.TECH I SEM REGULAR AND SUPPLE END EXAMINATIONS OCTOBER/NOVEMBER - 2023

TIME TABLE REVISED ON 27.10.2023

TIME : 10.00 AM TO 01.00 PM

DATE	Civil Engg. (01-CE)	Electrical & Electronics Engg. (02-EEE)	Mechanical Engg. (03-ME)	Electronics & Communication Engg. (04-ECE)	Computer Science & Engg. (05-CSE)	IT (12-IT)	AI (43-AI)
17.10.2023	PROFESSIONAL ETHICS AND HUMAN VALUES (R20CC31MC01)	PROFESSIONAL ETHICS AND HUMAN VALUES (R20CC31MC01)	PROFESSIONAL ETHICS AND HUMAN VALUES (R20CC31MC01)	PROFESSIONAL ETHICS AND HUMAN VALUES (R20CC31MC01)	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE (R20CC31MC02)	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE (R20CC31MC02)	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE (R20CC31MC02)
01.11.2023	SOIL MECHANICS (R20CE3102)	POWER ELECTRONICS (R20EE3102)	HEAT POWER ENGINEERING (R20ME3102)	ANTENNAS AND WAVE PROPAGATION (R20EC3102)	DATA WAREHOUSING AND DATA MINING (R20CC3102)	DATA WAREHOUSING AND DATA MINING (R20CC3102)	MACHINE LEARNING (R20AI3105)
03.11.2023	HIGHWAY ENGINEERING (R20CE3103)	POWER GENERATION AND TRANSMISSION (R20EE3103)	DESIGN OF MACHINE ELEMENTS-I (R20ME3103)	DIGITAL SIGNAL PROCESSING (R20EC3103)	DESIGN AND ANALYSIS OF ALGORITHMS (R20CC3103)	AUTOMATA AND COMPILER DESIGN (R20IT3103)	DESIGN AND ANALYSIS OF ALGORITHMS (R20CC3103)
06.11.2023	SOLID WASTE AND HAZARDOUS MANAGEMENT (R20CE3107)/ADVANCED STRUCTURAL ANALYSIS(R20CE3104)	SIGNALS AND SYSTEMS (R20EE3107)	METAL CUTTING & MACHINE TOOLS (R20ME3107)	ELECTRONIC MEASUREMENTS AND INSTRUMENTATION (R20EC3106)	COMPUTER NETWORKS (R20CC3104)	ADVANCED WEB TECHNOLOGIES (R20IT3104)	COMPUTER NETWORKS (R20CC3104)
08.11.2023	DISASTER MANAGEMENT (R20CC1OE01)	DATABASE MANAGEMENT SYSTEM (R20CC1OE10)	OPERATIONS RESEARCH (R20CC1OE07)	DATABASE MANAGEMENT SYSTEM (R20CC1OE10)	COMPILER DESIGN (R20CS3105)	DISASTER MANAGEMENT (R20CC1OE01)	COMPUTER ORGANIZATION (R20CC1OE16)
10.11.2023	**DESIGN AND DRAWING OF CONCRETE STRUCTURES (R20CE3101)**	**PROBLEM SOLVING WITH PYTHON (R20EE3101)**	**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING (R20ME3101)**	**LINEAR & DIGITAL IC APPLICATIONS (R20EC3101)**	**OPERATING SYSTEMS (R20CC3101)**	**OPERATING SYSTEMS (R20CC3101)**	**OPERATING SYSTEMS (R20CC3101)**
***11.11.2023**	**ADVANCED ENVIRONMENTAL ENGINEERING (R20CEHN06)**	**DATA WAREHOUSING AND DATA MINING (R20CCMN35)**	**FUNDAMENTALS OF DATA SCIENCE (R20CCMN39)**	**DATA WAREHOUSING AND DATA MINING (R20CCMN35)**	**DEVOPS (R20CSHN01)**	**DEVOPS (R20CSHN01)**	**DEVOPS (R20CSHN01)**

NOTE:

I.*ONLY APPLICABLE FOR HONOURS/MINORS REGISTERED STUDENTS.

II. ANY OMISSION OR CLASHES IN THIS TIME TABLE MAY PLEASE BE INFORMED TO THE CONTROLLER OF EXAMINATIONS, IMMEDIATELY.

III. EVEN IF GOVERNMENT DECLARES HOLIDAY ON ANY OF THE ABOVE DATES,THE EXAMINATIONS SHALL BE CONDUCTED AS USUAL.

IV. THE HOD'S ARE REQUESTED TO INFORM THE EXAMINATION SECTION (AUTONOMOUS) ANY OTHER SUBSTITUTE SUBJECTS THAT ARE NOT INCLUDED IN THE ABOVE LIST IMMEDIATELY.

PRINCIPAL

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CC1OE01

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
DISASTER MANAGEMENT
(CE&IT)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i) Define disaster and list out the important perceptions on disasters.	K2&K3	CO1	7M
		ii) Discuss the levels of disasters and disaster phenomena.	K2&K3	CO1	7M
		OR			
	b	Discuss various types of natural disasters in India and highlight their effects.	K2&K3	CO1	14M
2		**Unit-II**			
	a	Explain the Concepts of risk management and crisis managements in disaster management mechanism.	K2&K3	CO2	14M
		OR			
	b	Explain the disaster management cycle in detail.	K2&K3	CO2	14M
3		**Unit-III**			
	a	Discuss the Structural and Nonstructural Measures in concept of capacity building.	K2&K3	CO3	14M
		OR			
	b	Discuss the Legislative Support at the state and national levels under disaster management.	K2&K3	CO3	14M
4		**Unit-IV**			
	a	Explain the Industrial Safety Plan required for preventing or managing disasters.	K2&K3	CO4	14M
		OR			
	b	i) explain the concept of disaster management process	K2&K3	CO4	7M
		ii) explain the different types of coping strategies?	K2&K3	CO4	7M
5		**Unit-V**			
	a	i) what are the disaster management act and policy in India	K2&K3	CO5	7M
		ii) what are the preparation of state and district disaster management plan	K2&K3	CO5	7M
		OR			
	b	Discuss the Steps for formulating a disaster risk reduction plan	K2&K3	CO5	14M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CC1OE07

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

OPERATIONS RESEARCH

(ME)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 14 =70M)

Q.No		Questions	K L	CO	Marks
		Unit-I			
1	a	Solve the following LPP using graphical method (Use Graph Sheet) Maximize Z= 100 X_1+80 X_2 Subject to $5X_1 + 10\ X_2 \leq 50$ $8\ X_1 + 2\ X_2 \geq 16$ $3\ X_1 - 2\ X_2 \geq 6$ X_1 and $X_2 \geq 0$	**K4**	**CO1**	**14M**
		OR			
	b	Solve the following LPP using Simplex Method. Maximize Z= 10 X_1+15 X_2+20 X_3 Subject to $2X_1 + 4\ X_2 + 6\ X_3 \leq 24$ $3X_1 + 9\ X_2 + 6\ X_3 \leq 30$ $X_1, X_2,$ and $X_3 \geq 0$	**K4**	**CO1**	**14M**
2		**Unit-II**			
	a	The demand pattern for a product at for consumer centers, A, B, C and D are 5000 units, 7000 units, 4000 units and 2000 units, respectively. The supply for these centers is from three factories X, Y and Z. The capacities for the factories are 3000 units, 6000 units and 9000 units respectively. The unit transportation cost in rupees from a factory to consumer center is given Table.1. in the matrix. Develop an optimal transportation schedule and find the optimal cost.	**K3**	**CO2**	**14M**
		OR			
	b	Consider the problem of assigning four sales persons to four different sales regions as shown in ***Table.2.*** such that the total sales is maximized. The cell entries represents annual sale figures in lakhs of rupees. Find the optimal allocation of the sales persons to different regions.	**K5**	**CO2**	**14M**

Table.1.

From	***To***				
	A	***B***	***C***	***D***	Supply
X	8	9	12	8	3000
Y	3	4	3	2	6000
Z	5	3	7	4	9000
Demand	5000	7000	4000	2000	

Table. 2.

Sales Region

Salesman	**1**	**2**	**3**	**4**
1	10	22	12	14
2	16	18	22	10
3	24	20	12	18
4	16	14	24	20

Unit-III

3	a	In a maintenance shop mechanics has to reassemble the machine parts after yearly maintenance in the order *PQRST* on four machines *A*, *B*, *C* and *D*. The time required to assemble in hours is given in the matrix below. Find the optimal sequence. ***Machine.*** | ***Parts (Time in hours to assemble)*** P Q R S T *A* 7 5 2 3 9 *B* 6 6 4 5 10 *C* 5 4 5 6 8 *D* 8 3 3 2 6	**K5**	**CO 3**	**14M**
		OR			
	b	In a departmental store one cashier is there to serve the customers. And the customers pick up their needs by themselves. The arrival rate is 9 customers for every 5 minutes and the cashier can serve 10 customers in 5 minutes. Assuming Poisson arrival rate and exponential distribution for service rate, Find: (a) Average number of customers in the system. (b) Average number of customers in the queue or average queue length. (c) Average time a customer spends in the system. (d) Average time a customer waits before being served.	**K3**	**CO 3**	**14M**
4		**Unit-IV**			
	a	A taxi owner estimates from his past records that the costs per year for operating taxi whose purchase price when new is Rs.6000/- are as given below: Age (year) | 1 | 2 | 3 | 4 | 5 Operating cost in Rs. | 1000 | 1200 | 1500 | 1800 | 2000 After 5 years, the operating cost is Rs. 600 × *k* Where *k* = 6, 7, 8, 9, 10, *i.e.*, '*k*' denotes years. If the resale value increases by 10% of purchase price each year, what is the best replacement policy? Cost of money is zero.	**K3**	**CO 4**	**14M**
		OR			
	b	The following Table gives optimistic time (a), the most likely time (m) and the pessimistic time (b). Draw the network of the project and calculate the slack for each event. Find the critical path and the probability of completing the project in 35 days. **Activity** | **1–2** | **1–3** | **2-5** | **3-4** | **4-5** | **5-8** | **4-6** | **4-7** | **6–9** | **8-9** | **7-10** | **9-10** ***Optimistic time (a)*** 3 1 6 8 0 5 6 3 1 3 8 2 ***Most likely time (m)*** 5 2 8 12 0 7 9 6 2 5 15 5 ***Pessimistic time (b)*** 7 3 12 17 0 9 12 8 3 8 20 6	**K3**	**CO4**	**14M**

		Unit-V			
5	a	Solve the following 3 × 5 game using dominance property (***Table.3.***). ***Table 3.*** **Player B** **Player A** **1** 2 5 10 7 2 **2** 3 3 6 6 4 **3** 4 4 8 12 1	**K3**	**CO5**	**14M**
		OR			
	b	i) Discuss the types of simulation models.	**K2**	CO5	**7M**
		ii) Explain briefly the advantages and the disadvantages of simulation.	**K1**	CO5	**7M**

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

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NEC NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CC1OE10

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

DATABASE MANAGEMENT SYSTEM

(EEE,ECE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i)Explain Database and DBMS with examples	2	CO1	7M
		ii)List and explain the applications and advantages of DBMS.	2	CO1	7M
		OR			
	b	i)Explain different types of Datamodels.	2	CO1	7M
		ii)Explain in detail the components of DB system environment.	2	CO1	7M
2		**Unit-II**			
	a	i)What is an Entity? Explain different type of Entities.	2	CO2	7M
		ii)What are the basic notations of ER model? Explain	2	CO2	7M
		OR			
	b	Explain about stored and derived attributes and Distinguish strong entity set with weak entity set? Draw an ER diagram to illustrate weak entity set.	2	CO2	14M
3		**Unit-III**			
	a	i)Explain Order by, Group by and Having Clauses with example.	2	CO3	7M
		ii)Explain integrity constraints in SQL in detail	2	CO3	7M
		OR			
	b	i)What is a Join? Discuss about various joins used in SQL.	2	CO3	7M
		ii)List and explain SQL Relational Set Operators.	2	CO3	7M
4		**Unit-IV**			
	a	i)Illustrate redundancy and the problems that it can cause.	2	CO4	7M
		ii)Define normalization? Explain 1NF, 2NF.	2	CO4	7M
		OR			
	b	i)Discuss the problem that may be caused by the use of decompositions.	2	CO4	7M
		ii)Define functional dependencies. How are primary keys related to FD's.	2	CO4	7M
5		**Unit-V**			
	a	i)Explain the ACID properties in detail	2	CO5	7M
		ii)Discuss about view serializability with example	2	CO5	7M
		OR			
	b	Explain different types of indexing techniques	2	CO5	14M

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CC1OE16

III B.Tech. - I Semester Regular& Supple Examinations, October-2023

COMPUTER ORGANIZATION

Time: 3 hours **(AI)** **Max. Marks: 70**

Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	Describe the different types of computers	2	1	7M
		Explain the various arithmetic micro operations	2	1	7M
		OR			
	b	What is register transfer language? Explain the basic symbols used in register transfer	2	1	7M
		Explain the following i) 4 – bit Binary adder ii) Binary Adder - Subtractor	2	1	7M
2		**Unit-II**			
	a	Explain about instruction set completeness	2	2	7M
		Explain about the Instruction cycle	2	2	7M
		OR			
	b	Explain memory reference instructions with examples	2	2	14M
3		**Unit-III**			
	a	What is addressing modes? Discuss about different addressing modes with examples	2	3	14M
		OR			
	b	Distinguish the characteristics of RISC and CISC	2	3	7M
		Explain the design of micro programmed control unit in detail.	2	3	7M
4		**Unit-IV**			
	a	Explain the block diagram of Associative memory	2	4	7M
		Compare and Contrast Associate mapping and Set associate mapping	2	4	7M
		OR			
	b	Show the step by step multiplication process using Booth algorithm when the following binary numbers are multiplied (+15) * (-13). Also draw the flowchart	3	4	14 M
5		**Unit-V**			
	a	Explain the data transfer procedure for source initiated using handshaking	2	5	7M
		Differentiate between Memory Mapped I/O and Isolated I/O.	2	5	7M
		OR			
	b	Explain the Daisy Chaining priority with neat diagram	2	5	7M
		Draw the block diagram of a DMA controller and explain its functioning	2	5	7M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CC3101

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
OPERATING SYSTEMS
(CSE,IT,AI)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	I) Explain the various objectives and functions of Operating systems?	2	1	14M
		OR			
	b	i)Discuss the Simple Operating System Structure. Describe the layered approach	2	1	7M
		ii)What is system calls in OS? Explain in detail with its types	2	1	7M
2		**Unit-II**			
	a	i) Explain FCFS scheduling algorithm with example	2	3	7M
		ii) Explain about different multithreading models	2	2	7M
		OR			
	b	i) Explain the Process Control Block with neat sketch	2	2	7M
		ii)Explain about process scheduling? Explain different types of schedulers?	2	2	7M
3		**Unit-III**			
	a	i) Explain the solution for bounded buffer problem with semaphores.	2	2	7M
		ii) What is critical section problem? Explain about requirements that must satisfy for a solution to the critical-section problem.	2	2	7M
		OR			
	b	i) Explain paging scheme for memory management, discuss the paging hardware and Paging	2	4	7M
		ii) Differentiate external fragmentation with internal fragmentation.	2	4	7M
4		**Unit-IV**			
	a	i) Explain how paging supports virtual memory. With neat diagram explain hoe logical address is translated into physical address	2	4	7M
		ii) Explain FIFO and LRU algorithms with the example	2	4	7M
		OR			
	b	i) Write and explain the resource allocation algorithm for dead lock	2	4	7M
		ii) Explain about recovery from deadlock?	2	4	7M
5		**Unit-V**			
	a	i) Explain about single-level, two-level directory structure?	2	5	7M
		ii)Discuss in detail the file allocation techniques: Sequential, Indexed and Linked	2	5	7M
		OR			
	b	i) Differentiate SCAN, C-SCAN and LOOK, C-LOOK disk scheduling algorithms with an example.	2	5	14M

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CC3102

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
DATA WAREHOUSING AND DATA MINING
(CSE & IT)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i) Describe about Major issues in Data mining?	K2	CO1	7M
		ii) Explain data mining tasks.	K2	CO1	7M
		OR			
	b	i)Categorize the data quality issues and how can you solve them appropriately?	K4	CO1	7M
		ii)Define data mining. List applications of data mining.	K2	CO1	7M
2		**Unit-II**			
	a	i)Define SMC, JaccardCoefficient and Cosine Similarity. Apply them on any example data set to measure the similarity between objects.	K2	CO2	7M
		ii)Discuss about mean and median with example.	K2	CO2	7M
		OR			
	b	Explain data preprocessing techniques in detail.	K2	Co2	14M
3		**Unit-III**			
	a	i)Discuss about star schema and snowflake schema in detail.	K2	CO3	7M
		ii) Compare ROLAP, MOLAP and HOLAP	K2	CO3	7M
		OR			
	b	i) Build 3-tier Data Warehouse Architecture and Explain briefly.	K2	CO3	7M
		ii) Describe in brief about Data warehouse implementation	K2	CO3	7M
4		**Unit-IV**			
	a	i) Explain decision tree induction algorithm for classifying data tuples and with suitable example	K3	CO4	7M
		ii)What is model overfitting? Interpret the reasons of model overfitting with an example.	K3	CO4	7M
		OR			
	b	i) What is Bayesian belief network? Explain in detail	K3	CO4	7M
		ii)Discuss about Holdout method and cross validation.	K2	CO4	7M
5		**Unit-V**			
	a	What are the drawbacks of Apriori Algorithm? Explain about FP Growth Concept in Detail?	K3	CO5	14M
		OR			
	b	i)Explain DBSCAN clustering algorithm. Apply DBSCAN on any example data set to generate clusters	K3	CO5	7M
		ii)Discuss about K-means algorithm.	K3	CO5	7M

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CC3103

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

DESIGN AND ANALYSIS OF ALGORITHMS

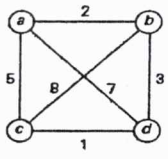
(CSE,AI)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	Explain asymptotic notations with examples	1	1	14M
		OR			
	b	i)Analyze Performance Analysis of algorithm and devise matrix multiplication algorithm and give time complexity	3	1	7M
		ii)Analyze algorithm Specification and explain properties with an example	3	1	7M
2		**Unit-II**			
	a	i)Explain Divide and Conquer General method and Analyze time complexity of recurrence relation.	2	2	7M
		ii)Analyze Quick sort algorithm with help of an example and derive time complexity.	3	2	7M
		OR			
	b	i)Explain Merge sort with Recursive Algorithm and derive its time complexity	4	2	7M
		ii)Derive the time complexity of Strassen's Matrix multiplication using recurrence relation.	4	2	7M
3		**Unit-III**			
	a	i)Define Spanning tree? Explain Prim's minimum cost Spanning tree with an algorithm and suitable example	2	3	7M
		ii)Discuss the Dijkstra's single source shortest path algorithm and derive the time complexity of this algorithm	1	3	7M
		OR			
	b	i)Find the Optimal solution for given Knapsack instances using greedy method N=4, M=20, (P1,P2,P3,P4)=(25,24,15,18), (W1,W2,W3,W4)=(18,16,10,15).	3	3	7M
		ii)Apply Greedy method to find an optimal solution generated by the job sequencing with deadlines when n=5, (p1,p2,p3,p4,p5) = (20,15,10,5,1) & (d1,d2,d3,d4,d5)=(2,2,1,3,3).	4	3	7M
4		**Unit-IV**			
	a	i)Construct an optimal travelling sales person tour using Dynamic Programming. $\begin{pmatrix} 0 & 10 & 9 & 3 \\ 5 & 0 & 6 & 2 \\ 9 & 6 & 0 & 7 \\ 7 & 3 & 5 & 0 \end{pmatrix}$	2	6	7M
		ii)Find the Minimum number of operations required for the following Chain Matrix Multiplication using Dynamic programming. A(5x3) * B(3x4) * C(4x2) * D(2x6)	1	4	7M

		OR			
	b	i)Describe the Backtracking technique for Hamiltonian Cycle. Explain an example with algorithm	**1**	**4**	**7M**
		ii)Construct an optimal binary search tree with the identifier set {a1 , a2 , a3,a4} = { cout ,float ,if ,while } with (p1,p2,p3,p4)=(0.05, 0.2, 0.1, 0.05) and (q0,q1,q2,q3,q4)=(0.2, 0.1, 0.2, 0.05, 0.05).	**1**	**4**	**7M**
5		**Unit-V**			
	a	i)Explain 4-Queen's problem using backtracking and Draw the state space tree by taking implicit constraint, explicit constraint and bounding functions.	**2**	**5**	**7M**
		ii)Apply branch & bound method to solve travelling salesperson instance for the following graph 	**3**	**5**	**7M**
		OR			
		Draw the portion of state space tree generated by LCBB for the 0/1 Knapsack instance: n = 5, (p1,p2,...,p5) = (10,15,6,8,4), (w1,w2,..,w5) = (4,6,3,4,2) and m=12. Find an optimal solution using fixed – tuple sized approach.	**4**	**6**	**14M**

NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CC3104

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
COMPUTER NETWORKS
(CSE,AI)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	CO	KL	Marks
		Unit-I			
1	a	Compare the WAN, LAN and MAN topologies	1	2	7M
		Explain the Architecture of Internet with a neat Sketch	1	2	7M
		OR			
	b	Explain the ISO/OSI reference model with neat sketch	1	2	14M
		Unit-II			
2	a	Explain the common approaches for flow control in data link layer.	2	2	7M
		What is the significance of Error control Mechanism? Explain how it is achieved by CRC	2	2	7M
		OR			
	b	Explain character stuffing and bit stuffing for framing with example	2	2	7M
		Discuss about IEEE820.11	2	2	7M
		Unit-III			
3	a	Explain in detail about the Simplex Stop and Wait protocol	3	2	7M
		Write about CSMA and CSMA/CD in detail.	3	2	7M
		OR			
	b	Explain how slotted ALOHA solves the problem of Channel allocation	3	2	7M
		Compare and Contrast HDLC and PPP	3	2	7M
		Unit-IV			
4	a	Differentiate between Virtual Circuit Versus Datagram Subnets	4	2	7M
		Explain Broadcast routing algorithm with an example	4	2	7M
		OR			
	b	Explain the distance vector routing with example	4	2	7M
		Compare and Contrast Connection oriented and Connection less networks	4	2	7M
		Unit-V			
5	a	Illustrate the Scenarios for establishing a connection using a Three-Way Handshake.	5	2	7M
		Explain TCP Connection management Finite State Machine. Explain all states in it	5	2	7M
		OR			
	b	Explain the following a) Electronic Mail b) HTTP c) WWW	5	2	14M

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

III B.Tech I Semester Regular & Supple Examinations, October-2023

Sub Code: R20CE3101

DESIGN AND DRAWING OF CONCRETE STRUCTURES

Time: 3 hours (CE) Max. Marks: 70

Note: Answer any ONE Question from Part – A and any THREE Questions from Part – B

Use of IS: 456-2000 and design charts from SP-16 is allowed.

Q.No.		Questions	KL	CO	Marks
		PART A			
1		A reinforced concrete floor slab of 125 mm thickness is supported by RCC beams of width 300 mm spaced at 3.0 m c/c. The beams are simply supported on 300 mm × 400 mm columns with a clear span of 5.2 m and cast monolithic with the slab. The imposed live load on the floor is 3 kN/m^2 and the floor finish is 1 kN/m^2. Design the T-beam section using M 25 grade concrete and Fe 500 steel. Draw the longitudinal and cross-sectional details of the T-beam.	K4	**CO5**	[28M]
		OR			
2		Design the footing for a rectangular column 300 mm × 450 mm subjected to an axial load of 1200 kN in addition to an ultimate moments of 100 kNm about the major axes. Assume the bearing capacity of soil is 175 kN/m^2. Use concrete of grade M 25 and Fe 500 steel. Draw the reinforcement details.	K4	**CO5**	[28M]
		PART B			
3	a	Derive an expression for the moment of resistance of a reinforced concrete beam of rectangular cross-section *'b×d'* and also find the moment of resistance factor for M 25 grade concrete and Fe 500 grade steel reinforcement. Adopt working stress method of design.	K1	**CO1**	[7M]
	b	A simply supported reinforced concrete beam of rectangular section has an effective span 4.5 m and size 300 mm × 450 mm is reinforced with 4 bars of 16 mm diameter. Determine the safe uniformly distributed load the beam can carry in addition to its self-weight. Use M 25 concrete and Fe 415 steel. Adopt working stress method of design.	K4	**CO2**	[7M]
4		Design the shear reinforcement of a simply supported beam of span 4.5 m and section 300 mm × 450 mm subjected to an imposed load of 30 kN/m. The beam is reinforced with 3 bars of 16 mm diameter. Use M 25 concrete and Fe 415 steel.	K4	**CO3**	[14M]
5		Design an RCC slab of clear dimensions 5 m × 6 m with two adjacent edges discontinuous. The slab is subjected to live load of 2 kN/m^2 and floor finish of 1 kN/m^2. Assume the width of the supports is 230 mm. Use M 20 grade concrete and Fe 415 steel.	K4	**CO4**	[14M]
6		Design an RCC column subjected to a factored axial load of 1250 kN and a facored moment of 250 kNm. Use M 25 grade concrete and Fe 500 steel.	K4	**CO4**	[14M]
7		Design the footing for a rectangular column 230 mm × 300 mm subjected to an axial load of 1250 kN. Assume the bearing capacity of soil is 160 kN/m^2. Use M 25 concrete and Fe 415 steel.	K4	**CO4**	[14M]

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NEC NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CE3102

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

SOIL MECHANICS

(CE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i) Write about formation of soils and Sketch the phase diagram for a soil and indicate the terms.	**K2**	**CO1**	**7M**
		ii) A sample of saturated soil has water content at 25% and bulk unit weight of 20 kN/m^3. Determine the dry unit weight, void ratio and specific gravity of solids. What will be the value of bulk unit weight, if the degree at saturation is 80%.	**K4**	**CO1**	**7M**
		OR			
	b	i) What is the purpose of Soil classification? List out the classification of soil and explain about textural classification?	**K2**	**CO1**	**7M**
		ii) A fully saturated clay sample has mass of 150 g and a volume of 75 cm^3 . After oven drying, the clay has mass of 125 g. Assuming that the volume does not change during drying, determine i) Specific Gravity (G), ii) Void Ratio (e) iii) Porosity (n) and iv) dry unit weight (γd).	**K3**	**CO1**	**7M**
2		**Unit-II**			
	a	i)Define effective stress and importance of effective stress.	**K1**	**CO2**	**7M**
		ii)What is Darcy's law? What are its limitations?	**K4**	**CO2**	**7M**
		OR			
	b	For field pumping test, a well was sunk through a horizontal stratum of 14.5 m thick, underlain by clay sratum. Two observation wells were sunk at horizontal distance of 16 m and 34 m respectively from the pumping well. The initial position of the water table was 2.2 m below ground level. At a steady-state pumping rate of 1850 litres/min, the draw down found to be 2.45m and 1.20m respectively. Calculate the coefficient of permeability.	**K4**	**CO2**	**14M**
3		**Unit-III**			
	a	i)State the assumptions made in computing stresses	**K2**	**CO3**	**4M**
		ii)Derive an expression for the vertical stress at appoint due to a point load using boussinesq's theory.	**K2**	**CO3**	**10M**
		OR			
	b	A stiff clay layer underlies a 12 m thick silty sand deposit as show in Fig.1. A sheet pile is driven into the sand to a depth of 7 m, and the upstream and downstream water levels are as shown in the figure below. Take k = 8.6 x 10^{-6} m/sec. Estimate the following: i) The seepage beneath the sheet pile in m3/day per meter. ii) What is the pore water pressure at the tip of the sheet pile?	**K3**	**CO3**	**14M**

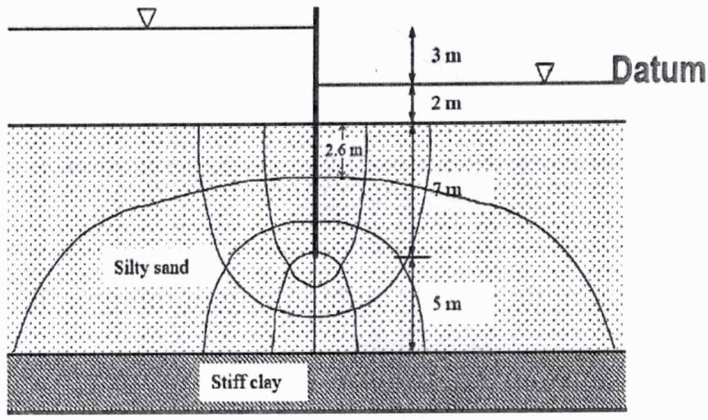


Fig.1

4		**Unit-IV**			
	a	i) Define coefficient of compressibility, coefficient of volume change, compression index.	**K2**	**CO4**	**7M**
		ii) A certain clay layer has a thickness of 6m. After one year when the clay was 50% consolidated 7cm of settlement had occurred. For a similar clay and loading conditions how much settlement would occur at the end of one year and 4 years, if the thickness of this new layer is 36m?	**K4**	**CO4**	**7M**
		OR			
	b	i)What is compressibility of soil? Explain the stages in consolidation.	**K2**	**CO4**	**7M**
		ii) Derive the equation for coefficient of consolidation (1D)	**K3**	**CO4**	**7M**
5		**Unit-V**			
	a	i) Discuss about the factors affecting compaction	**K2**	**CO5**	**7M**
		ii)Work out theoretical max. dry density for a soil sample having specific gravity of 2.7 and water content of 16 % during a standard Proctor test. If the values of G are 2.65, what is the degree of saturation? What is the maximum dry density it can further compacted?	**K3**	**CO5**	**7M**
		OR			
	b	Define the following i) Relative compaction ii) zero air void line iii) optimum moisture content	**K1**	**CO5**	**7M**
		ii) Discuss various methods available for field compaction.	**K2**	**CO5**	**7M**

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CE3103

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

HIGHWAY ENGINEERING

(CE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i) What are the various classifications of roads?	K2	CO1	**7M**
		ii) Explain the requirements of ideal highway alignment in detailed	K3	CO1	**7M**
		OR			
	b	i) What are the objectives of the highway planning? Explain in detailed.	K2	CO1	**7M**
		ii) Explain in detail the reconnaissance survey for highway location in rural area.	K2	CO1	**7M**
2		**Unit-II**			
	a	i)What are the factors affecting geometric design ? Explain	K2	CO2	**7M**
		ii) Calculate the stopping sight distance for two way traffic in a single lane road. The design speed is 68 Kmph. Assume reaction time of driver as 2.5 seconds. Coefficient of friction is 0.6. Brake efficiency is 50%.	K3	CO2	**7M**
		OR			
	b	i) Draw the cross section of a typical hill road and label the component parts.	K2	CO2	**7M**
		ii) Briefly expalin highway cross sectional elements.	K2	CO2	**7M**
3		**Unit-III**			
	a	i) Enlist different types of road signals.	K2	CO3	**7M**
		ii) Explain the rotary island in brief with neat sketch.	K3	CO3	**7M**
		OR			
	b	i) Explain In detail about Road User Characteristics.	K2	CO3	**7M**
		ii) Compare grade intersection with grade separated intersection.	K3	CO3	**7M**
4		**Unit-IV**			
	a	i) Write the design processer of IRC method for flexible pavements?	K2	CO4	**6M**
		ii)A circular load having radius of 152 mm and uniform pressure 0.56 MPa is applied on two layer system. The subgrade has elastic modulus of 35MPa and can support a maximum vertical stress of 0.056 MPa. If bituminous layer has elastic modulus of 3500 MPa, what is the required thickness of a full depth pavement?	K2	CO4	**8M**
		OR			
	b	i) Describe briefly the thermal stresses developed in Concrete slab due to seasonal variation of temperature	K2	CO4	**6M**
		ii) A cement concrete pavement has a thickness of 18 cm and has two lanes of 7.2m with a longitudinal joint along the centre. Design the dimensions and spacing of the tie bar. Allowable working stress in tension = 1400kg/cm^2 , Unit weight of concrete = 2400kg/m^3 , Allowable bond stress in deformed bars in concrete=24.6 kg/cm^2 and coefficient of friction = 1.5	K2	CO4	**8M**

5		**Unit-V**			
	a	i) Explain in detail about the crushing test and abrasion test on the aggregates used for highway road construction.	K3	CO5	**7M**
		ii) Explain in detail the possible causes and remedial measures for joint failure.	K2	CO5	**7M**
		OR			
	b	i) Explain the construction procedure of bituminous road.	K3	CO5	**7M**
		ii) Distinguish between surface drainage and sub-surface drainage system	K2	CO5	**7M**

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CE3104

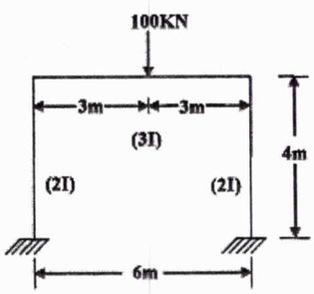
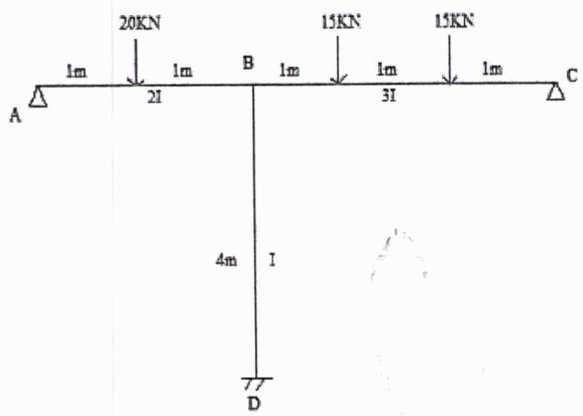
III B.Tech. - I Semester Supple Examinations, October-2023

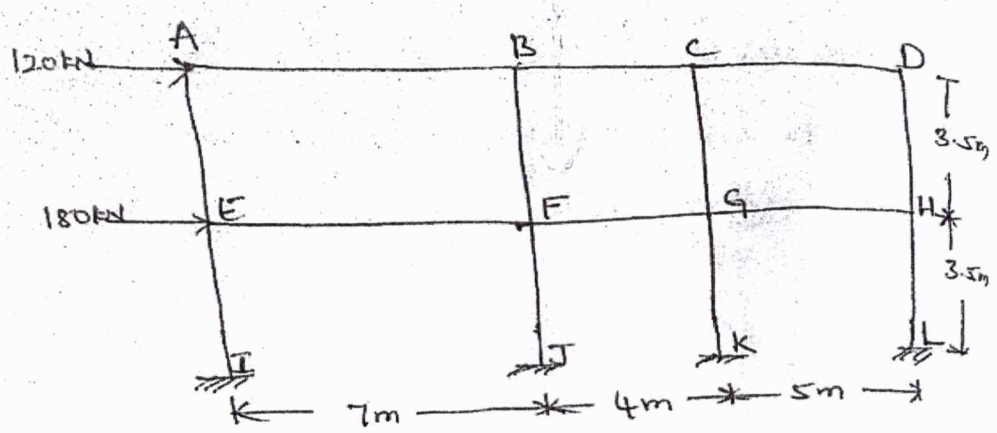
ADVANCED STRUCTURAL ANALYSIS

(CE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
		Unit-I			
1	a	A cantilever beam ABC of 4.5m span is fixed at A and free at C, B being the mid-point. The beam is of circular cross-section of 50mm diameter in portion CB and of 100mm diameter in portion AB. The beam is carrying a uniformly distributed load of 20kN/m on its whole length. It is also subjected to a concentrated load of 12kN at its free end C. assume E=220GNm−2 . Determine the deflection at the free end using Castigliano's first theorem.	3	1	14M
		OR			
	b	A single bay single storey portal frame ABCD has a span of 6m and height of 6m. It is subjected to a horizontal load of 10 KN (left to right) at B. Both the supports at A and D are fixed. Analyse the portal frame by moment distribution method and draw the bending moment diagram.	3	1	14M
		Unit-II			
2	a	Analyse the portal frame shown in figure. by Kani's method and draw the bending moment diagram. 	3	2	14M
		OR			
	b	Analyze the frame using kanis method? 	3	2	14M
3		**Unit-III**			
	a	A three hinged parabolic arch has a span of 24m and a central rise of 4m. Draw the influence line diagrams for the positive and negative bending moments at a section 7m from the left hinge due to a rolling point load of 15 kN. Using this, calculate the maximum positive and negative bending moments at the section. Also calculate the	3	3	14M

		position and magnitude of absolute maximum bending moment			
		OR			
	b	A two hinged parabolic arch of span 'l' and rise 'r' carries a UDL of w/meter run over the left hand half of the span. The moment of inertia varies as secant of the slope of rib axis. Derive the expression for the horizontal thrust at the hinges. Calculate the horizontal thrust and Bending moment at quarter span point on the right half of the span if l=20m; r=4m; w=20 KN/m.	3	3	14M
		Unit-IV			
4	a	. Analyze the frame by cantilever method assume all columns having same cross section area 	3	4	14M
		OR			
	b	Analyse a portal frame of two stroyed, two bay of 5m bay length each and height 5m. A horizontal force of 120kN is applied at top storey and 240kN is applied at lower storey. Use portal frame method	3	4	14M
		Unit-V			
5		What are the main functions of stiffening girders in suspension bridges? i)Give the types of significant cable structures ii)What is the degree of indeterminacy of a suspension bridge with two hinged stiffening girder?	2	5	14M
		OR			
	b	The three hinged stiffening girder of a suspension bridge of 110 m is subjected to two point loads of 15 kN each placed at 22 m and 44 m respectively from the left hand hinge.Determine the B.M. and S.F. in the girder at section 33 m from each end. Also determine the maximum tension in the cable which has a central dip of 11 m.	3	5	14M

NEC NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CE3107

III B.Tech. - I Semester Regular Examinations, October-2023

SOLID WASTE AND HAZARAOUS MANAGEMENT

(CE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

Q.No		Questions	K L	CO	Marks
1		**Unit-I**			
	a	Explain the sources and types of solid wastes	K1	CO1	7M
		List the essential reasons for the analysis of composition, characteristics and quantities of solid wastes	K3	CO1	7M
		OR			
	b	Describe the global strategy of e-waste management system	K2	CO1	7M
		Discuss in detail about the functional elements of solid waste management system.	K3	CO1	7M
2		**Unit-II**			
	a	Explain briefly the factors affecting the generation of solid waste	K2	CO2	7M
		Discuss the physical and mechanical properties of construction and demolition waste	K3	CO2	7M
		OR			
	b	State the methods of storage of solid waste management	K2	CO2	7M
		Distinguish between waste prevention and waste reduction.	K2	CO2	7M
3		**Unit-III**			
	a	Describe the compliance criteria for storage, transportation and processing of solid waste	K1	CO3	7M
		Describe in detail the methods of collection system with flow diagram and the type of vehicle used for collection system.	K5	CO3	7M
		OR			
	b	What are the various facilities that must be available at transfer station?	K3	CO3	7M
		Describe the reuse and recycling of solid waste material	K2	CO3	7M
4		**Unit-IV**			
	a	State the factors affecting composting. State the different methods of composting. Explain any one detail.	K4	CO4	14M
		OR			
	b	Explain briefly, the processing techniques involved in the treatment of MSW as well as material recovery	K5	CO4	14M
5		**Unit-V**			
	a	Explain the advantages and disadvantages of the disposal method of open dumping	K2	CO5	7M
		Describe any one method of constructing a sanitary landfill	K1	CO5	7M
		OR			
	b	Design a suitable environmental monitoring system for a sanitary land fill. Sketch the main monitoring components	K2	CO5	7M
		Briefly explain the advantages and disadvantages of the disposal method of open dumping	K4	CO5	7M

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20EE3101

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

PROBLEM SOLVING WITH PYTHON

(EEE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i)Explain the concept of algorithms and their importance in computer science. Provide an example of an algorithm and describe how it can be implemented in a computer program.	K2	1	7M
		ii)Describe the hardware architecture of a modern computer system and its components.	K2	1	7M
		OR			
	b	i)Discuss the concept of data representation in computers. Describe the difference between binary and decimal number systems and how they are used in computing.	K2	1	7M
		ii)Explain the role of software and operating systems in computer systems. Describe the difference between system software and application software.	K2	1	7M
2		**Unit-II**			
	a	i)Write a Python program to find the sum of all the numbers from 1 to 100 that are divisible by 7 using a for loop.	K3	2	7M
		ii)Write a Python program to find the largest element in a given list using for loop.	K3	2	7M
		OR			
	b	i)Write a Python program that accepts a sentence and calculates the number of letters and digits in it using while loop.	K3	2	7M
		ii)Write a Python program that takes a list of integers and returns the list of the squares of each element using a list comprehension.	K3	2	7M
3		**Unit-III**			
	a	i)Write a recursive function in Python to calculate the factorial of a given number.	K3	2	7M
		ii)Explain user defined functions with a suitable example.	K2	2	7M
		OR			
	b	i)What is a lambda function in Python? Give an example of a lambda function that takes two input parameters and returns their product.	K3	2	7M
		ii)Write a Python function that takes two integers as input parameters and returns their sum.	K2	2	7M
4		**Unit-IV**			
	a	i)Write a Python program to remove all duplicates from a given list and sort it in descending order.	K2	2	7M
		ii)Explain the concept of a dictionary in Python. Give an example of how you could use a dictionary to store information about a group of students.	K2	2	7M
		OR			
	b	i)What is a file? What are file operations? What are the advantages of file handling?	K3	2	7M
		ii)What is the difference between a list and a tuple in Python? Provide an example of when you would use a tuple instead of a list.	K3	2	7M
5		**Unit-V**			
	a	i)Describe the concept of polymorphism in object-oriented programming. Provide an example of polymorphism in Python using a base class and derived classes.	K2	3	7M
		ii)Explain the use of operator overloading in Python.	K2	3	7M
		OR			
	b	i)Explain the concept of inheritance in object-oriented programming	K2	3	7M
		ii)Discuss the concept of exception handling in Python. Explain how try-except blocks can be used to handle errors in a program, and provide an example of a program that uses try-except blocks to handle an exception.	K2	3	7M

NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20EE3102

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
POWER ELECTRONICS
(EEE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All FIVE Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i) Explain the various turn-on methods of SCR's?	2	1	7M
		ii) What are the requirements of good gate driver circuits of IGBT and MOSFET? Explain	2	1	7M
		OR			
	b	i) Explain the design of Snubber circuit used for a SCR, how it provides different voltage protections?	2	1	7M
		ii) Describe the basic behaviour of thyristors using a two-transistor model?	2	1	7M
2		**Unit-II**			
	a	What is phase angle controlled technique? Explain the operation of single phase angle full wave controlled rectifier with R load. Derive the expression for average DC output voltage, Draw the relevant waveforms?	3	2	14M
		OR			
	b	A single phase 220V, 1 KW heater is connected to a half-wave controlled rectifier and fed from a 220V, 50 HZ AC supply. Determine the power absorbed by the heater when the firing angle is i) $\alpha = 30^0$ and ii) $\alpha = 90^0$	3	2	14M
3		**Unit-III**			
	a	A three phase full converter is connected to a load resistance of 5 ohm and it is supplied from a 220V, 50 HZ AC supply. If the firing angle of thyristor is $\alpha = 30^0$, Draw the relevant waveforms, and determine i) average output voltage ii) average output current iii) rms output voltage and iv) rms output current	3	3	14M
		OR			
	b	i) Draw the output voltage waveforms and derive the average and rms voltage expressions of three phase semi converter on discontinuous conduction mode	2	3	7M
		ii) A three phase full converter is connected to a resistive load of 10 ohms. If the firing angle of SCR is $\alpha = 45^0$ and it feds 4 KW power to a resistive load determine the amplitude of maximum line input voltage?	3	3	7M
4		**Unit-IV**			
	a	i) With necessary waveforms explain the working of single phase mid point type cyclo converter with RL load?	2	4	7M
		i) A single phase full wave AC voltage controller has a load of R= 5 ohm and input voltage is 230V, 50 HZ. If the load power is 5 KW, find firing angle delay of SCR and input power factor?	3	4	7M
		OR			
	b	i) Describe the operation of single phase full wave AC regulator feeding resistive load. Derive the expression for output voltage?	3	4	7M
		ii) A single phase voltage controller has input voltage of 230V, 50 HZ, the load consists of a resistance 30 ohm in series with inductance 15 mH, for 6 cycles off and 4 cycles on. Determine the output voltage and input power factor?	3	4	7M

		Unit- v			
5	a	Explain the working of boost converter with relevant waveforms in CCM mode and also derive the expression for average output voltage?	3	5	14M
		OR			
	b	i) Draw a neat circuit diagram for single phase full bridge inverter feeding inductive load?	3	5	7M
		ii) Explain the working of a three phase inverter with 120^0 mode of conduction with three phase delta connected resistive load?	2	5	7M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20EE3103

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
POWER GENERATION AND TRANSMISSION
(EEE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i) Discuss various factors which affect the selection of site for a nuclear power plant	3	1	7M
		ii) What are various control rods used in a nuclear reactor? Describe the function of each of them?	2	1	7M
		OR			
	b	Draw a typical layout of a thermal power plant and describe the function of the following components i) Coal and ash handling plant ii) steam generating plant iii) Steam turbines iv) Feed water circuit and v) Cooling water circuit	3	1	14M
2		**Unit-II**			
	a	Describe with a neat sketch the construction and principle of operation of a turbine used for tidal power?	2	2	14M
		OR			
	b	Explain with neat sketches, the principle of operation of a geothermal power plant with reference to i) indirect condensing cycle and ii) Direct non-condensing cycle?	2	2	14M
3		**Unit-III**			
	a	Find the inductance of the following systems using the method of GMD: i) Two wire system ii) symmetrically spaced three phase line iii) unsymmetricallay spaced three phase transposed line?	3	3	14M
		OR			
	b	i) Distinguish between GMD and GMR?	2	3	7M
		ii) The three conductors of a three phase line are arranged at the corners of a right angled isosceles triangle. If each side of their triangle is 2m, find the line to neutral capacitance per Km. Take the diameter of each conductor is 1.24 cm. The conductors are transposed at regular intervals?	2	3	7M
4		**Unit-IV**			
	a	i) Derive the expression for sending end voltage in nominal T method?	2	4	7M
		ii) Define regulation of a transmission line and derive the approximate expression for the regulation of a short transmission line?	2	4	7M
		OR			
	b	i) What is an equivalent Π circuit of a long line? Derive expression for parameters of this circuit in terms of line parameters?	2	4	7M
		ii) Derive the expression for ABCD parameters of a mid-Condenser method of medium transmission line?	3	4	7M
5		**Unit-V**			
	a	i) What are the different methods to improve string efficiency of an insulator?	2	5	7M
		ii) A string of six insulator units has mutual capacitance 10 times the capacitance to ground. Determine the voltage across each unit as a fraction of the operating voltage. Also determine the string efficiency?	3	5	7M

		OR			
	b	i) What is meant by grounding of cables? Discuss briefly any one method of grading?	2	5	7M
		ii) What is Corona? What are the factors affecting corona? What are the advantages of Corona?	2	5	7M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NEC NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20EE3107

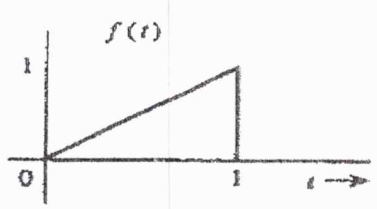
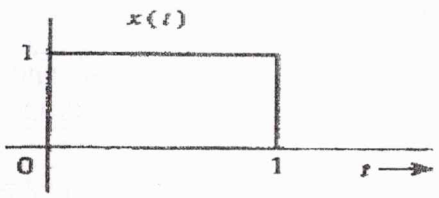
III B.Tech. - I Semester Regular & Supple Examinations, October-2023

SIGNALS AND SYSTEMS

(EEE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
		Unit-I			
1	a	Define and sketch the following elementary signals i)unit impulse signal ii) unit step signal iii) signum function	K1	CO1	7M
	a	For the signals f(t) and x(t) shown below , find the component of the form x(t) contained in f(t). Find the value of c, so that the error signal is minimum in approximating , $f(t) \approx cx(t)$.  	K3	CO1	7M
		OR			
	b	Determine whether or not each of the following continuous-time signals is periodic. If the signal is periodic, determine its fundamental period. $a(t)=3\cos\left(4t+\frac{\pi}{3}\right)$; $b(t)=e^{-j(\pi t-1)}$; $c(t)=$ 2sin4t	K2	CO1	7M
		Prove that the set of exponentials $\{1, e^{\pm j\Omega_0 t}, e^{\pm j2\Omega_0 t}, e^{\pm j3\Omega_0 t} \ldots\ldots\}$ are orthogonal over any interval T_0	K2	CO1	7M
2		**Unit-II**			
	a	Obtain the relations between the coefficients of trigonometric Fourier series and Exponential Fourier series.	K2	CO2	7M
		Explain any three properties of continuous time Fourier series.	K2	CO2	7M
		OR			
	b	Obtain the trigonometric Fourier series for the i) half wave rectified sine wave. ii) saw tooth wave form	K3	CO2	14M
3		**Unit-III**			
	a	State and prove the following properties of Fourier Transform i) Time shifting ii) Convolution in time domain.	K2	CO3	7M
	a	Suppose $g(t)=x(t)\cos t$ and the Fourier transform of the x(t) is given by $X(j\omega)=\begin{cases}1, & \|\omega\|<=2\\ 0, & \text{otherwise}\end{cases}$ Find G(jω)	K4	CO3	7M
		OR			
	b	Find the Fourier transform of the following functions and plot magnitude and phase spectra of $x(t)=sgn(t)$ & $w(t)=\cos\omega_0 t$	K2	CO3	7M
	b	Use appropriate Fourier Transform properties and find the Fourier Transform of the signal $x(t)=\left(\frac{t\sin t}{\pi t}\right)^2$	K4	CO3	7M

4		**Unit-IV**			
	a	Find the impulse responses of the causal LTI systems described by the following differential equation. $$\frac{dy(t)}{dt}+2y(t)=3\frac{dx(t)}{dt}+x(t)$$	**K3**	**CO4**	**7M**
		Explain in detail the requirements for distortion less transmission through a system.	**K2**	**CO4**	**7M**
		OR			
	b	Determine whether each of the following statements concerning LTI systems is true or false. Justify your answers. (i) If h(t) is the impulse response of an LTI system and h(t) is periodic and nonzero, the system is unstable. (ii) The inverse of a causal LTI system is always causal (iii) If an LTI system is causal, it is stable.	**K4**	**CO4**	**7M**
		Ideal filters are physically unrealizable? Justify your answer by specifying the condition for physical realizability?	**K4**	**CO4**	**7M**
5		**Unit-V**			
	a	Explain quantitatively how the signal is reconstructed from its samples.	**K3**	**CO5**	**7M**
		Determine the Nyquist sampling rate and Nyquist sampling interval for the signals (i) sinc(100nt) (ii) sinc(100nt) + sinc(50nt)	**K3**	**CO5**	**7M**
		OR			
	b	What is aliasing? Explain. How it can be avoided?	**K2**	**CO5**	**6M**
		A signal x(t) = 2 cos 400πt + 6 cos 640πt is ideally sampled at fs = 500 Hz. If the sampled signal is passed through an ideal low pass filter with cutoff frequency of 400Hz, what frequency components will appear in the output. Sketch the output spectrum and find output signal	**K3**	**CO5**	**8M**

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20ME3101

III B.Tech. - I Semester Regular & Supple Examinations,October-2023

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

(ME)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i)Explain the applications of AI	**K2**	**CO1**	**7M**
		ii)Define state-space search technique.	**K 2**	**CO1**	**7M**
		OR			
	b	i)What are Intelligent Agents? What is their use?	**K 2**	**CO1**	**7M**
		ii)How do you evaluate an algorithm's performance in AI problem	**K 3**	**CO1**	**7M**
2		**Unit-II**			
	a	i)Discuss greedy best-first search algorithm in detail.	**K 2**	**CO2**	**7M**
		ii)Explain problem characteristics with example	**K 3**	**CO2**	**7M**
		OR			
	b	Discuss A* search algorithm in detail	**K 3**	**CO2**	**14M**
3		**Unit-III**			
	a	I) Explain the Pre-processing steps of Machine Learning	**K 2**	**CO3**	**7M**
		ii)Differentiate between Procedural and Declarative Knowledge	**K 3**	**CO3**	**7M**
		OR			
	b	i)Describe Semantic Network Representation with example	**K 3**	**CO3**	**7M**
		ii)What are the Requirements for knowledge Representation system?	**K 2**	**CO3**	**7M**
4		**Unit-IV**			
	a	I) Differentiate supervised learning and un supervised learning	**K 3**	**CO4**	**7M**
		ii)List out the applications of Machine learning	**K 2**	**CO4**	**7M**
		OR			
	b	i)Differentiate between Classification and clustering algorithms	**K 2**	**CO4**	**7M**
		ii)Write down k-mean algorithm for clustering data	**K 3**	**CO4**	**7M**
5		**Unit-V**			
	a	i)Explain the Decision tree algorithm with example	**K 2**	**CO5**	**14M**
		OR			
	b	i)Explain Random forest algorithm with example	**K 2**	**CO5**	**7M**
		ii)Describe K-nearest Neighbour learning Algorithm for continues valued target function	**K 3**	**CO5**	**7M**

NEC NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20ME3102

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

HEAT POWER ENGINEERING

(ME)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	KL	CO	Marks
1		**Unit-I**			
	a	i) Describe about the working of Rankine cycle.	2	1	7M
		ii) Explain about the Orsat apparatus analysis.	2	1	7M
		OR			
	b	i) Illustrate the methods to improve cycle performance (regeneration & reheating)	3	1	7M
		ii) Explain about adiabatic flame temperature.	2	1	7M
2		**Unit-II**			
	a	i) What are the Boiler Mountings and explain about any one mountings.	2	2	7M
		ii) Explain about Classification of draught.	2	2	7M
		OR			
	b	i) What are the Boiler Accessories and explain about any one accessories.	2	2	7M
		ii) What are the condition for maximum discharge through chimney.	1	2	7M
3		**Unit-III**			
	a	i) Explain about the types and applications of steam nozzles.	2	3	7M
		ii) Explain about degree of super saturation and degree of under cooling.	2	3	7M
		OR			
	b	i) Explain about ideal and actual expansion in nozzle.	2	3	7M
		ii) Explain the conditions for maximum discharge of nozzle.	2	3	7M
4		**Unit-IV**			
	a	i) Describe about velocity compounding and pressure compounding.	2	4	7M
		ii) Explain about Principle of operation of the reaction turbine.	2	4	7M
		OR			
	b	i) Define velocity of whirl, Blade efficiency, Stage efficiency, Fixed blade and moving blade efficiency.	1	4	7M
		ii) Explain about Parson's reaction turbine.	2	4	7M
5		**Unit-V**			
	a	i) Illustrate the parameters of performance of gas turbines.	3	5	7M
		ii) Explain about the working of Turbo jet engines.	2	5	7M
		OR			
	b	i) Explain closed and Semi closed cycles in gas turbines.	2	5	7M
		ii) Explain Thrust, Thrust Power and Propulsion Efficiency.	2	5	7M

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20ME3103

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
DESIGN OF MACHINE ELEMENTS-I
(ME)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i) Explain the phases of Design Process.	K3	CO1	7M
		ii) Write short notes on Tolerance ,Allowance, Interchangeability	K1	CO1	7M
		OR			
	b	A cantilever cold drawn steel bar 20 mm diameter and 100 mm length is loaded by a transverse force of 0.55 kN, an axial load of 8 kN and a torque of 30 Nm. The yield tensile and compressive strength are 165MPa and 190MPa.Compute factor of safety based on maximum shear stress theory and Maximum distortion energy theory.	K2	CO1	14M
2		**Unit-II**			
	a	i) Explain Goodman line, soderberg line and gerber lines.	K3	CO2	14M
		OR			
	b	i)Estimate the factors that affect the fatigue strength.	K2	CO2	4M
		ii) What is factor of safety. List out the factors to be considered while deciding the factor of safety.	K3	CO2	10M
3		**Unit-III**			
	a	i) Explain with sketches the different types of failures and efficiencies of the riveted joints.	K2	CO3	7M
		ii)Design a double riveted butt joint with two cover plates for the longitudinal seam of a boiler shell 1.5 m in diameter subjected to a steam pressure of 0.95 N/mm2 . Assume joint efficiency as 75 % , allowable tensile stress in the plate 90 MPa, compressive stress 140 MPa and shear stress in the rivet is 56 MPa	K3	CO3	7M
		OR			
	b	i)What is the difference between caulking and fullering? Explain with the help of neat sketches.	K2	CO3	7M
		ii)How the strength of transverse fillet weld is evaluated	K2	CO3	7M
4		**Unit-IV**			
	a	Design a sleeve and cotter joint to resist a tensile load of 60 KN. All parts of the joint are made of the same material with the following allowable stresses. σt = 60 MPa , τ = 70 MPa and σc =125 MPa.	K3	CO4	14M
		OR			
	b	i)Why do we consider Wahl's factor for the design of helical compression springs?	K2	CO4	4M

		ii)A spring is subjected to a variable load varying from 500 N to 900 N. Determine diameter of wire and mean diameter of coils. Yield strength in shear 750 MPa, torsional fatigue strength 350 MPa.	K3	CO4	10M
5		**Unit-V**			
	a	i)Explain briefly about the design of shafts subjected to combined bending and torsion	K2	CO5	7M
		ii)A line shaft is to transmit 30 KW at 160 rpm. It is driven by a motor placed directly under it by means of a belt running on a 1m diameter pulley keyed to the end of the shaft. The tension in the tight side of the belt is 2.5 times that of the slack side and the centre of pulley overhangs 150 mm beyond the centre line of the end bearing. Determine the diameter of the shaft, if the allowable shear stress is 56MPa and the pulley weighs 1600 N.	K3	CO5	7M
		OR			
	b	i)Briefly explain the procedure to design a shaft based on any two theories of failures	K2	CO5	7M
		ii)A mild steel shaft transmits 20 KW at 200 rpm. It carries a central load of 900 N and is simply supported between the bearings 2.5 m apart. Determine the size of the shaft, if the allowable shear stress is 42 MPa and the maximum tensile or compressive stress is not to exceed 56 MPa. What size of the shaft will be required, if it is subjected to gradually applied loads?	K3	CO5	7M

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20ME3107

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
METAL CUTTING & MACHINE TOOLS
(ME)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	**i)** List the types of Chips. Explain the mechanics of chip formation in single point cutting tool with neat sketch	**K2**	**CO1**	**7M**
		ii) Mild steel is being machined at a cutting speed of 200 *m/min* with a tool rake angle 10^0.The width of cut and uncut chip thickness are 2 *mm* and 0.2 *mm* respectively. If the average value of the coefficient of friction between the tool and chip is 0.5 and shear stress of work material is 400 N/mm^2. Determine (I) shear angle (II) The cutting and thrust components of machining force	**K3**	**CO1**	**7M**
		OR			
	b	**i)** Explain the differences between orthogonal and oblique cutting	**K3**	**CO1**	**7M**
		ii) In a normal turning operation, the tool life is 45 minutes at a cutting speed of 25m/min and when cutting speed is 70m/min, tool life is 3 minutes. Estimate tool life for this cutting operation at a cutting speed of 50m/min.	**K3**	**CO1**	**7M**
2		**Unit-II**			
	a	**i)** Explain the principle of operation of a Single-spindle automatic lathe machine.	**K4**	**CO2**	**7M**
		ii) Describe on Turret Indexing mechanism used in capstan lathe with a neat sketch.	**K3**	**CO2**	**7M**
		OR			
	b	Discuss about the classification of lathes and explain briefly the parts of lathe.	**K4**	**CO2**	**14M**
3		**Unit-III**			
	a	**i)** Explain the principle of operation of radial drilling machine with schematic diagram.	**K3**	**CO3**	**7M**
		ii) List out the major differences between shaping and planning machines.	**K2**	**CO3**	**7M**
		OR			
	b	**i)** Discuss in detail the principle of operation of bench drilling machine with schematic diagram.	**K3**	**CO3**	**7M**
		ii) Write short notes on following hole making operations a) boring b) counter boring c) counter sinking	**K3**	**CO3**	**7M**
4		**Unit-IV**			
	a	**i)** Explain briefly the following with neat sketches: (1) Up milling (2) Down milling	**K3**	**CO4**	**7M**
		ii) Discuss briefly the Horizontal milling machine with schematic diagram.	**K4**	**CO4**	**7M**
		OR			
	b	**i)** What is indexing? Describe direct indexing, with example.	**K2**	**CO4**	**7M**
		ii) Classify Jigs & Fixtures and Differentiate between jigs and fixtures.	**K2**	**CO4**	**7M**

5		**Unit-V**			
	a	**i)** Discuss the factors to be considered in specifing a grinding wheel.	**K4**	**CO5**	**7M**
		ii) Explain briefly the following operations with neat sketches: (1) Honing (2) Lapping	**K3**	**CO5**	**7M**
		OR			
	b	Classify the types of grinding machines and discuss in detail the principle of operation of cylindrical grinding machine with neat sketch.	**K4**	**CO5**	**14 M**

NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20EC3101

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

LINEAR & DIGITAL IC APPLICATIONS

(ECE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i)What are the three differential amplifier configurations? Compare and contrast these configurations	2	1	7M
		ii)Define the terms: PSRR, CMRR, input bias current & input offset voltage. Explain the difference between slew rate and transient response	2	1	7M
		OR			
	b	i)With the help of a neat circuit diagram, explain the working of a logarithmic amplifier. Derive the expression for its output voltage.	2	1	7M
		ii)Draw a neat circuit diagram of an integrator circuit. Explain its functioning with the Input-Output wave forms. Derive the output voltage V0 of an integrator circuit.	1	1	7M
2		**Unit-II**			
	a	i)Draw the circuit diagram of dual slope integration A to D converter and state its advantages. Explain its operation with waveforms. What parameters decide its conversion speed and accuracy?	2	2	7M
		ii)Compare different types of ADCs	1	2	7M
		OR			
	b	Discuss with relevant circuits and waveforms the working of Monostable multivibrator using 555 timer	3	2	14M
3		**Unit-III**			
	a	i)Design a wide band pass filter with fL = 200 Hz, fH = 1KHz and a pass band gain = 4. Draw the frequency response and calculate 'Q' factor for the filter	3	3	7M
		ii)Explain the term 'frequency scaling' with suitable example	3	3	7M
		OR			
	b	i)What is the principle of PLL? Draw the block schematic and explain the same.	2	3	7M
		ii)Explain the operation of an All-pass filter. Explain why it is known as phase shift circuit.	2	3	7M
4		**Unit-IV**			
	a	i)Draw the circuit diagram of Emitter coupled logic and explain its operation	4	4	7M
		ii) Write short notes on FCT and FCT-T Families	4	4	7M
		OR			
	b	i)Draw the circuit diagram of CMOS NOR gates and explain its operation	2	4	7M
		ii) List out few Comparison of CMOS TTL and ECL	2	4	7M
5		**Unit-V**			
	a	i)What is Binary Decoder? Design of 3-to-8 Decoder and explain its operation	3	5	7M
		ii) Draw the circuit diagram of bi-directional shift register and explain	3	5	7M
		OR			
	b	i)Draw the circuit diagram of Up-Down Counters and explain its operation	4	5	7M
		ii) Write short notes on universal shift register in detail	3	5	7M

NAKASAKAUPETA
NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20EC3102

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

ANTENNAS AND WAVE PROPAGATION

(ECE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	KL	CO	Marks
1		**Unit-I**			
	a	i) What is the radiation resistance of antenna? Derive the expression for radiation resistance of half wave length dipole antenna.	I	1	5M
		ii)Define the terms antenna efficiency and radiation efficiency.	I	1	2M
		iii)Explain Principal Patterns and Radiation Pattern lobes with neat diagrams.	V	1	7M
		OR			
	b	i)What is Antenna Temperature? Derive the expression for T_A with neat diagram.	I	1	7M
		ii)A thin dipole antenna is $\frac{\lambda}{15}$ long. If its loss resistance is 1.5Ω, find radiation resistance and the efficiency.	I	1	4M
		iii)Calculate the gain of an antenna with a circular aperture of diameter 3 metres at a frequency of 5GHz.	V	1	3M
2		**Unit-II**			
	a	i)What are Retard Potentials? Derive the expression for Retard Potential.	I	2	7M
		ii)Discuss the Current Distribution and Derive the expression for Radiation Resistance of Quarter wave Monopole Antenna.	VI	2	7M
		OR			
	b	i)Derive the expressions for E and H fields of small Electric Dipole Antenna	I	2	7M
		ii)Derive the expressions for Power Radiated and Directivity of Half wave Dipole Antenna.	I	2	7M
3		**Unit-III**			
	a	i)What is the Basic Principle of Electronic scanning Phased Array Operation? Explain.	I	3	4M
		ii)Derive the expression for Phase Angle, Total Electric field and Half Power Point direction of Array of two point sources with equal Amplitude and phase.	I	3	10M
		OR			
	b	Design a four element broadside array of $\frac{\lambda}{2}$ spacing between elements. The pattern is to be optimum with a side lobe level 19.1 dB down the main lobe maximum.	III	3	14M
4		**Unit-IV**			
	a	i)Explain the working of V Antenna with neat diagrams.	V	4	7M
		ii)A Parabolic Antenna having a circular mouth is to have a power gain of 1000 at $\lambda = 10$cm. Estimate the diameter of the mouth and the half-power beamwidth of the antenna.	VI	4	7M

		OR			
	b	i)Draw a Sketch of Yagi-Uda Antenna. Write the general characteristics of Yagi-Uda Antenna.	I	4	7M
		ii)Derive the expression for effective index of refraction μ in E-plane Metal Plate Lens Antenna.	I	4	7M
5		**Unit-V**			
	a	i)Derive Friis Free Space Equation for wave Propagation.	I	5	14M
		OR			
	b	i)Calculate the free space loss (assuming free space conditions) in a satellite communication where the satellite is at a height of 36,000 km above the earth. Given $G_T = 15\,dB$, $G_R = 45\,dB$, f=4 GHz. What is the power received, if the power radiated is 200 Watts?	V	5	7M
		ii) What is Duct Propagation? Explain in detail.	I	5	7M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20EC3103

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

DIGITAL SIGNAL PROCESSING

(ECE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	M
1		**Unit-I**			
	a	What are the advantages of DSP over ASP? Explain	2	1	7M
		Find the impulse response $h[n]$ of the system described by the difference equation $6\,y[n]+8\,y[n-1]=x[n]$.	3	1	7M
		OR			
	b	Explain about the Block Diagram Representation of Discrete-Time Systems.	2	1	7M
		What are the conditions for stability and causality of an LTI system? Explain.	2	1	7M
2		**Unit-II**			
	a	State and prove convolution property of DFT.	2	2	7M
		Compute the circular convolution of the sequences $x_1(n) = \{1, 2, 0, 1\}$ and $x_2(n) = \{2, 2, 1, 1\}$	3	2	7M
		OR			
	b	Compute the DFT of the three-point sequence x(n)= {2, 1, 2}. Using the same sequence, compute the 6 point DFT and compare the two DFTs.	3	2	14M
3		**Unit-III**			
	a	With an example explain the design procedure for Butterworth filter.	2	3	7M
		Explain the frequency-sampling method of FIR filter design with an example.	2	3	7M
		OR			
	b	Explain the differences between Direct form-I and Direct form-II structures.	2	3	7M
		Obtain the direct form I, direct form II and Cascade form realization of the following system functions. Y(n) = 0.1 y(n-1) + 0.2 y(n-2) + 3x(n) + 3.6 x(n-1) + 0.6 x(n-2).	3	3	7M
4		**Unit-IV**			
	a	Determine the system function $H(z)$ of the lowest order Butterworth digital filter with the following specification: 3 dB ripple in pass band 0 w 0.2	3	4	7M
		Given a 3-stage lattice FIR filter with coefficients, $k_1=(1/4)$; $k_2=(1/2)$; $k_3=(1/3)$; Determine the FIR filter coefficients for the direct form structure.	3	4	7M
		OR			
	b	Design a low pass digital filter that will operate on sampled analog data such that the analog cut-off frequency is 200 Hz (1 dB acceptable ripple) and at 400 Hz the attenuation is at least 20 dB with monotonic shape past 400 Hz. The sample rate is 2000 samples/sec. Use impulse invariant transformation.	3	4	7M
		Compare bilinear transformation and impulse invariant mapping.	2	4	7M
5		**Unit-V**			

	a	Explain the design of FIR filters using windows.	2	5
		What is Blackman Window function? Obtain its frequency domain characteristics.	2	5
		OR		
	b	What is Hamming Window function? Obtain its frequency domain characteristics.	2	5
		Explain the differences between the IIR and FIR filters.	2	5

NARASARAOPETA
NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20EC3106

III B.Tech. - I Semester Regular & Supple Examinations, October-2023

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

(ECE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All FIVE Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	Given the following set of data for voltage measurement taken from voltmeter, find the average values, average deviation, standard deviation and expected probable error. Data is 157, 135 V, 126 V, 175 V, 116 V, and 155 V	K4	CO1	7M
		Explain with an examples how these terms are used in measurement system: Hysteresis, linearity, static accuracy.	K3	CO1	7M
		OR			
	b	Classify and explain types of errors and discuss how limiting errors, in x can be computed from measurement of two quantities u, v each having limiting errors, when $x=u+v$ and $x=u/v$	K3	CO1	7M
		A voltmeter and an ammeter are to be used find the power dissipation in a resistor. Both instruments are having a ±1 @ FSD guaranteed error. If the meter reads 90 v on its 160 V range and ammeter reads 76 mA on its 120 mA range, determine the limiting error for power calculation.	K4	CO1	7M
2		**Unit-II**			
	a	Show the high sensitivity device for the temperature measurement using two thermistors connected in bridge fashion and explain its working principle.	K2	CO2	7M
		Explain the working theory of the strain gauge and derive the gauge factor G got stretched metal conductor.	K3	CO2	7M
		OR			
	b	Certain thermistor has a resistance of 2000 Ω at the ice point ($0°C$) and 600 Ω at $40°C$. The temperature relationship is given by $R_T=a\,R_0 e^{b/T}$. Find the constant a and b. Also estimate the range of resistance to be measured in case the temperature varies from $30°C$ $120°C$.	K4	CO2	6M
		List and explain advantages, disadvantages and applications of the LVDT.	K3	CO2	8M
3		**Unit-III**			
	a	Explain the brief working of Q meter and derive the series Q meter.	K3	CO3	7M
		Describe the construction and working of an electronic voltmeter.	K4	CO3	7M
		OR			
	b	Derive the balanced equation for the kelvin double bridge and describe advantages of double kelvin double bridge.	K3	CO3	7M
		A circuit consisting of a coil, a resistance and a variable capacitor connected in series is tuned to resonance using a Q meter. If the frequency is 600 kHz, the resistance 0.80 Ω. and the variable capacitor set to 400 pF. Calculate the effective inductance and resistance of the coil, if the Q meter indicates 96.	K3	CO3	7M
4		**Unit-IV**			
	a	Explain with the diagram how the DMM can measure the a.c and d.c signals and various electrical parameters.	K3	CO4	7M
		Write short notes on Harmonic distortion analyzer and its applications.	K3	CO4	7M
	b	Explain the sweep generator with its neat diagram.	K3	CO4	7M
		What is frequency synthesized signal generator and explain indirect frequency synthesizer.	K4	CO4	7M
5		**Unit-V**			
	a	Draw circuit diagrams of analog storage oscilloscope and digital storage oscilloscope.	K2	CO5	7M
		Explain different types of delays and uses of delay line in CRO.	K3	CO5	7M
		OR			
	b	Describe the functions of major blocks of an oscilloscope.	K4	CO5	8M
		List and explain advantages of dual trace over double beam CRO using basic block diagrams.	K3	CO5	6M

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CS3105

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
COMPILER DESIGN
(CSE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i)What is compiler and discuss all the phases of compiler with a neat diagram	**K2**	**CO1**	**7M**
		ii)Write a short note on: a. Tokens, Patterns and Lexemes b. Pass c. Bootstrapping d. LEX Compiler	**K2**	**CO1**	**7M**
		OR			
	b	i)What is Regular Expression? Write the regular expression for: a. R=R1+R2 (Union operation) b. R=R1.R2 (concatenation Operation) c. R=R1* (Kleen Clouser) d. R=R+ (Positive Clouser) e. Write a regular expression for a language containing strings which end with "abb" over Σ= {a,b}.	**K2**	**CO1**	**7M**
		ii)What is a regular expression? State the rules, which define regular expression?	**K2**	**CO1**	**7M**
2		**Unit-II**			
	a	i)Write the production rules to eliminate the left recursion and left factoring problems.? Do left factoring in the following grammar: A-> aAB|aA|a B-> bB|b	**K2**	**CO2**	**7M**
		ii)Show the following Grammar: S-> AaAb|BbBa A-> € B-> € Is LL(1) and parse the input string "ba".	**K2**	**CO2**	**7M**
		OR			
	b	i). Construct the predictive parsing table for the following grammar: S -> (L) | a, L -> L, S | S ii). Write Rules to construct FIRST Function and FOLLOW Function.	**K2**	**CO2**	**14M**
3		**Unit-III**			
	a	i)Consider the following grammar: E-> E+T|T, T-> TF|F, F-> F*|a|b Construct the SLR parsing table and also parse the input "a*b+a"	**K2**	**CO2**	**7M**
		ii)Differentiate CLR and LALR parsers.	**K2**	**CO2**	**7M**

		OR			
	b	i)Derive LALR (1) parsing algorithm for following grammar S → AS/b A → SA/a	**K2**	**CO2**	**7M**
		ii)Write the properties of LR parser with its structure .Also explain the techniques of LR parser.	**K2**	**CO2**	**7M**
4		**Unit-IV**			
	a	i)Define the following and show an example for each. i). Three-address code iii). Triples ii). Quadruples	**K2**	**CO3**	**7M**
		ii)Write the three address code sequence for the statement x=y*z + y*-z. Also give its triple representation	**K2**	**CO3**	**7M**
		OR			
	b	i)Explain the specification of a simple type checker.	**K2**	**CO3**	**7M**
		ii)Write quadruples, triples and indirect triples for the expression: -(a*b)+(c+d)-(a+b+c+d)	**K2**	**CO3**	**7M**
5		**Unit-V**			
	a	i)Explain how DAGs help in intermediate code generation?	**K2**	**CO4**	**7M**
		ii)Explain the principle sources of code optimization in detail.	**K3**	**CO5**	**7M**
		OR			
	b	i)Explain three techniques for loop optimization with examples.	**K3**	**CO5**	**7M**
		ii)Explain common sub expression elimination with an example.	**K2**	**CO4**	**7M**

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M: Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20IT3103

III B.Tech. - I Semester Regular & Supple Examinations,October-2023

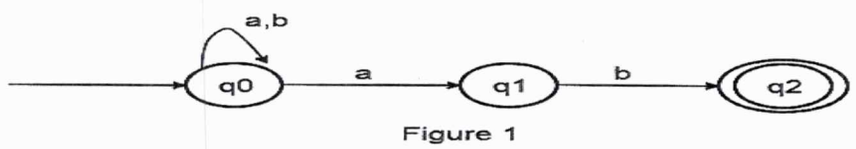
AUTOMATA AND COMPILER DESIGN

(IT)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	Design a DFA that accepts the language over _ = {a, b} of all strings that contain the sub-string either aa or bb.	K3	CO1	**7M**
		Give a finite state diagram that accepts all the floating-point numbers.	K3	CO1	**7M**
		OR			
	b	Construct a NFA with *-ε moves* equivalent to the regular expression (0+1)*(00+11)(0+1)*	K3	CO1	7M
	b	 Figure 1 Convert the above NFA into DFA	K3	CO1	**7M**
2		**Unit-II**			
	a	What are the various phases of the compiler? Explain each phase in detail.	K2	CO2	**14M**
		OR			
	b	Explain the procedure for eliminating ambiguity and eliminating left recursion from a grammar. Give an example	K2	CO2	**14M**
		Compute FIRST and FOLLOW for the grammar: *E -> T E', E' ->+ T E' / ε, T -> F T', T' -> * F T' / ε, F ->(E) | id*	K2	CO2	
3		**Unit-III**			
	a	List the differences between LR and LL Parsers. Give Various types of LR Parsers	K3	CO3	**7M**
	a	Construct SLR Parsing table for the grammar *E -> E + T | T, T ->T * F | F, F ->(E) | id* by giving LR(0) items.	K3	CO3	**7M**
		OR			
	b	i) Explain the role of parser. Discuss different kinds of errors and error recovery strategies.	K2	CO3	**7M**
	b	ii) Consider the grammar *E -> E + T | E - T | T, T ->T * F |T / F | F, F -> (E) | id* Show the sequence of moves made by shift reduce parser for the input string id1+id2*id3 is accepted or not.	K2	CO3	**7M**
4		**Unit-IV**			
	a	Discuss syntax directed definition by defining synthesized and inherited attributes. Construct a SDD of a simple desk calculator	K2	CO4	**7M**
	1.	What are the different storage allocation strategies? Explain run time storage allocation by activation trees.	K2	CO4	**7M**

		OR			
	b	Construct the three address code for the following expression and represent it in different forms : a = b * – c + b * – c	K3	CO4	**7M**
		Explain in detail the construction of syntax trees.	K3	CO4	**7M**
5		**Unit-V**			
	a	Explain Principal sources of Optimization	K3	CO5	**7M**
		Write short notes on basic blocks by giving structure preserving transformation.	K3	CO5	**7M**
		OR			
	b	Discuss the design issues of Code Generator	K2	CO1	**7M**
		Explain with examples Register allocation and assignment	K2	CO1	**7M**

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20IT3104

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
ADVANCED WEB TECHNOLOGIES
(IT)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	What is servlet? What are the advantages of servlet? Explain Life cycle of servlet.	**K2**	**CO1**	**14M**
		OR			
	b	i) Develop a Servlet that handles an HTTP POST request	**K2**	**CO1**	**7M**
		ii) Discuss about Session tracking in Servlets with a suitable example.	**K2**	**CO1**	**7M**
2		**Unit-II**			
	a	i) Illustrate the use of MVC architecture in JSP with an example.	**K2**	**CO2**	**7M**
		i) Explain about the JSP processing	**K2**	**CO2**	**7M**
		OR			
	b	Explain about the JSP directive Elements. Explain each of them in detail	**K2**	**CO2**	**14M**
3		**Unit-III**			
	a	Identify the objects associated with JSP and highlight the features of each object.	**K3**	**CO3**	**14M**
		OR			
	b	i)Demonstrate Error Handling and Debugging in JSPs	**K3**	**CO3**	**7M**
		ii)Explain in detail about implicit JSP objects.	**K3**	**CO3**	**7M**
4		**Unit-IV**			
	a	i)Explain JDBC database access in detail.	**K2**	**CO4**	**7M**
		ii)Develop a JSP page to register a student using registration form and student table	**K2**	**CO4**	**7M**
		OR			
	b	Create a JSP application to insert and then retrieve the following employee details of a company from the database and display: 1) Employee ID 2)First name 3) Last name 4)Age	**K2**	**CO4**	**14M**
5		**Unit-V**			
	a	i)Write a PHP program to print reverse of any number.	**K3**	**CO5**	**7M**
		ii)Explain various data types and operators available in PHP	**K3**	**CO5**	**7M**
		OR			
	b	i)Write a program to create Index Based and Associative Arrays in PHP.	**K3**	**Co5**	**7M**
		ii)Design a PHP code to validate the form consisting of a username, password and email fields	**K3**	**CO5**	**7M**

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20AI3105

III B.Tech. - I Semester Regular & Supple Examinations, October-2023
MACHINE LEARNING
(AI)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	What are the Components of Learning	**K2**	**CO1**	**7M**
		Illustrate Vapnik-Chervonenkis (VC) dimension	**K 2**	**CO1**	**7M**
		OR			
	b	List out the issues in machine learning	**K 2**	**CO1**	**7M**
		Explain Regression trees with example	**K 3**	**CO1**	**7M**
2		**Unit-II**			
	a	Define support and confidence with respect to Association rules	**K 2**	**CO2**	**7M**
		What is Minimum Error Rate Classification	**K 2**	**CO2**	**7M**
		OR			
	b	Explain Two-Category Classification using Bayesian Decision Theory	**K 3**	**CO2**	**14M**
3		**Unit-III**			
	a	Discuss PCA & its kernel PCA	**K 3**	**CO3**	**7M**
		Write Linear Discriminate Analysis algorithm with neat sketch?	**K 3**	**CO3**	**7M**
		OR			
	b	How Matrix factorization works in PCA. Explain in detail?	**K 4**	**CO3**	**7M**
		Explain Apriori Algorithm with example	**K 3**	**CO3**	**7M**
4		**Unit-IV**			
	a	Explain the KMeans algorithm with a small hand crafted dataset and demonstrate its working principle.	**K 3**	**CO4**	**7M**
		What is fuzzy clustering? How do you choose Number of Clusters in a clustering algorithm	**K 3**	**CO4**	**7M**
		OR			
	b	What are the advantages and disadvantages of the K means Algorithm?	**K 2**	**CO4**	**7M**
		Explain Adaptive Resonance Theory.	**K 3**	**CO4**	**7M**
5		**Unit-V**			
	a	What strategies can help reduce overfitting in decision trees? Explain them	**K 3**	**CO5**	**7M**
		Illustrate information gain. Explain with example	**K 3**	**CO5**	**7M**
		OR			
	b	What are the differences between Decision Tree and random Forest	**K 3**	**CO5**	**7M**
		Briefly outline the major steps of Decision tree classifier with suitable example	**K 3**	**CO5**	**7M**

NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CSHN01

III B.Tech - I Semester Regular & Supple Examinations, October-2023

DEV OPS

(CSE, IT, AI)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	i) What is SDLC? Explain various phases involved in SDLC?	K2	CO1	7M
		ii) Contrast the Four Values of Agile Software Development?	K2	CO1	7M
		OR			
	b	i) Differentiate the waterfall model and Lean SDLC Model?	K2	CO1	7M
		ii) Explain the major principles of Agile Software development?	K2	CO1	7M
2		**Unit-II**			
	a	i)What is Devops Workflow and explain it with an Example.	K2	CO2	7M
		ii) How Devops is different from Agile methodology explain it briefly?	K2	CO2	7M
		OR			
	b	i) Explain the Devops Architecture with a neat sketch diagram.	K2	CO2	7M
		ii) What is Devops Pipeline? Explain various Stages involved in Devops Pipeline?	K2	CO2	7M
3		**Unit-III**			
	a	i) Explain various challenges for adopting devops in Information technology?	K2	CO3	7M
		ii) Discuss the Approach for Tool stack implementation in Devops Adaption?	K2	CO3	7M
		OR			
	b	i) Illustrate the People aspect and processes in DevOps adoption?	K4	CO3	7M
		ii) Describe various features and capabilities in Agile?	K3	CO3	7M
4		**Unit-IV**			
	a	i) What is CI/CD in devops? How CI is different from CD in devops? Justify it?	K1	CO4	7M
		ii) Explain various benefits of CI/CD in devops?	K2	CO4	7M
		OR			
	b	i) Discuss metrics for optimizing the devops CI/CD pipeline?	K2	CO4	7M
		ii) How will you approach a project that needs to implement in devops?	K1	CO4	7M
5		**Unit-V**			
	a	i) Define a Devops maturity model? Explain various phases of Devops maturity model with a neat sketch?	K2	CO5	7M
		ii) Explain the Key factors of Devops maturity model?	K2	CO5	7M
		OR			
	b	i) Explain the stages of Devops maturity model?	K2	CO5	7M
		ii) Describe how maturity Assessment is used in Devops?	K3	CO5	7M

NEC NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, October-2023

Sub Code: R20CEHN06 ADVANCED ENVIRONMENTAL ENGINEERING

Time: 3 hours (CE) Max. Marks: 70

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 = 70M)

Q.No		Questions	KL	CO	M
1		Unit-I			
	a	i)write about Environmental Laws and Legislations	K2	CO1	7M
		ii) Briefly summaries the Introduction to Environmental Policies.	K2	CO1	7M
		OR			
	b	i) Brief out the objectives of Environmental Management plan.	K2	CO1	7M
		ii) Explain the environmental legislations in India?	K1	CO1	7M
2		Unit-II			
	a	i) Explain about environmental forecasting measures? In brief.	K2	CO2	7M
		ii) Write about Environmental Clearance Procedure in India.	K1	CO2	7M
		OR			
	b	i) Explain about environmental impact assessment?	K3	CO2	7M
		ii) What is the need of Environmental Impact Assessment (EIA) Monitoring and Auditing.	K1	CO2	7M
3		Unit-III			
	a	Write the industrial project environmental audit report? In brief.	K2	CO3	7M
		OR			
	b	Explain about Waste Audits and Pollution Prevention Assessments in detailed.	K1	CO3	14M
4		Unit-IV			
	a	Explain the Stages in Life Cycle Assessment of a Product and write the Procedure for LCA.	K2	CO4	7M
		OR			
	b	i) Write the life cycle assessment in different stages?	K2	CO4	7M
		ii) Sustainable approach towards Environment Management, explain it?	K4	CO4	7M
5		Unit-V			
	a	i) Write the applications of the cleaner development mechanism?	K2	CO5	7M
		ii) what is environmental economics and what are the tools for evaluation of it, explain?	K4	CO5	7M
		OR			
	b	i) Write the applications of the cleaner development mechanism?	K2	CO5	7M
		ii) write about Implementation of EMS Conforming to ISO 14001	K3	CO5	7M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks ***

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CCMN39

III B.Tech. - I Semester Regular Examinations,October-2023

FUNDAMENTALS OF DATA SCIENCE

(ME)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	Is It safe to assume that "np.empty" will return an array of all zeros? Justify your answer with example.	2	1	7M
		Apply indexing using integer arrays.	4	1	7M
		OR			
	b	Convert or cast an array from one " dtype " to another using " ndarray's ".	3	1	7M
		Implement Computing the quantiles of an array using sort method.	4	1	7M
2		**Unit-II**			
	a	Construct a DataFrame. Specify a sequence of columns. Analyze what happens if you pass a column that isn't contained in data.	4	2	7M
		How can you get an array of the sorted unique values in a Series.	2	2	7M
		OR			
	b	How can you use values in the index when selecting single values or a set of values?	4	2	7M
		Analyze the pandas library.	4	2	7M
3		**Unit-III**			
	a	Implement reading out a small number of rows from file.	3	3	7M
		Explain the types of data formats	3	3	7M
		OR			
	b	Implement writing only a subset of the columns to file.	3	3	7M
		Implement reading out a file in pieces.	3	3	7M
4		**Unit-IV**			
	a	Perform merge with multiple keys.	3	3	7M
		Is there any data combination situation can't be expressed as either a merge or concatenation operation? if so how to combine?	3	3	7M
		OR			
	b	What is matplotlib? create a new figure in matplotlib. create one or more subplots in it and adjust the spacing around subplots.	3	4	14M
5		**Unit-V**			
	a	Analyze how GroupBy object supports iteration.	4	5	7M
		Correlate aggregating a Series or all of the columns of a DataFrame using multiple functions at once with a function.	4	5	7M
		OR			
	b	Illustrate aggregation using one of the levels of an axis index	4	5	7M
		How to return Aggregated Data in "unindexed" Form.	4	5	7M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NEC ENGINEERING COLLEGE
(AUTONOMOUS)

Subject Code: R20CCMN35

III B.Tech - I Semester Regular Examinations, October-2023
DATA WAREHOUSING AND DATA MINING
(EEE, ECE)

Time: 3 hours **Max. Marks: 70**

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 =70M)

QNo		Questions	K L	CO	Marks
1		**Unit-I**			
	a	What are the challenges that focused on advent of Data Mining systems?	L2	CO1	7M
		Describe how data mining can help the company by giving any specific examples of how techniques, such as clustering, classification, association rule mining, and anomaly detection can be applied.	L3	CO1	7M
		OR			
	b	What is the difference between data mining and knowledge discovery? What are the two major categories of Data Mining Tasks.	L2	CO1	7M
		What are the general characteristics of Data sets.	L2	CO1	7M
2		**Unit-II**			
	a	Explain various sampling approaches?	L2	CO2	7M
		What is Discretization and Binarization? Explain discretization of continuous attributes	L2	CO2	7M
		OR			
	b	What is Feature Selction? Explain the feature selection process with a neat flowchart?	L2	CO2	14M
3		**Unit-III**			
	a	Briefly compare the following concepts of Snowflake schema, fact constellation, starnet query model. You may use an example to explain your point(s).	L3	CO3	7M
		Suppose that a data warehouse for Big University consists of the four dimensions student, course, semester, and instructor, and two measures count and avg grade. At the lowest conceptual level (e.g., for a given student, course, semester, and instructor combination), the avg grade measure stores the actual course grade of the student. At higher conceptual levels, avg grade stores the average grade for the given combination. (a) Draw a snowflake schema diagram for the data warehouse.	L3	CO3	7M
		OR			
	b	Suppose that a data warehouse consists of the three dimensions time, doctor, and patient, and the two measures count and charge, where charge is the fee that a doctor charges a patient for a visit. (a) Enumerate three classes of schemas that are popularly used for modeling data warehouses. (b) Draw a schema diagram for the above data warehouse using one of the schema classes listed in (a).	L3	CO3	7M
		A data warehouse can be modeled by either a star schema or a snowflake schema. Briefly describe the similarities and the differences of the two models, and then analyze their advantages and disadvantages with regard to one another. Give your opinion of which might be more empirically useful and state the reasons behind your answer.	L3	CO3	7M

Unit-IV

4	a	Briefly outline the major steps of decision tree classification and explain classification problem by using general approach	L2	CO4	14M
		OR			
	b	The following table consists of training data from an employee database. The data have been generalized. For example, "31 … 35" for age represents the age range of 31 to 35. For a given row entry, count represents the number of data tuples having the values for department, status, age, and salary given in that row.	L2	CO4	14M

department	*status*	*age*	*salary*	*count*
sales	senior	31…35	46K…50K	30
sales	junior	26…30	26K…30K	40
sales	junior	31…35	31K…35K	40
systems	junior	21…25	46K…50K	20
systems	senior	31…35	66K…70K	5
systems	junior	26…30	46K…50K	3
systems	senior	41…45	66K…70K	3
marketing	senior	36…40	46K…50K	10
marketing	junior	31…35	41K…45K	4
secretary	senior	46…50	36K…40K	4
secretary	junior	26…30	26K…30K	6

Let status be the class label attribute.
(a) How would you modify the basic decision tree algorithm to take into consideration the count of each generalized data tuple (i.e., of each row entry)?
(b) Use your algorithm to construct a decision tree from the given data.

Unit-V

5		Suppose you have the set C of all frequent closed itemsets on a data set D, as well as the support count for each frequent closed itemset. Describe an algorithm to determine whether a given itemset X is frequent or not, and the support of X if it is frequent.	L3	CO5	7M
	a	A database has five transactions. Let min sup D 60% and min conf D 80%.	L3	CO5	7M

TID	*items_bought*
T100	{M, O, N, K, E, Y}
T200	{D, O, N, K, E, Y }
T300	{M, A, K, E}
T400	{M, U, C, K, Y}
T500	{C, O, O, K, I, E}

Find all frequent itemsets using Apriori principle.

OR

		The Apriori algorithm makes use of prior knowledge of subset support properties. Prove that all nonempty subsets of a frequent itemset must also be frequent.	L3	CO5	7M
	b	A database has four transactions. Let min sup D 60% and min conf D 80%.	L3	CO5	7M

cust_ID	*TID*	*items_bought* (in the form of *brand-item_category*)
01	T100	{King's-Crab, Sunset-Milk, Dairyland-Cheese, Best-Bread}
02	T200	{Best-Cheese, Dairyland-Milk, Goldenfarm-Apple, Tasty-Pie, Wonder-Bread}
01	T300	{Westcoast-Apple, Dairyland-Milk, Wonder-Bread, Tasty-Pie}
03	T400	{Wonder-Bread, Sunset-Milk, Dairyland-Cheese}

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