I M.TECH I Semester Regular Examinations, January-2025

R24

Sub Code: R24MCC101
Time: 3 hours

RESEARCH METHODOLOGY & IPR
(MD, CSE, STRE, PID, DECS, VLSI&ES)

Max. Marks: 60

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 12M = 60M)

Q.No		Questions	KL	CO	M
		Unit-I			
1	a	i) Explain Clearly the objectives of Research Problem	K2	1	6M
		ii) Interpret different sources of research problem by giving suitable examples	K2	1	6M
		OR			
	b	i) Explain clearly research design process and steps to be followed	K2	1	12M
2		**Unit-II**			
	a	i) How do you design a research problem? Give an example to illustrate your answer	K2	2	6M
		ii) Discuss various issues involved in selecting a research problem. Also elaborate important features of a good research design.	K2	2	6M
		OR			
	b	i) Differentiate between qualitative research and quantitative research	K2	2	12M
3		**Unit-III**			
	a	i) Explain the procedure to determine the size of sample and discuss on sampling size	K2	3	6M
		ii) Explain the Concepts of Statistical Population	K2	3	6M
		OR			
	b	Explain different types of sampling techniques	K2	3	12M
4		**Unit-IV**			
	a	i) Explain new developments in Intellectual Property Rights.	K2	4	6M
		ii) Define intellectual property in research. Explain different types of intellectual property	K2	4	6M
		OR			
	b	i) Contrast the purpose and functions of trademarks	K2	4	6M
		ii) Write notes on trade secrets, precautions and maintenance	K2	4	6M
5		**Unit-V**			
	a	i) Exemplify the basic criteria of patentability of industrial designs	K2	5	6M
		ii) Explain the fundamentals of copyright laws	K2	5	6M
		OR			
	b	i) Describe briefly how the online patent data is organized	K3	5	6M
		ii) Describe the structure and content of a patent document in general.	K3	5	6M

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

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I M. Tech I Semester Regular Examinations, January-2025

Sub Code: R24MNC102

DISASTER MANAGEMENT

Time: 3 hours

(STRE, P&ID, MD,DECS,VLSI&ES and CSE)

Max. Marks: 60

Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No		Questions	KL	CO	M
1		**Unit-I**			
	a	i) Describe types of disasters with examples.	K2&K3	C01	6M
		ii)) Explain About The Disaster Management Cycle	K2&K3	C01	6M
		OR			
	b	i) Explain how the Richter scale is used to measure the magnitude of an earthquake	K2&K3	C01	6M
		ii) Discuss various types of natural disasters in India and highlight their effects	K2&K3	C01	6M
2		**Unit-II**			
	a	Explain The causes of Floods and the effects of Floods in detail. Give one Case Study of The Floods.	K2&K3	C02	12M
		OR			
	b	Explain The causes of earthquakes and effects of earthquakes in detail. Give one Case Study of The earthquake.	K2&K3	C02	12M
3		**Unit-III**			
	a	i) Explain the Earthquake zones of India	K2&K3	C03	6M
		ii) explain assessing risk and vulnerability	K2&K3	C03	6M
		OR			
	b	What is drought? Explain the types of droughts. Explain drought mitigation with an integration of technology and people.	K2&K3	C03	12M
4		**Unit-IV**			
	a	i) what are the multimedia technologies of disaster risk management in remote sensing	K2&K3	C04	12M
		OR			
	b	i) what are the forewarning levels of disaster management	K2&K3	C04	6M
		ii) Explain About The Mass Media and disaster Management?	K2&K3	C04	6M
5		**Unit-V**			
	a	i) what are the disaster management acts and policies in India	K2&K3	C05	6M
		ii) What are the steps for formulating a disaster risk reduction plan?	K2&K3	C05	6M
		OR			
		What are favourable conditions for cyclone formation? How do you estimate risk from cyclonic conditions and safety precautions to save lives?	K2&K3	C05	12M

I M.TECH I Semester Regular Examinations, January-2025

R24

Sub Code: R24MCS102 MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE
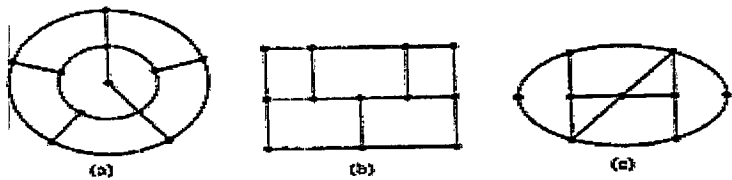
Time: 3 hours   (CSE)   Max. Marks: 60

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 12M = 60M)

Q.No		Questions	KL	CO	M
		Unit-I			
1	a	i) Obtain the Principal conjunctive normal form of (P->Q) ∧ (Q->R)	3	1	6M
		ii) i) If A works hard, then either B or C will enjoy themselves. ii) If B enjoys himself, then A will not work hard. iii) If D enjoys himself, then C will not. Therefore, if A works hard, D will not enjoy himself. Show that these statements constitute a valid argument.	3	1	6M
		OR			
	b	i) Show that SvR is tautologically implied by (P v R) ∧ (P->R) ∧ (Q->S)	3	1	6M
		ii) Define PCNF,PDNF and obtain PCNF,PDNF for the formula pv(q->r) ?	3	1	6M
		Unit-II			
2	a	i) Find the transitive closure of R if (i) R={(a,b),(b,c),(c,d),(d,e)} (ii) R={(a,a),(a,b),(b,c),(b,d),(d,c),(d,d)}	3	2	6M
		ii) If f : X → Y and g: Y → Z and both f and g are on-to, show that (g o f) is also on-to. Is (g o f) one-to-one if both g and f are one-to-one?	3	2	6M
		OR			
	b	i) If R be an equivalence relation on a set A, then R-1 is also an equivalence relation in A. Prove	3	2	6M
		ii) Set B ={a, b, c} and A = P(B) be the power set of B. Draw the hasse's diagram for subset on poset A.	3	2	6M
		Unit-III			
3	a	i) In how many ways can four students be selected out of twelve students i) If two particular students are not included at all? ii) Two particular students included?	3	3	6M
		ii) Compute the number of 10-digit numbers which contain only the digits 1,2 and 3 with the digit 2 appearing in each number twice?	3	3	6M
		OR			
	b	i) Find a particular solution for recurrence relation using the method of determined coefficients an- 7 an-1+12an-2=n.2^n	3	3	6M
		ii) Solve the recurrence relation an - 7 an-1 + 10 an-2 =0 for n _ 2 using generating functions?	3	3	6M
		Unit-IV			
4	a	i) What is connectedness in a directed graphs? And also explain connected and weakly connected, unilateral connected and strongly connected graph.	2	4	6M
		ii) Explain the isomorphic graphs with example	2	4	6M
		OR			
	b	i)Show the graphs are Hamiltonian	3	4	6M

			KL	CO	M
		ii) What is Euler trail and Euler circuit? Prove that the complete bipartite graph K₂,₃ contains an Euler trail.	3	4	6M
5		**Unit-V**			
	a	i) What is Planar Graph? Find whether K₅ is planar or not	3	5	6M
		ii) Write DFS algorithm and discuss with an example	2	5	6M
		OR			
	b	i) Explain prims and kruskals algorithm with the following graph	3	5	12M

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

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I M.Tech I Semester Regular Examinations, January-2025

R24

Sub Code: R24MCS103 ADVANCED DATA STRUCTURES AND ALGORITHMS

Time: 3 hours　　　　　　　　　　(CSE)　　　　　　　Max. Marks: 60

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 12M = 60M)

Q.No		Questions	KL	CO	M
		Unit-I			
1	a	i) Explain the asymptotic notations in detail	2	1	6M
		ii) Calculate the time complexity of matrix multiplication using step count method	3	1	6M
		OR			
	b	i) Explain the various operations on AVL tress with example	3	1	12M
2		**Unit-II**			
	a	i)Explain the DFS with example	3	2	6M
		ii)Write the control abstraction of divide and conquer method	2	2	6M
		OR			
	b	i) Analyze the Merge sort algorithm with example and derive its time complexity.	4	2	6M
		ii)Explain the strassens matrix multiplication and derive its time complexity	3	2	6M
3		**Unit-III**			
	a	i) Explain the the Dijkstra's single source shortest path algorithm with example	3	3	6M
		ii) What is the solution generated by function Job Sequencing algorithm when n=6 (P1...p6) = (3, 5, 20, 18, 1, 6), and (d1..d6) = (1, 3, 4, 3, 2, 1).	3	3	6M
		OR			
	b	i) Find an optimal solution to the knapsack instance n=7 objects and the capacity of knapsack M=15. The profits and weights of the objects are (P1,P2,P3, P4, P5, P6, P7)= (10,5,15,7,6,18,3) (W1,W2,W3,W4,W5,W6,W7)= (2,3,5,7,1,4,1)	3	3	6M
		ii) Explain Prim's Minimum cost spanning tree algorithm with suitable example.	3	3	6M
4		**Unit-IV**			
	a	i) Solve the following instance of 0/1 Knapsack problem using Dynamic programming n = 3; (W1, W2, W3) = (3, 5, 7); (P1, P2, P3) = (3, 7, 12); M = 4.	3	4	6M
		ii) Write the general method of dynamic programming	2	4	6M
		OR			
	b	i) Describe the Travelling sales person problem and discuss how to solve it using dynamic programming	3	4	12M
5		**Unit-V**			
	a	i) State **n**-queens problem and Explain 8-queens problem using backtracking	3	5	6M
		ii) Describe general iterative backtracking algorithm	2	5	6M
		OR			
	b	i) Draw the portion of the state space tree generated by LCBB for the knapsack instance: $n=5,(p1,p2,p3,p4,p5)=(w1,w2,w3,w4,w5)=(4,4,5,8,9)$, and $m=15$.	3	5	6M
		ii) Explain the Clique Decision Problem	2	5	6M

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

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I M.TECH I Semester Regular Examinations, January-2025

R24

Sub Code: R24MCS104   **BIG DATA ANALYTICS**

Time: 3 hours   (CSE)   Max. Marks: 60

Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 12M = 60M)

Q.No		Questions	KL	CO	M
		Unit-I			
1.	a	i) Summarizing Google File System and its Architecture.	K2	1	6M
		ii) Compare and contrast between standalone mode and Pseudo-distributed mode.	K2	1	6M
		OR			
	b	i) Explain about the building blocks of Hadoop.	K4	1	6M
		ii) Explain about Fully distributed mode.	K4	1	6M
		Unit-II			
2	a	i) Structuring and explain Map Reduce architecture.	K4	2	6M
		ii) Comparing old and new java Map Reduce APIs.	K2	2	6M
		OR			
	b	i) Analyse map reduce on weather data set.	K4	2	6M
		ii) Implement any one basic program of Hadoop MapReduce	K3	2	6M
		Unit-III			
3	a	i) Explain the Apache Spark.	K4	3	6M
		ii) Illustrate in detail of persistence with an example	K4	3	6M
		OR			
	b	i) Categorizing the RDDs Operations	K4	3	6M
		ii) Illustrate How to Create RDDs in Apache Spark?	K4	3	6M
		Unit-IV			
4	a	i) Categorizing the Pig Latin operators and explain any four operators.	K4	4	6M
		ii) Sketch the Pig Architecture with explanation	K3	4	6M
		OR			
	b	i) Explain Evaluating Local and Distributed Modes of Running Pig Scripts	K4	4	6M
		ii) Illustrate in detail of Pig Latin Application Flow	K4	4	6M
		Unit-V			
5	a	Explain the creating and managing database and tables in HIVE	K4	5	12M
		OR			
	b	i) Illustrating architecture of HIVE.	K4	5	6M
		ii) Categorizing and Explain Hive Data Manipulation Language Instructions	K4	5	6M

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

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I M.TECH I Semester Regular Examinations, January-2025

R24

Sub Code: R24MCS109
Time: 3 hours

INTERNET OF THINGS
(CSE)

Max. Marks: 60

Note: Answer All **FIVE** Questions.
All Questions Carry Equal Marks (5 X 12M = 60M)

Q.No		Questions	KL	CO	M
		Unit-I			
1	a	i) Define IOT. Illustrate generic block diagram of an IOT device with the help of a neat diagram.	4	1	6M
		ii) Explain deployment Templates of IOT Levels	1	1	6M
		OR			
	b	i) Summarize IOT enabling technologies.	2	1	6M
		ii) Distinguish between IOT and M2M	1	1	6M
		Unit-II			
2	a	i) With the help of home automation case study, explain the steps involved in IOT design methodology	3	2	12M
		OR			
	b	i) Write short notes on Domain model specification of IOT system	2	2	6M
		ii) Write short notes on Functional view specification of IOT system	2	2	6M
		Unit-III			
3	a	i) Analyze in detail about sensors, Actuators and smart objects.	3	3	12M
		OR			
	b	i) Describe different components on Raspaberry PI	2	3	6M
		ii) Why the python is the first choice for the Raspberry PI language than C or C++?	3	3	6M
		Unit-IV			
4	a	i) Write key points about unstructured data storage on cloud	2	4	6M
		ii) Explain different Cloud computing services	2	4	6M
		OR			
	b	i) Explain the Autobahm Cloud services for IOT	2	4	6M
		ii) Explain the usage of cloud platforms for IOT applications and services.	2	4	6M
		Unit-V			
5	a	i) Explain the steps to develop the Smart city Domain specific Application	2	5	12M
		OR			
	b	i) Explain the steps to develop the Agriculture Domain Specific Application	2	5	6M
		ii) Discuss about case study on IOT system for industrial automation.	2	5	6M

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

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