Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV/DEC 2024

Geoinformatics, Semester VII

GI 5701 DECISION SUPPORT SYSTEM FOR RESOURCE MANAGEMENT

(Regulation 2019)

Time: 3hrs

Max.Marks: 100

CO 1	Acquire knowledge about structure of Expert system and its difference with conventional programming
CO 2	Understand and develop Rule based expert system for geomatic problems
CO 3	Handle the inexact real world problems to get the solution
CO 4	Integrate Operation research and geomatic tools to design a Hybrid model to solve real world problems
CO 5	Plan, control and Monitor the activities of the project properly for effective implementation

BL – Bloom's Taxonomy Levels

(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	Write down the purpose of decision support system.	2	1	L1
2	List out the activities of Expert system.	2	1	L2
3	What do you mean by knowledge engineering?	2	2	L1
4	Give the architecture of simple semantic net for the concept of a ship.	2	2	L2
5	Write down the goals of knowledge engineer.	2	3	L1
6	What do you mean by crisp logic?	2	3	L2
7	What is the need of Operation Research?	2	4	L1
8	Differentiate between graphical and simplex method of problem solving in OR.	2	4	L2
9	Differentiate between CPM and PERT.	2	5	L1
10	Construct the dual problem for the following linear programming model. Maximize $z = 4x_1 + x_2$ Subject to $3x_1 + 2x_2 \leq 6$ $6x_1 + 3x_2 \leq 10$ $x_1, x_2 \geq 0$.	2	5	L2

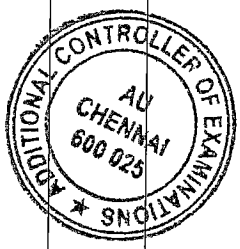
PART- B (5 x 13 = 65 Marks)

Q. No	Questions	Marks	CO	BL
11 (a) (i)	Explain in detail about the components and salient features of expert system.	8	1	L3
(ii)	Differentiate between i).Expert system and Conventional programming and ii) Human Vs artificial expertise.	5	1	L3
	OR			
11 (b).(i)	Write about the brief history of evolution of expert system and	8	1	L3

	describe the components of expert system structure.			
(ii)	Write about the different types of expert system with examples.	5	1	L3
12 (a) (i)	Define Reasoning and discuss about the different types of reasoning with its sample hypotheses and conclusion statements.	8	2	L3
(ii)	Explain about the declarative knowledge with three example knowledge statements	5	2	L3
	OR			
12 (b)	Explain in detail about the 'backward inference chaining in expert system development with its complete rule base' to execute the rule of calling fire department if the flammable liquid was spilled.	13	2	L3
13 (a) (i)	What is the need of certainty theory and discuss in detail about the rule inferencing with certainty factors.	8	3	L4
(ii)	Explain about the fuzzy membership representation for three height classes of 'Tall men' problem.	5	3	L4
	OR			
13 (b)	Write in detail about the Mamdani fuzzy inferencing method.	13	3	L4
14 (a)	A television company has to decide on the number of 27 and 20 inch sets to be produced at one of its factories. Market research indicate that almost 40 no of 27 inch sets and 10 of 20 inch sets sold per month. The maximum no of work hours available is 500 per month. A 27 inch set requires 20 work hours and 20 inch set 10 work hours. Each 27 inch set sold produces a profit of Rs.120 and each 20 inch set produces a profit of Rs.80. A Wholesaler has agreed to purchase all the television sets produced if the numbers do not exceed the maxima indicated by the market research. i)Generate the relevant data table. ii)Formulate a LPM for this problem. iii)Use Graphical method to solve this model.	13	4	L4
	OR			
14 (b)	Use Simplex method to solve the following problem. Maximize $z = 3x_1 + 5x_2$ Subject to the following i) $x_1 \leq 4$ ii) $2x_2 \leq 12$ iii) $3x_1 + 2x_2 \leq 18$ and $x_1, x_2 \geq 0$.	13	4	L4
15 (a)	A Project timeline has the following characteristics as shown in table.	13	5	L5

Activity	Name	Time	Activity	Name	Time (days)
1-2	A	4	5-6	G	4
1-3	B	1	5-7	H	8
2-4	C	1	6-8	I	1
3-4	D	1	7-8	J	2
3-5	E	6	8-10	K	5
4-9	F	5	9-10	L	7

1. Construct the network diagram.
2. Compute EST, EFT, LST and LFT.
3. Find the critical path.
4. Determine the total project completion time.
5. Compute the total float.



	OR			
15 (b) (i)	What do you mean by inventory and give a detailed account on different types of inventory.	8	5	L5

(ii)	Write short note on Project Schedule Network diagram.	5	5	L5

PART- C (1 x 15 = 15 Marks)

(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16.	Design and develop the Knowledge Based Expert System involving its all the basic activities for low pressure system detection, monitoring and advisory.	15	1,2,3 ,4,5	5,6