Q. Code:471961

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Sixth Semester

IT18601– COMPUTATIONAL INTELLIGENCE

(Information Technology)

(Regulation 2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Analyze the problems and solve them using AI techniques•	5
CO 2	Infer knowledge for the problem represented in the language/framework using different AI methods	4
CO 3	Apply data mining techniques to real-world problems	5
CO 4	Design expert systems for various applications	4
CO 5	Generate solutions to problems using advanced concepts of Computational Intelligence	4

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Show how heuristic function is used in travelling salesman problem.	**1**	**4**
2.	Differentiate alpha cutoff and beta cutoff.	**1**	**4**
3.	Convert “Kevin reads all kinds of book” to predicate logic.	**2**	**3**
4.	Illustrate standardize apart with an example.	**2**	**3**
5.	Compare supervised learning and unsupervised learning.	**3**	**4**
6.	Mention some of the applications of data mining.	**3**	**2**
7.	Examine the importance of XCON expert system.	**4**	**4**
8.	Why is expert system shell used?	**4**	**3**
9.	List the applications of Neural Networks.	**5**	**2**

10.	Write the properties of fuzzy sets.	**5**	**3**	

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	You have an empty 4-litres and 3-litre bottle and want to share 2-litres of apple juice to your friend in the 4-litres bottle. Write the production system and determine the solution steps for it.	**(14)**	**1**	**4**
	(OR)			
(b)	Use constraint satisfaction strategy to solve the following crypt arithmetic problem S E N D M O R E + --- M O N E Y ---	**(14)**	**1**	**4**
12. (a)	Convert the following statements into predicate Logic • Richard likes all kind of food. • Apple and vegetable are food • Anything anyone eats and not killed is food • Anil eats peanuts and still alive • Harry eats everything that Anil eats. Use resolution to prove that "Richard likes peanuts".	**(14)**	**2**	**3**
	(OR)			
(b)	**(i)** A knowledge base has the following statements: If there is gas in the tank and the fuel line is okay, then there is gas in the engine; If there is gas in the engine and a good spark, the engine runs; If there is power to the plugs and the plugs are clean, a good spark is produced;	**(7)**	**2**	**3**

If the battery is charged and the cables are okay, then there is power to the plugs.

Given the facts that there is gas in the tank, the battery is charged, the fuel line and cables are both okay, and the plugs are clean.

Apply Forward Chaining and backward chaining to prove that the engine runs.

(ii) Compare the knowledge inferencing techniques. **(7) 2 3**

13. (a) Examine Apriori algorithm and use it to find all the frequent item sets for a database with nine transactions assuming minimum support as 3. Also determine the association rules with minimum confidence 75%. **(14) 3 4**

TID	Items
1	Eggs, Almonds, Dates, Bread
2	Dates, Almond, Cashews, Eggs, Bread
3	Cashews, Almond, Bread, Eggs
4	Bread, Almond, Dates
5	Dates
6	Dates, Bread
7	Almond, Dates, Eggs
8	Bread, Cashews

(OR)

(b) Apply hierarchical clustering to cluster the following points and construct the dendrogram **(14) 3 4**

A = (1, 2.5), B = (5, 10), C = (23, 34), D = (45, 47), E = (4, 17), F = (18, 4)

14. (a) Elucidate the architecture of an expert system with a neat sketch. **(14) 4 2**

(OR)

(b)	**(i)**	Explain how inferencing takes place in MYCIN expert system.	**(8)**	**4**	**2**
	(ii)	Discuss DART expert system in brief.	**(6)**	**4**	**2**
15. (a)		Investigate the role of genetic operators with suitable examples and elaborate the working of genetic algorithm.	**(14)**	**5**	**4**

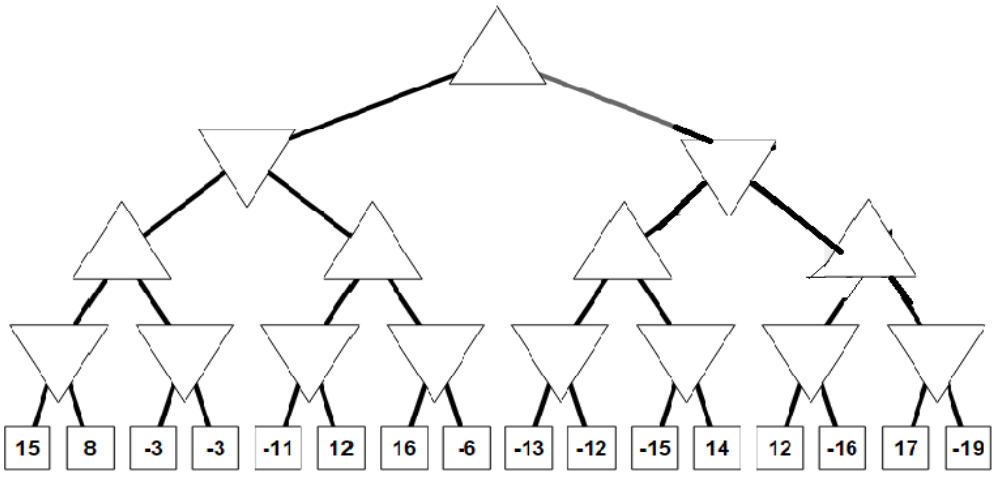
(OR)

(b)	**(i)**	Analyze how Fuzzy logic is used for Reasoning in detail.	**(7)**	**5**	**4**
	(ii)	Investigate how learning takes place in Multi layer Feed Forward Neural Networks.	**(7)**	**5**	**4**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

			Marks	CO	RBT LEVEL
16.		For the given game tree, use the alpha-beta pruning procedure to determine the nodes that need not be examined. Give the appropriate pseudo code.	**(10)**	**1**	**5**



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