

Total No. of Questions: 6

Total No. of Printed Pages:3

Enrollment No.....



Faculty of Engineering
End Sem Examination May-2024
ME3EL23 Fundamentals of AI

Programme: B.Tech.

Branch/Specialisation: ME

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. Which of the following is the goal of intelligent agent? **1**
(a) High performance (b) Optimized results
(c) Rational action (d) All of these
- ii. Condition-Action is a characteristic feature of _____. **1**
(a) State space search (b) Production system
(c) Both (a) & (b) (d) None of these
- iii. Which of the following is not a method for finding heuristic value? **1**
(a) Eucladian distance (b) Manhatton distance
(c) Number of misplaced tiles (d) None of these
- iv. BFS belongs to which search technique- **1**
(a) Informed (b) uninformed (c) Heuristic (d) All of these
- v. '¬' this symbol is used to represent- **1**
(a) Conjunction (b) Disjunction
(c) Negation (d) If and only if rule
- vi. Top to bottom approach is followed by which chaining? **1**
(a) Forward (b) Backward
(c) Both (a) & (b) (d) None of these
- vii. Which of the following is responsible for resolving conflicts and creating agreements? **1**
(a) Negotiation and bargaining
(b) Agent architecture
(c) Agent communication protocols
(d) Trust and reputation management

[2]

- viii. The role of 'Trust' in multi agent system is _____ **1**
 (a) Ensuring complete autonomy of agents
 (b) Minimizing communication between agents
 (c) Facilitating cooperation and collaboration among agents
 (d) Preventing agents from sharing information
- ix. What is the primary objective of robot hardware perception in AI? **1**
 (a) Understanding natural language
 (b) Recognizing human emotions
 (c) Sensing and interpreting physical environment
 (d) Strategic decision making
- x. Which of the following involves conversion of human language to machine readable format? **1**
 (a) Information retrieval
 (b) Machine translation
 (c) Speech recognition
 (d) Robot hardware perception
- Q.2 i. What do you understand from the term artificial intelligence? **2**
 ii. What are the advantages and disadvantages of artificial intelligence? **3**
 iii. What is an intelligent agent? What are its types? Explain any one type with diagram. **5**
- OR iv. Explain the concept of production system in artificial intelligence. **5**
- Q.3 i. Write difference between Breadth First Search (BFS) & Depth First Search (DFS). **4**
 ii. Explain the concept of A* algorithm with the help of suitable example. **6**
- OR iii. Explain Alpha-Beta pruning approach in context of game playing using suitable example. **6**
- Q.4 i. Represent 'Z' sentence as propositional logic- **2**
 (a) X: Rohan is doctor , Y: Rohan is engineer
Z: Rohan is doctor or engineer
 (b) X: It is hot , Y: It is humid
Z: If it is humid then it is hot
- ii. Represent the following sentences as first order predicate logic- **3**
 (a) Some boys like football
 (b) All men drink coffee

[3]

- iii. What is knowledge representation? Explain different types of knowledge. **5**
- OR iv. Explain the concept of unification with suitable example. **5**
- Q.5 Attempt any two:
 i. Explain the architecture of intelligent agent. Draw necessary diagram in support of your answer. **5**
 ii. Write an informative note on agent communication covering all important points. **5**
 iii. Describe the term multi agent system. **5**
- Q.6 Attempt any two:
 i. Explain the role of artificial intelligence in robotics and automation. **5**
 ii. Describe the term: **5**
 (a) Machine Translation (b) Speech recognition
 iii. Explain various applications of artificial intelligence. **5**

Marking Scheme**Fundamental of AI (T) - ME3EL23 (T)**

Q.1	i)	d) All of these		1
	ii)	b) Production system		1
	iii)	d) None of these		1
	iv)	b) uninformed		1
	v)	c) Negation		1
	vi)	b) Backward		1
	vii)	a). Negotiation and bargaining		1
	viii)	c).Facilitating cooperation and collaboration among agents		1
	ix)	c) Sensing and interpreting physical environment		1
	x)	B. Machine translation		1
Q.2	i.	Definition	2 Mark	2
	ii.	Advantages	1.5 Mark	3
		Disadvantages	1.5 Mark	
	iii.	Definition	1 Mark	5
OR		Types	1 Mark	
		Explanation with diagram	3 Mark	
	iv.	Definition	1 Mark	5
		Components, Explanation	4 Mark	
Q.3	i.	1 Mark for each difference	4 Mark	4
	ii.	Concept & equation	2 Mark	6
		Diagram	2 Mark	
		Solution	2 Mark	
OR	iii.	Concept & equation	2 Mark	6
		Diagram	2 Mark	
		Solution	2 Mark	
Q.4	i.	1 Mark for each sentence	2 Mark	2
	ii.	1.5 Marks for each sentence	3 Mark	3
	iii.	Definition	1 Mark	5
		Types	1 Mark	
OR		Explanation	3 Mark	
	iv	Unification	3 Mark	5
		Example	2 Mark	
Q.5	i.	Architecture	3 Mark	5
		Diagram	2 Mark	
	ii.	Agent communication	3 Mark	5
		Important components	2 Mark	

OR	iii.	Multi agent system	5 Mark	5
Q.6		Any two		
	i.	Role in robotics	2.5 Mark	5
		Role in automation	2.5 Mark	
	ii.	i) Machine Translation	2.5 Mark	5
		ii) Speech recognition	2.5 Mark	
	iii.	Applications (at least 5)	5 Mark	5
