SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF MEDICAL ELECTRONICS

(Common to CSE)

QUESTION BANK

VII SEMESTER

1904006 – ARTIFICIAL INTELLIGENCE

Department of Medical Electronics

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UNIT I - INTRODUCTION

Introduction - Foundation and history of AI. AI Problems and techniques - AI programming languages – Introduction to LISP and PROLOG – Problem spaces and searches -Blind search strategies; Breadth first - Depth first –Heuristic search techniques Hill climbing - Best first – A* algorithm AO* algorithm – game trees Minimax algorithm – Game playing – Alpha beta pruning.

PART – A

Q.No	Questions	BT Level	Competence
1.	Define artificial intelligence (AI).	BTL 1	Remembering
2.	Differentiate natural intelligence from artificial intelligence.	BTL 2	Understanding
3.	What is AI capable of today?	BTL 1	Remembering
4.	List four approaches that are followed in AI.	BTL 1	Remembering
5.	Identify the strong and weak AI.	BTL 1	Remembering
6.	When it comes to human behavior, will the machine be exact?	BTL 1	Remembering
7.	Compare between Informed and Uninformed Search strategies.	BTL 2	Understanding
8.	Mention the area where AI can be used.	BTL 1	Remembering
9.	Summarize the major components of AI.	BTL 2	Understanding
10.	Infer a list of the qualities of an artificially intelligent agent.	BTL 4	Analyzing
11.	Distinguish between LISP and PROLOG.	BTL 2	Understanding
12.	Select the two basic types of search strategies.	BTL 3	Applying
13.	Inspect on which basic search algorithms are chosen.	BTL 4	Analyzing
14.	Show how search strategies are evaluated.	BTL 3	Applying
15.	Can you formulate why heuristic search techniques are considered to be powerful than the traditional search techniques?	BTL 6	Creating
16.	Assess the advantages of heuristic function.	BTL 5	Evaluating
17.	Interpret the reason when hill climbing often gets stuck.	BTL 5	Evaluating
18.	Create a partial game tree for the game of tic-tac-toe.	BTL 6	Creating
19.	How would you demonstrate that alpha–beta pruning outperforms the minimax search algorithm?	BTL 3	Applying
20.	What inference can you draw about how minimax can be extended to a game of chance?	BTL 4	Analyzing
21.	Differentiate A* and AO* algorithm with example.	BTL 2	Understanding
22.	Show the Blind search strategies and summarize any two.	BTL 3	Applying
23.	Infer in brief about problem space and search strategies.	BTL 4	Analyzing
24.	Formulate GPS: General Problem Solver.	BTL 5	Evaluating

PART - B

1.	Explain in details about the four approaches that are followed in AI.	(13)	BTL 4	Analyzing
2.	Summarize the various disciplines that contributed the ideas, viewpoints and techniques to AI.	(13)	BTL 2	Understanding
3.	Illustrate in detail the structure of prolog programming with an example.	(13)	BTL 3	Applying

4.	(i) Describe the history of artificial intelligence from the year 1943.	(7)	BTL 1	Remembering
	(ii) Describe the minimax procedure for game playing.	(6)		
5.	(i) Explain in detail about Turing Test Approach and Cognitive Modeling Approach	(7)	BTL 4	Analyzing
	(ii) Infer the effect of "Laws of thought" approach and Rational agent approach.	(6)		
6.	Discuss in detail about the structure of different intelligent agents.	(13)	BTL 2	Understanding
7.	How LISP and PROLOG can help you in regard of developing artificial intelligence? Explain in detail with features.	(13)	BTL 1	Remembering
8.	(i) How to minimize total estimated cost using A* search with an example.	(8)	BTL 1	Remembering
	(ii) Write the proof of optimality of A*.	(5)		
9.	(i) Demonstrate the AO* algorithm with a suitable example.	(10)	BTL 3	Applying
	(ii) State the limitations in the algorithm.	(3)		
10.	Identify and discuss any two uninformed search methods with examples.	(13)	BTL 1	Remembering
11.	Develop an algorithm to implement alpha–beta pruning with an example.	(7)	BTL 6	Creating
	Develop the concept of game tree with illustration.	(6)		
12.	(i) Analyze the Best Fit Search algorithm with suitable example.	(7)	BTL 4	Analyzing
	(ii) Pointout the importance of Hill climbing algorithm with an example.	(6)		
13.	Evaluate the performance problem solving method based on (i) Breadth first strategy.	(7)	BTL 5	Evaluating
	(ii) Depth first search algorithms.	(6)		
14.	Interpret the Blind search strategies with necessary examples.	(13)	BTL 2	Understanding
15.	Assess in detail the various Heuristic Search strategies available with necessary examples.	(13)	BTL 5	Evaluating
16.	Apply the steps involved in search through problem space for 8 Queens problem and explain in detail.	(13)	BTL 3	Applying
17.	Discuss the min-max algorithm in game playing theory with tic-tac-toe example.	(13)	BTL 2	Understanding

PART -C				
1.	Is AI a science or is it an Engineering? Or neither or both? Justify with suitable examples.	(15)	BTL 5	Evaluating
2.	Consider the given problem. Formulate the operator involved in it. Consider the water jug problem: You are given two jugs, a 4-gallon one and 3-gallon one. Neither has any measuring marker on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 gallons of water from the 4-gallon jug? Explicit Assumptions: A jug can be filled from the	(15)	BTL 6	Creating

	pump, water can be poured out of a jug on to the ground, water can be poured from one jug to another and that there are no other measuring devices available.			
3.	Compare Blind search and heuristic search by sighting any two example for each strategies.	(15)	BTL 5	Evaluating
4.	To what extent are the following computer systems instances of Artificial Intelligence • Super market Bar Code scanners • Web Search Engines • Voice Activated Telephone menus • Internet Routing Algorithms	(15)	BTL 6	Creating
5.	Convince that the 8 puzzle states are divided into two disjoints sets such that, any state is reachable from any other state in the same set, while no state is reachable from any state in the other set.	(15)	BTL 5	Evaluating

UNIT II - KNOWLEDGE REPRESENTATION

Knowledge representation issues – – logic programming – Sematic nets - Frames and inheritance - constraint propagation –Representing Knowledge using rules – Rules based deduction system.

PART - A

Q.No	Questions	BT Level	Competence
1.	What do you mean when you say knowledge representation?	BTL 1	Remembering
2.	What is propositional logic?	BTL 1	Remembering
3.	Determine the drawbacks of using propositional logic to represent the knowledge base.	BTL 5	Evaluating
4.	Express the resolution in propositional logic.	BTL 2	Understanding
5.	Differentiate procedural knowledge and declarative knowledge.	BTL 2	Understanding
6.	Name the issues involved in knowledge representation.	BTL 1	Remembering
7.	Write the properties of Knowledge Representation.	BTL 1	Remembering
8.	Distinguish between propositional versus first order predicate logic.	BTL 2	Understanding
9.	Analyze the factors justify whether the reasoning should be done forward or backward?	BTL 4	Analyzing
10.	Define first order definite clause.	BTL 1	Remembering
11.	Illustrate the meta rules.	BTL 3	Applying
12.	Evaluate the generalized modus ponens rule.	BTL 5	Evaluating
13.	List the types of knowledge.	BTL 1	Remembering
14.	Mention the characteristics of logic programming.	BTL 6	Creating
15.	Interpret the use of semantic networks.	BTL 2	Understanding
16.	Create the structure of a frame.	BTL 6	Creating
17.	Pointout the conjunctive normal form of a rule.	BTL 4	Analyzing
18.	Express the steps to convert first order logic sentence to normal form?	BTL 3	Applying

19.	Find the advantages of Semantic Nets.	BTL 3	Applying
20.	Compare propositional logic with FOL.	BTL 4	Analyzing
21.	Express the issues that arise while using knowledge representation in Artificial Intelligence.	BTL 2	Understanding
22.	Demonstrate Constraint Propagation.	BTL 3	Applying
23.	Measure the semantic network notation when compared with FOL.	BTL 5	Evaluating
24.	Analyze Logic programming and state one example.	BTL 4	Analyzing

PART – B				
1.	Show the various problems that are represented in the knowledge.	(13)	BTL 3	Applying
2.	With the help of examples, summarize the various rules used in knowledge representation.	(13)	BTL 2	Understanding
3.	(i) Examine the algorithm for deciding entailment in propositional logic.	(7)	BTL 1	Remembering
	(ii) List the five logical connectivity used to construct the complex sentences and give the formal grammar of propositional logic.	(6)		
4.	Write down and explain the unification algorithm in predicate logic.	(13)	BTL 1	Remembering
5.	(i) Define and compare the atomic sentence and complex sentence.	(7)	BTL 2	Understanding
	(ii) Differentiate forward chaining and backward chaining.	(6)		
6.	Discuss the syntax and semantics of first order logic.	(13)	BTL 2	Understanding
7.	Analyze the forward chaining and backward chaining with examples.	(13)	BTL 4	Analyzing
8.	Illustrate the rule based deduction systems with examples.	(13)	BTL 3	Applying
9.	Consider the following sentences: John likes all kinds of food; Apples are food; Chicken is food; Anything anyone eats and isn't killed by is food; Bill eats peanuts and still is alive; Sue eats everything Bill eats.		BTL 5	Evaluating
	(i) Translate these sentences into formulas in predicate logic.	(7)		
	(ii) Convert the formulas of part an into clause form.	(6)		
10.	Brief about (i) Propositional Logic	(6)	BTL 2	Understanding
	(ii) Predicate Logic	(7)		
11.	How are frames used in knowledge representation? Give the structure of a general frame.	(13)	BTL 1	Remembering
12.	Develop and explain a simple semantic network with a small number of facts and relations.	(13)	BTL 6	Creating
13.	Explain in details about the representing knowledge using rules.	(13)	BTL 4	Analyzing
14.	Infer the rules-based deduction system with examples.	(13)	BTL 4	Analyzing
15.	Demonstrate in detail about Logic programming and the	(13)	BTL 3	Applying

	most widely used Logic programming language: PROLOG.			
16.	Summarize the various issues faced while representing Knowledge in Artificial Intelligence.	(13)	BTL 5	Evaluating
17.	Examine the concept of frames and inheritance in semantic nets.	(13)	BTL 1	Remembering

PART - C				
1.	Formulate the following sentences to predicate logic,		BTL 6	Creating
	(i) Marcus was a man,	(4)		
	(ii) Marcus was a pompeian,	(4)		
	(iii) All pompeians were roman,	(4)		
	(iv) Caser was a ruler.	(3)		
2.	Explain Conjunctive Normal Form for First order Logic for the following problem and Prove West is criminal using First order logic. "The law says that it is a crime for an American to sell weapons to hostile nations. The country Nono, an enemy has some missiles, and all of its missiles were sold to it by Colonel West, who is American".	(15)	BTL 6	Creating
3.	Determine the semantic net representation for the following,		BTL 5	Evaluating
	(i) Pompeian (Marcus), Blacksmith (Marcus);	(8)		
	(ii) Mary gave the green flowered vase to her favorite cousin.	(7)		
4.	Assess the following sentences in conceptual dependency representation.		BTL 5	Evaluating
	(i) "Since smoking can kill you", I stopped.	(8)		
	(ii) "Bill threatened John with a broken nose".	(7)		
5.	Formulate the use of Rule based production system in both forward and backward production systems.	(13)	BTL 5	Evaluating

UNIT III - REASONING UNDER UNCERTAINTY			
Introduction to uncertain knowledge review of probability – Baye's Probabilistic inferences and Dempster Shafer theory –Heuristic methods – Symbolic reasoning under uncertainty- Statistical reasoning – Fuzzy reasoning – Temporal reasoning- Non monotonic reasoning.			
PART - A			
Q.No	**Questions**	**BT Level**	**Competence**
1.	What you mean by probabilistic reasoning?	BTL 1	Remembering
2.	Express the Baye's theorem.	BTL 2	Understanding
3.	Draw the fuzzy curve for tall, short, very tall.	BTL 6	Creating
4.	Differentiate between forward and backward reasoning.	BTL 2	Understanding
5.	Define Dempster-Shafer theory.	BTL 1	Remembering
6.	Determine the logics used in reasoning with uncertain information.	BTL 5	Evaluating
7.	Examine the concept of prior probability.	BTL 4	Analyzing
8.	List the types of approximation methods.	BTL 1	Remembering
9.	What exactly do you mean when you say hybrid Bayesian	BTL 3	Applying

	network?		
10.	Analyze the computational learning theory.	BTL 4	Analyzing
11.	Generalize the full specification of Bayesian network.	BTL 6	Creating
12.	Infer about uncertainty.	BTL 4	Analyzing
13.	Define Conditional probability.	BTL 1	Remembering
14.	Distinguish between Causal Inference and Diagnostic Inference of Bayesian Network.	BTL 2	Understanding
15.	Derive Conditional version of chain rule from chain rule.	BTL 3	Applying
16.	What is temporal reasoning?	BTL 1	Remembering
17.	Summarize Joint Probability Distribution.	BTL 5	Evaluating
18.	How would you gain access to fuzzy's performance?	BTL 3	Applying
19.	Identify the heuristic function.	BTL 1	Remembering
20.	Demonstrate the basic inference task in temporal models.	BTL 3	Applying
21.	Infer about Non monotonic reasoning with example.	BTL 2	Understanding
22.	Pointout the necessity Statistical reasoning.	BTL 4	Analyzing
23.	Assess the need of symbolic reasoning.	BTL 5	Evaluating
24.	Differentiate on statistical reasoning and fuzzy reasoning.	BTL 2	Understanding

PART - B				
1.	(i) Derive Baye's theorem probability.	(7)	BTL 3	Applying
	(ii) Illustrate with suitable example, Baye's theorem use in expert system.	(6)		
2.	Explain the probabilistic reasoning with suitable examples.	(13)	BTL 4	Analyzing
3.	Discuss the need and structure of Bayesian network.	(13)	BTL 2	Understanding
4.	Summarize in detail about reasoning with Fuzzy sets quoting some examples.	(13)	BTL 2	Understanding
5.	(i) List down the applications of Bayesian network.	(7)	BTL 1	Remembering
	(ii) Discuss forward – backward algorithm in detail.	(6)		
6.	(i) Interpret variable elimination algorithm for answering queries in Bayesian network.	(7)	BTL 2	Understanding
	(ii) How is the Bayesian network used in representing the uncertainty about the knowledge.	(6)		
7.	Describe in details about Dempster-Shafer theory.	(13)	BTL 1	Remembering
8.	(i)Define uncertain knowledge, prior probability and conditional probability.	(7)	BTL 1	Remembering
	(ii) Examine belief networks briefly.	(6)		
9.	Assess the need of fuzzy set and fuzzy logic with example.	(13)	BTL 5	Evaluating
10.	Illustrate the different methods of heuristic with examples.	(13)	BTL 3	Applying
11.	Analyze the different reasoning system as to how reasoning is done under uncertain conditions.	(13)	BTL 4	Analyzing
12.	Write a short note on,		BTL 1	Remembering
	(i) Symbolic reasoning under uncertainty,	(7)		
	(ii) Statistical reasoning.	(6)		
13.	Elaborate the concept of the following,		BTL 6	Creating
	(i) Temporal reasoning,	(7)		
	(ii) Non monotonic reasoning.	(6)		

14.	Evaluate on computing Conditional probabilities for a Bayesian network in the "Home Domain" usecase.	(13)	BTL 5	Evaluating
15.	Analyze the algorithm to construct Bayesian Net and compute joint probability distribution.	(13)	BTL 4	Analyzing
16.	Discuss with example Reasoning under uncertainty.	(13)	BTL 2	Understanding
17.	Illustrate the need for conditional probability and the important rules related to it.	(13)	BTL 3	Applying

PART - C				
1.	Marie's marriage is tomorrow. In recent years, each year it has rained only 5 days. The weatherman has predicted rain for tomorrow. When it actually rains, the weatherman correctly forecasts rain 90% of the time. When it doesn't rain, the weatherman incorrectly forecasts rain 10% of the time.The question: What is the probability that it will rain on the day of Marie's wedding?	(15)	BTL 6	Creating
2.	Consider the following facts: (i) I saw my cat in the living room 3 hours ago, (ii) 2 hours ago my door blew open, (iii) Three quarters of the time my door blows open, my cat runs outside the door, (iv) One hour ago I thought I heard a cat noise in my living room. Assume I was half certain, (v) In one hour period the probability that cat will leave the room is 0.2. There is also 0.2 probability that he may enter the room. What is the uncertainty that the cat is in the living room? Use Bayesian networks to evaluate this.	(15)	BTL 5	Evaluating
3.	In a clinic, the probability of the patients having HIV virus is **0.15**. A blood test done on patients : If patient has virus, then the test is **+ve** with probability **0.95**. If the patient does not have the virus, then the test is **+ve** with probability **0.02.** Assign labels to events :H= patient has virus , P=test +ve Given : P(H)= 0.15, P(P/H)=0.95, P(P/ ┐H) =0.02 Find : If the test is **+ve** what are the probabilities that the patient i) has the virus ie **P(H|P)** ; ii) does not have virus ie **P(¬H|P)** ; If the test is **-ve** what are the probabilities that the patient iii) has the virus ie **P(H|¬P)** ; iv) does not have virus ie **P(¬H|¬P)** ;	(15)	BTL 6	Creating
4.	(i)With an example, how do you deal with uncertain	(8)	BTL 5	Evaluating

	knowledge?			
	(ii) How should knowledge be represented in a domain that is uncertain?	(7)		
5.	Elaborate on Causal and Diagnostic Inference of Bayesian Net with examples.	(15)	BTL 6	Create

UNIT IV - PLANNING AND LEARNING			
Planning - Introduction, Planning in situational calculus - Representation for planning – Partial order planning algorithm- Learning from examples- Discovery as learning – Learning by analogy – Explanation based learning –Introduction to Neural nets – Genetic Algorithms.			
PART - A			
Q.No	**Questions**	**BT Level**	**Competence**
1.	What does planning involve?	BTL 1	Remembering
2.	Express the basic idea of situational calculus.	BTL 2	Understanding
3.	What does Generalization and overfitting mean?	BTL 2	Understanding
4.	Define Explicit state representation.	BTL 1	Remembering
5.	How will you represent planning? give an example.	BTL 1	Remembering
6.	State the rule for partial order planning.	BTL 2	Understanding
7.	Define learning in Artificial intelligence.	BTL 1	Remembering
8.	Select the components of learning agent.	BTL 3	Applying
9.	Classify learning types.	BTL 4	Analyzing
10.	Analyze explanation based learning.	BTL 4	Analyzing
11.	Write the basic approach for the problem of concept formation in Winston's program.	BTL 1	Remembering
12.	Pointout the problems in decision tree.	BTL 4	Analyzing
13.	Assess the major issues that affect the design of a learning element.	BTL 5	Evaluating
14.	Generalize about Transformational Analogy.	BTL 6	Creating
15.	Discuss about Derivational Analogy.	BTL 2	Understanding
16.	Formulate the three factors involved in the analysis of efficiency gains from explanation-based learning.	BTL 6	Creating
17.	Illustrate and define Neuron and perceptron.	BTL 3	Applying
18.	Define Decision tree with example.	BTL 1	Remembering
19.	Draw the Architecture of Neural Network.	BTL 5	Evaluating
20.	Mention the advantages of genetic algorithms in AI?	BTL 3	Applying
21.	Illustrate Neural Network Architecture.	BTL 3	Applying
22.	Demonstrate partial order planning.	BTL 2	Understanding
23.	Point out the components for learning from Observation.	BTL 4	Analyzing
24.	Summarize Genetic Algorithm and steps involved.	BTL 5	Evaluating

PART - B

1.	Examine about planning with certainty and represent state, action and goal .	(13)	BTL 1	Remembering
2.	Illustrate partial order planning algorithm with an example.	(13)	BTL 3	Applying
3.	Write short notes on,		BTL 1	Remembering
	(i) Situational Calculus with blocks world example.	(7)		
	(ii) Representing states , actions and goals.	(6)		
4.	Discuss in detail any one of the learning from examples.	(13)	BTL 2	Understanding
5.	Inspect the decision tree learning algorithm with an example and illustrate the concept.	(13)	BTL 4	Analyzing
6.	(i) What is explanation-based learning?	(3)	BTL 1	Remembering
	(ii) Examine steps involved in explanation-based learning.	(10)		
7.	Analyze the concept on learning using decision trees with suitable example.	(13)	BTL 4	Analyzing
8.	(i)Define Discovery and discuss about Theory –Driven Discovery.	(7)	BTL 2	Understanding
	(ii) Data driven Discovery.	(6)		
9.	(i)How genetic algorithm works in AI? Explain with examples.	(7)	BTL 1	Remembering
	(ii) List the advantages and disadvantages of genetic algorithm	(6)		
10.	Discuss about Analogy and the two methods of Analogical problem solving.	(13)	BTL 5	Evaluating
11.	Generalize the various types machine learning with examples.	(13)	BTL 6	Creating
12.	Summarize about different discovery learning techniques with examples.	(13)	BTL 2	Understanding
13.	Illustrate about the,		BTL 3	Applying
	(i) Transformational Analogy	(7)		
	(ii) Derivational Analogy.	(6)		
14.	Infer the ideas of situational calculus in Blocks world example and illustrate it.	(13)	BTL 4	Analyzing
15.	Illustrate the neural network architecture and represent the early learning models of neural nets.	(13)	BTL 3	Applying
16.	Discuss in detail about Genetic algorithm with example and suitable illustration.	(13)	BTL 2	Understanding
17.	Evaluate the working of partial order planner and illustrate the algorithm involved in it.	(13)	BTL 5	Evaluating

PART - C				
1.	Assess the use of planning graph in providing better heuristic estimation with suitable example.	(15)	BTL 5	Evaluating
2.	What is meant by inductive logic programming? How does top-down inductive learning methods and inductive learning with inverse deduction work? Explain.	(15)	BTL 5	Evaluating
3.	Consider a simple domain: waiting at a traffic light. Give an example of decision tree for this domain.		BTL 6	Creating

	(i) Create a list of relevant variables,	(5)		
	(ii) How the concept of information or expected information gain can be used to determine which variable to choose for a maximally compact decision tree.	(10)		
4.	In the case of learning to play cricket. Formulate whether this is supervised or reinforcement learning and explain.	(15)	BTL 6	Creating
5.	Suppose you had a neural network with linear activation functions. That is, for each unit the output is some constant c times the weighted sum of the inputs. a. Assume that the network has one hidden layer. For a given assignment to the weights w, **write** down equations for the value of the units in the output layer as a function of w and the input layer x, without any explicit mention of the output of the hidden layer	(15)	BTL 6	Creating

UNIT V - APPLICATIONS

Principles of Natural Language Processing, Rule Based Systems Architecture - Expert systems- Knowledge Acquisition concepts – AI application to robotics – Current trends in Intelligent Systems.

PART - A

Q.No	Questions	BT Level	Competence
1.	What are the two important task of language processing problem?	BTL 1	Remembering
2.	Differentiate morphology Analysis an syntactic analysis.	BTL 2	Understanding
3.	Write the applications of natural language processing.	BTL 1	Remembering
4.	Show the steps involved in natural language understanding process.	BTL 3	Applying
5.	Define expert systems.	BTL 1	Remembering
6.	List some of the early expert systems.	BTL 1	Remembering
7.	Find the various components of expert systems.	BTL 3	Applying
8.	Express the basic characteristics of expert systems.	BTL 2	Understanding
9.	How AI is applied in Robotics.	BTL 3	Applying
10.	Draw schematic diagram showing various components of expert system.	BTL 1	Remembering
11.	Evaluate the role of intelligent systems in computer vision.	BTL 5	Evaluating
12.	Classify the knowledge based on Expert system.	BTL 4	Analyzing
13.	Pointout the use of inference engine in rule based expert system.	BTL 6	Creating
14.	State the knowledge Acquisition process.	BTL 2	Understanding
15.	Assess how knowledge is a crucial aspect of expert systems?	BTL 5	Evaluating
16.	List the guideline considered while planning knowledge acquisition.	BTL 2	Understanding
17.	Generalize Robots and Robotics.	BTL 6	Creating
18.	Infer the use of cybernetics in AI.	BTL 4	Analyzing

19.	Will artificial intelligence replace human?	BTL 1	Remembering
20.	Summarize the new trends in intelligence.	BTL 5	Evaluating
21.	Infer why NLP is difficult?	BTL 2	Understanding
22.	Categorize the elements of rule-based expert systems.	BTL 4	Analyzing
23.	Illustrate the Architecture of expert system.	BTL 3	Applying
24.	Analyze the techniques used in NLP.	BTL 4	Analyzing

PART – B				
1.	Express in detail the various steps of natural language understanding process.	(13)	BTL 2	Understanding
2.	Summarize about the following NLP process (i) Syntactic analysis (ii) Semantic analysis.	(13)	BTL 2	Understanding
3.	Write short notes on,		BTL 1	Remembering
	(i) Morphological Analysis.	(7)		
	(ii) Discourse Integration & Pragmatic Analysis	(6)		
4.	Analyze the components of Expert systems with neat diagrams.	(13)	BTL 4	Analyzing
5.	Explain with necessary illustrations for the term, Knowledge acquisition process.	(13)	BTL 3	Applying
6.	Discuss the various components of expert system and their importance in expert system.	(13)	BTL 2	Understanding
7.	Analyze the need of knowledge engineering, knowledge base and inference engine in expert system.	(13)	BTL 4	Analyzing
8.	(i) List out the problems are addressed by expert systems.	(7)	BTL 1	Remembering
	(ii) Examine the application of expert system.	(6)		
9.	Illustrate a detailed note Rule based system architecture for expert system.	(13)	BTL 3	Applying
10.	(i) Write short note on the people involved in expert system.	(7)	BTL 1	Remembering
	(ii) Write advantages and disadvantages of expert systems.	(6)		
11.	What was one of the earliest implementations of a self-driving vehicle, and Which AI method was used?	(13)	BTL 1	Remembering
12.	Compare the early development of Intelligent systems to those being developed today.	(13)	BTL 4	Analyzing
13.	Assess the importance of knowledge Acquisition with example.	(13)	BTL 5	Evaluating
14.	Elaborate any five current trends in artificial intelligence.	(13)	BTL 6	Creating
15.	Illustrate the rule based architecture of an expert system with neat diagram.	(13)	BTL 3	Applying
16.	Infer the use of robotics in the following field (i) Behavior based robotics (ii) Cognitive model.	(6) (7)	BTL 2	Understanding
17.	Summarize about the current trends in the field of machine learning in AI.	(13)	BTL 5	Evaluating

PART - C				
1.	Evaluate in detail about MYCIN Expert systems and its functions.	(15)	BTL 5	Evaluating
2.	Assess the role and use of any one chat bot available in the current market to demonstrate the concept of NLP in Artificial Intelligence.	(15)	BTL 5	Evaluating
3.	Design an expert system for travel recommendation and discuss its roles.	(15)	BTL 6	Creating
4.	Elaborate the use of Robotics in the field of (i) Agriculture (ii) Automobiles	 (8) (7)	BTL 6	Creating
5.	Develop an example as to how AI and robotics are used in the healthcare industry	(15)	BTL 6	Creating