UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July202

Course: Artificial Intelligence   Semester: VI
Program: B.Tech. CSE+MFT   Time:
Course Code: CSEG3005   Max. Marks: 100

Mode of exam: Online through blackboard

INSTRUCTIONS

1. Description

    This question paper has 3 Sections.

    Section A is Objective Type [with 20 MCQs] - 20*2=20 Marks

    Section B has Short Answer Questions [5 Questions] = 5*8= 40 Marks

    Section C has Long Answer Questions [1 Question with 2 parts] = 2*10=20 Marks

2. Instructions

    Go through the questions carefully!

    Think carefully, apply your knowledge and answer! Content you write matters than the length

    Do not copy; Do original work; Your answers will be run through plagarism check. You will lose marks if found copied!

    Total Marks: 100

    Total Time: 2 hours

3. Timed Test

    This test has a time limit of 2 hours. Your remaining time is approximately 00 seconds.

4. Timer Setting

    You will be notified when time expires, and you may continue or submit.

5. Force Completion

    This Test can be saved and resumed later. The timer will continue to run if you leave the test.

6. Due Date

    This Test is due on07 July 2020 12:00:00 o'clock IST.Test cannot be started past this date.

Section A

MC	(CO2) For implementation of BFS, which of these data structures is most convenient	Stacks		Incorrect	Priority Queues		Incorrect	Queues	Correct	All of these		Incorrect

MC	(CO1) Taking 'Medical Diagnosis System' as an example, which of the following is a suitable PEAS interpretation	P: Minimize Cost, Minimize Law suit; E: Patient, Hospital Staff; A: Screen Displays (Diagnosis, tests, treatments, referrals); S: Keyboard (entry of symptoms, patients' answers, findings)	Correct	P: Keyboard (entry of symptoms, patients' answers, findings); E: Screen Displays (Diagnosis, tests, treatments, referrals); A:Minimize Cost, Minimize Law suit; S: Patient, Hospital Staff;	Incorrect	P: Patient, Hospital Staff; E:Minimize Cost, Minimize Law suit ; A:Keyboard (entry of symptoms, patients' answers, findings) ; S: Screen Displays (Diagnosis, tests, treatments, referrals)	Incorrect	P:Screen Displays (Diagnosis, tests, treatments, referrals); E:Keyboard (entry of symptoms, patients' answers, findings) ; A: Patient, Hospital Staff; S: Minimize Cost, Minimize Law suit	Incorrect
MC	(CO1) While studying the world in AI, its division into two fundamental components is considered. Which are these?	No such categorization exists	Incorrect	Land and Water	Incorrect	Digital Yes or No	Incorrect	Agent and Environment	Correct
MC	(CO1) What does 'thinking humanly' mean in context of AI	Understand and model how human mind works	Correct	Using logic	Incorrect	Objectively thinking	Incorrect	Model Complexity	Incorrect
MC	(CO2) Which of the mentioned problems can be called as Constraint	All [i], [ii], [iii], [iv]	Correct	Only [ii] and [iii]	Incorrect	None of these	Incorrect	Only [i] and [iv]	Incorrect

	Satisfaction Problems(CSP) - [i] Sudoku [ii] Map Coloring Problem [iii] Cryptarithmatic Problem [iv] N-Queens Problem								
MC	(CO3) Which of the following examples will qualify for being called as 'uncertain knowledge' - [i] A number occuring on rolling a dice [ii] The temperature of tomorrow [iii] Which card will come when you pick from fair deck of 52 cards [iv] Output on tossing a coin	All [i], [ii], [iii], [iv]	Correct	None of these	Incorrect	[ii] is not uncertain knowledge	Incorrect	Only [i] and [iii] are uncertain knowledge	Incorrect
MC	(CO3) The collection of restrictions which an agent cannot violate while solving a problem are termed as	Variables	Incorrect	Constraints	Correct	Domains	Incorrect	Values	Incorrect

MC	(CO2) One of the following functions is used to check the feasibility of game tree. Name the function	Evaluation function	Correct	Transposition	Incorrect	Alpha Beta Pruning	Incorrect	All the above	Incorrect
MC	(CO4) In Machine Learning which of the following factors does not affect the performance of the learning system	Training scenario	Incorrect	Representation Scheme	Incorrect	Good Data Structures	Correct	Typeee of Feedback	Incorrect
MC	(CO3) How does a knowledge-based agent work	It works with general knowledge and infers the current state and accordingly takes actions.	Incorrect	It uses current percepts and infers the undiscovered aspects of current state and then takes an action	Incorrect	It combines general knowledge with current percepts, infers undiscovered aspects of current state and then selects actions	Correct	None of these indicate how a knowledge based agents work	Incorrect
MC	(CO4) Decision trees can be used in which of the following conditions:	Attributes are both numeric and nominal	Incorrect	Target function takes on a discrete number of values.	Incorrect	Data may have errors	Incorrect	All of these	Correct
MC	(CO3) Which of the following term you will use to	Heuristic	Correct	Value based	Incorrect	Critical	Incorrect	Analytical	Incorrect

	describe judgement and common sense in problem solving								
MC	(CO2) When can an algorithm be called Admissible	Not guaranteed to return an optimal solution when one exist	Incorrect	It is guaranteed to return an optimal solution when one exists	Correct	It returns more solutions, but not an optimal one	Incorrect	It guarantees to return more optimal solutions	Incorrect
MC	(CO2) In case of forward chaining, how do you think, redundant rule-matching attempts, can be stopped	Decremental forward chaining	Incorrect	Incremental forward chaining	Correct	Data complexity	Incorrect	None of the mentioned	Incorrect
MC	(CO4) Which is one of the key advantages of the Naïve baye's classifer	It is not good at learning interactions between features	Incorrect	It uses less training data	Incorrect	It is faster	Incorrect	All the above	Correct
MC	(CO3)Translate the following statement into FOL."For every x, if x is a music student, then x has a musical instrument"	∀ x PhD(x) -> Master(x)	Correct	∃ x PhD(x) -> Master(x)	Incorrect	A is true, B is true	Incorrect	A is false, B is false	Incorrect
MC	(CO4)In a typical expert system what is role of an	It constructs a diagnostic model supporting diagnosis	Incorrect	It speeds up the process of debugging	Incorrect	Facilitates to understand the reason	Incorrect	Explains not only the reasoning but also	Correct

	explanation sub system:					process followed by the system		facilitates debugging process		
MC	(CO3) While drawing a resolution tree, what is the sequence of steps followed	Converting statement to FOPL to Conjunctive Normal Form followed by resolution and then drawing graph tree	Correct	Breaking compound FOPL statements to atomic statements, then drawing a graph tree	Incorrect	Conjunctive Normal Forms and Disjunctive Normal Forms are alternatively used	Incorrect	None of the above.	Incorrect
MC	(CO4) One of the following statements is not true, regarding regression	It is used for prediction	Incorrect	It relates the inputs to the outputs	Incorrect	It is used for interpretation	Incorrect	Helps to discover causal relationships	Correct
MC	(CO4) Which statement is false	Regression fits the data	Incorrect	Classification separates the data	Incorrect	Support vector machines is supervised method, mostly used for classification	Incorrect	In unsupervised learning, the model learns from labeled data set	Correct

Section B

SR   (CO4) With one example each differentiate between Inductive, Abductive and Deductive Machine Learning

SR   (CO3)Where and why would the following knowledge representation methods can be used? (a).Case based and (b). Rule-based system

SR   (CO4) Discuss the stages of building a machine learning model. Provide one line description of each stage

SR   (CO4) Compare symbolic vs Statistical learning approach

SR   (CO2)If you were to use hill climbing for a vehicle routing problem, discuss the steps followed ? what are typical problems of hill climbing

Section C

ESS

This question has two parts: (a) and (b). Both are compulsary;   (CO4)(a). Taking any problem statement of your choice and a technique of your choice, discuss how to devleop a classifier using Machine Learning? (CO4) (b). Recommender engines in e-commerce websites use Machine Learning? If you were given task to code such engine, which techniques and steps you would use and why so? Give your reasons