Semester IV (B.Tech)

Er. No. 2018308
Academic Year: 2021-22

Jaypee University of Engineering & Technology, Guna
T-3 (Even Semester 2022)
14B11CI711–Artificial Intelligence & Applications

Maximum Duration: 2 Hours

Maximum Marks: 35

Notes:
1. This question paper has four questions.
2. Use of calculator is permitted.
3. Do not write anything on question paper (Except your Er. No.).
4. Answer the questions in serial order.

Marks

Q1. For two person game between A and B where P1, P2 and Q1, Q2 are the number of **[07]** times the options that may be used and their equations are:
$U \leq 3P1 + P2$ & $U \leq -2P1 + 2P2$ then

   I.   Is there a saddle point?
   II.   Calculate the values of : P1, P2, Q1, Q2.
   III.   Calculate the values of : A's payoff and B' payoff.

Q2. Bob and Alice is accomplice in a crime and their punishments are as mentioned in the **[07]** matrix given below in Fig1. What is the right pure strategy for Alice or Bob assuming both want to maximize their own expected utility strictly in the light of Prisoner's Dilemma Strategy?

	Bob: testify	Bob: refuse
Alice: testify	A = -5, B = -5	A = 0, B = -10
Alice: refuse	A = -10, B = 0	A = -1, B = -1

Figure 1

Q3. In cases where knowledge exists, but the process for using it takes too long or is **[07]** expensive to scale. Such is often the case with knowledge developed by financial advisers. Which areas of artificial intelligence may be applied to solve the problem and why. Draw suitable diagram for the same.

Q4. A training data set has been provided in fig2 for deciding if the weather is amenable to [07] play Golf or Baseball. For partitioning the continuous attribute values to make them discrete, the following key has been mentioned below for your use. Calculate all the Entropy values for the attributes "Outlook" & "Wind".

Temperature: Hot (H) 80 to 85, Medium (M) 70 to 75, Cold (C) 64 to 69.
Humidity: High (H) 81 to 96, Normal (N) 65 to 80.
Class: Yes (Y) play, No (N) no play

Day	Outlook	Temp	Humidity	wind	Play
1	sunny	85	85	week	no
2	sunny	80	90	strong	no
3	cloudy	83	78	week	yes
4	rainy	70	96	week	yes
5	rainy	68	80	week	yes
6	rainy	65	70	strong	no
7	cloudy	64	65	strong	yes
8	sunny	72	95	week	no
9	sunny	69	70	week	yes
10	rainy	75	80	week	yes
11	sunny	75	70	strong	yes
12	cloudy	72	90	strong	yes
13	cloudy	81	75	week	yes
14	rainy	71	85	strong	no

Figure 2

Q5. Write the formula for computing the probability of a sentence using chain rule. What are [07] bigrams and if it is a first-order Markov model then what is the expression for computing the probability of a sentence? An experimental corpus and its corresponding Bigram table is provided. Corpus - (eos) You book a flight (eos) I read a book (eos) You read (eos)Calculate P((eos) you read a book (eos))

	(eos)	you	book	a	flight	I	read
(eos)	0	0.33	0	0	0	0.25	0
you	0	0	0.5	0	0	0	0.5
book	0.5	0	0	0.5	0	0	0
a	0	0	0.5	0	0.5	0	0
flight	1	0	0	0	0	0	0
I	0	0	0	0	0	0	1
read	0.5	0	0	0.5	0	0	0

Figure 3: Bigram Table