Roll	Number:		
NOII	Nullibel.		

Thapar Institute of Engineering & Technology, Patiala

Department of Computer Science and Engineering

BE	Course Code: UCS411
	Course Name: Artificial Intelligence
March 1, 2023	Duration 5:30-8:30pm
Time: 3 Hours, M. Marks: 100	Name Of Faculty: Dr. Swati Kumari

Note: All questions are compulsory. Attempt question in sequence.

Q1	For the search space shown below, find the optimal path from S to G using uniform	15(8+7)
	cost search algorithm. Also discuss the performance evaluation of UCS algorithm.	
Q2	Discuss about the performance evaluation and limitations of DFS algorithm with	15(9+6)
00	example. Also state the difference between DFS and DFS-ID algorithm	42/4-2-5\
Q3	 A) State the difference between independent and mutually exclusive event? B) Discuss the concept of replacement about the event. C) Let R be raining and C be cloudy. The probability of raining is 0.0001, probability of cloudy is 0.1 and probability of cloudy given raining is 0.8. Find what is the probability of raining given cloudy is. 	12(4+3+5)
Q4	A) Identify the type of data (Nominal/Ordinal/Discrete/Continuous)? a) Number of computers in each department b) Names of car brands c) Daily wind speed d) Names of month B) What is the role of training and testing data? C) Briefly discuss about the tasks of supervised learning with example.	13(4+4+5)
Q5	Consider the following dataset and use the K-Nearest Neighbor (KNN) to compute the weight of the test instance given in the dataset (set k=3, distance=Euclidean).	10

ne following of licome Hight Hight Medium	Instance ection mea	nd the ro Credit	45 26 4 30 5 34 5 40 5 40 5 40 5 40 5 40 5 40	e attribute of	the decision	20(8+12
2 3 4 5 6 7 8 9 10 Test attribute selections following of the following of	data and fi Student No	5.11 5.6 5.9 4.8 5.8 5.3 5.8 5.5 5.6 5.5 sures use	26 4 30 5 34 5 40 7 36 6 19 4 28 6 23 4 32 5 32 5 32 5 32 5 34 5 32 5 32 5 32 5 32 5 32 5 32 5 32 5 32	47 55 59 72 60 40 60 45 58 Weight? e ID3 to const	the decision	20(8+12
3 4 5 6 7 8 9 10 Test extribute selections of the following of the followi	data and fi Student No	5.6 5.9 4.8 5.8 5.3 5.8 5.5 5.6 5.5 sures use	30 ! 34 ! 40 : 36 ! 19 ! 4 ! 28 ! 19 ! 4 ! 32 ! 33 ! 32 ! 38 ! 38 ! 38 ! 38 ! 38	55 59 72 60 40 60 45 58 Weight? e ID3 to const	the decision	20(8+1)
4 5 6 7 8 9 10 Test attribute selections following of the	data and fi Student No	5.9 4.8 5.8 5.3 5.8 5.5 5.6 5.5 sures use	34	59 72 60 40 60 45 58 Weight? e ID3 to const	the decision	20(8+1)
5 6 7 8 9 10 Test attribute selections following of the f	data and fi Student No	4.8 5.8 5.8 5.5 5.6 5.5 sures use	40 36 6 19 4 28 6 23 4 32 38 2 4 38 2 4 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	72 60 40 60 45 58 Weight? e ID3 to const	the decision	20(8+12
6 7 8 9 10 Test extribute selections of the following of	data and fi Student No	5.8 5.8 5.5 5.6 5.5 sures use	36 (19 4 28 (19 4 23 4 4 23 4 4 24 24 24 24 24 24 24 24 24 24 24 24	60 40 60 45 58 Weight? e ID3 to const	the decision	20(8+1)
7 8 9 10 Test attribute selections following of the follo	data and fi Student No	5.3 5.8 5.5 5.6 5.5 sures use	19 4 28 6 23 4 32 5 38 9 ed in the	40 60 45 58 Weight? e ID3 to const	the decision	20(8+1)
8 9 10 Test attribute selections following of the followi	data and fi Student No	5.8 5.5 5.6 5.5 sures use	28 (23 / 43 / 32 / 38 / 24 in the	60 45 58 Weight? e ID3 to const	the decision	20(8+1)
9 10 Test attribute selections following of the following	data and fi Student No	5.5 5.6 5.5 sures use nd the ro	23 4 32 5 38 7 ed in the	45 58 Weight? e ID3 to const	the decision	20(8+1)
Income Hight Hight Meditire	data and fi Student No	5.6 5.5 sures use nd the ro	32 38 sed in the	Weight? ID3 to const e attribute of	the decision	20(8+12
Test attribute sele ne following of Income Hight Hight Hight Meditim	data and fi Student No	5.5 sures use nd the ro	38 1 ed in the	Weight? ID3 to const e attribute of Buys_c	the decision	20(8+12
ne following of licome Hight Hight Medium	data and fi Student No	nd the ro	ed in the	e ID3 to const	the decision	20(8+12
Income Hight Hight Medium	Student No	nd the ro Credit	ot node	e attribute of Buys_c	the decision	20(8+1)
Income Hight Hight Hight Medium	Student No	Credit Fair		Buys_c		
Hight Hight Hight Medium	No No	Fair		MALINE STREET,	I DESCRIPTION OF THE PROPERTY OF THE	
Hight Hight Medium	No	E SE		WHEN THE PROPERTY OF THE PERSON NAMED IN COLUMN 1		
		- DX(5,2)	lent			
	No	Fair		Yes		
	No	Fair		Ves		
	Yes	Fair		Yes		
	Yes	Excel	(ent	No		
	Yes	Excel		Ves		
	No	Fair				
	Yes	Fair		Ves	WELL WATER	
			lent			
	No					
				Yes	企业 业务	
	Na		lent	No.		
	Medium Medium Medium High Medium	Medium Yes Medium Yes Medium No High Yes Medium Na	Medium Yes Fair Medium Yes Excel Medium No Excel High Yes Fair Medium No Excel	Medium Yes Fair Medium Yes Excellent Medium No Excellent High Yes Fair Medium No Excellent	Medium Yes Fair Yes Medium Yes Excellent Yes Medium No Excellent Yes High Yes Fair Yes Medium No Excellent No	Medium Yes Fair Yes Medium Yes Excellent Yes Medium No Excellent Yes High Yes Fair Yes

.