## Code No.: 14267 N/O

## VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

## B.E. IV-Semester Main & Backlog Examinations, July-2023

## Machine Learning

(Common to CSE & AIML)

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A  $(10 \times 2 = 20 \text{ Marks})$ 

Q. No.			Stem of	the questi	on		M	L	CO	PO
1.	Consider set of more general	of hypothes than the oth	ses H1 and	l H2, Find nesis.	among th	em which is	2	1	1	1,2
	H1 = {"?", 'No									
	H2 = {'Warm	', 'Normal	','?', '+'}					1		
2.		oothesis wh			iven set	of samples using	2	3	1	1,2,3
	Day Outloo  D1 Sunny  D2 Sunny  D3 Overca  D4 Rain	y H y H ast H	erature lot lot lot ild	Humidity High High High High High	Wind Weak Strong Weak Weak	No No Yes Yes				
3.	Calculate the featurevector	is (x1, x2	$(x3) = (x^2 + x^2)$	(0.8, 0.6, 0.	4) and w	bias. The input	2	3	2	1,2,3
	[w1,w2,w3, b] activation fund	]=[0.2, 0.1]	, -0.3, 0.3	osj. Use b	mary Sign	moid function as				1
4.	[w1,w2,w3, b]	J = [0.2, 0.1]				moid function as	2	1	2	1,2
4.	activation fund	J = [0.2, 0.1]		ng examp	les:	moid function as	2	1	2	1,2
4.	activation fund	J=[0.2, 0.1] etion. following se	et of traini	ng examp	les:	moid function as	2	1	2	1,2
	[w1,w2,w3, b] activation fund Consider the formal (a) What is the respect to the target target to the target target to the target targe	Instance  Instan	Classification of this colon classification classif	ration and transfer of the control o	les:  T F F T T	g examples with	2	1	2	1,2
	[w1,w2,w3, b] activation fund Consider the formula (a) What is the	Instance  Instan	Classification of this colon classification classif	ration and transfer of the control o	les:  T F F T T		2	1	2	1,2
	[w1,w2,w3, b] activation fund Consider the formal (a) What is the respect to the target target to the target target to the target targe	Instance  Instan	Classification  Classification  of this colon classification classification	ration and Transfer of the control o	les:  T T F T T Of training	g examples with	2	3	2	
	[w1,w2,w3, b] activation fund Consider the formal (a) What is the respect to the target target to the target target to the target targe	Instance  Instan	Classification  Classification  of this colon classification classification	ration and transfer of the control o	les:  T T F T T Of training	g examples with	2	3	2	
	[w1,w2,w3, b] activation fund Consider the formal (a) What is the respect to the target target to the target target to the target targe	etion.  Instance  Instance  1 2 3 4 5 6  The entropy arget function arguments for the property of the propert	Classification of this conclassification classification $P(F \mid h_i)$	ng example cation $a_i$ True  True  For interest of the properties of the properti	les:  T  F  T  T  Of training	g examples with	2	3	3	
	[w1,w2,w3, b] activation fund Consider the formal (a) What is the respect to the target target to the target target to the target targe	$P(h_i \mid D)$	ct of traini  Classific  + + of this co ion classif  h1 throug $P(F \mid h_i)$	ng example cation $a_i$ True  True  Foollection (cication?)  h h5. $P(L \mid h_i)$ $0$	les:  T T F T Of training $P(R \mid h_i)$ 0	g examples with	2	3	3	
	[w1,w2,w3, b] activation fund Consider the formal (a) What is the respect to the target target to the target target to the target targe	= [0.2, 0.1] ction.  collowing set  Instance  1 2 3 4 5 6  ne entropy arget function arguments in the properties of	ct of traini  Classific  + + of this co ion classif  h1 throug $P(F \mid h_i)$ 1	ng example cation $a_i$ True	les:  T  F  F  T  Of training $P(R \mid h_i)$ 0	g examples with	2	3	3	

6.	Define Vannik Chamanil							
	related with no of trainingexa	(VC) di	mension. H	low VC dimension i	s 2	2	3	1,2
7.	Write the steps to find a M	laximun	n A Posteri	ior (MAP) hypothesi	s 2	2	4	
8.	using Brute-force method.			, my pourest	3 2	2	4	1,2
0.	R 73 100		90 R	00	2	3	4	1,2,4
	a <sub>rigi</sub>	he	.   81					
	Initial state: s <sub>1</sub>	L	Next state:	<i>s</i> <sub>2</sub>				
	Find the Q(s1,aright)?							
9.	Consider a string before a cross	Ovion						
	s1 '= 111 <u>1010</u> 101 s2 '= 11101	110101			2	3	5	1,2,3
	Compute the offspring's after the	ne crosso	over					
10.	Find the output dimension of 228*228 and kenel size is 5*5	c 0-	AGG P	the input image is	2	3	5	1,2,4
	Part-B (	$5 \times 8 = 4$	0 Marke)					
11. a)	Explain the issues hat need machine learning algorithm.	to be c	onsidered v	while designing the	4	1	1	1,2
1								~,~
b)	Consider the training data in classattribute. In the table, the	the 😋	111111	le where Play is a	4	3	1	1,2,3
b)	Consider the training data in classattribute. In the table, the low) or "H" (for high), Sunny h Wind hasvalues "S' (for strovalues "Yes" or "No".	the cal Humidi na value ng or '	es "Y" (L. y	le where Play is a	4	3	1	1,2,3
b)	Consider the training data in classattribute. In the table, the low) or "H" (for high), Sunny h Wind hasvalues "S' (for strovalues "Yes" or "No".  Humidity Su	the cal Humidi las value ng) or '	'W" (for w	has values "L" (for res) or "N" (for no), reak), and Play has	4	3	1	1,2,3
b)	Consider the training data in classattribute. In the table, the low) or "H" (for high), Sunny h Wind hasvalues "S" (for strovalues "Yes" or "No".  Humidity Su L	the equal Humidian value and or '	w" (for w	has values "L" (for res) or "N" (for no), reak), and Play has	4	3	1	1,2,3
b)	Consider the training data in classattribute. In the table, the low) or "H" (for high), Sunny h Wind hasvalues "S' (for strovalues "Yes" or "No".  Humidity Su L H	the cal Humidi na value ng) or '	W'' (for w	has values "L" (for res) or "N" (for no), reak), and Play has  Play No Yes	4	3	1	1,2,3
b)	Consider the training data in classattribute. In the table, the low) or "H" (for high), Sunny h Wind hasvalues "S" (for strovalues "Yes" or "No".  Humidity Su L H H H	Humidi las value ng) or '  nny  N  N	Wind  Wind	has values "L" (for res) or "N" (for no), reak), and Play has  Play No Yes Yes	4	3	1	1,2,3
b)	Consider the training data in classattribute. In the table, the low) or "H" (for high), Sunny h Wind hasvalues "S" (for strovalues "Yes" or "No".    Humidity   Su   L   H   H   H   H   H   H   H   H   H	the cal Humidi na value ng) or '	Wind W S W	has values "L" (for res) or "N" (for no), reak), and Play has  Play No Yes Yes Yes Yes	4	3	1	1,2,3
b)	Consider the training data in classattribute. In the table, the low) or "H" (for high), Sunny h Wind hasvalues "S" (for strovalues "Yes" or "No".    Humidity   Su   L   H   H   H   H   L   L   L   L   L	Humidina value ng) or '	Wind S W S	le where Play is a has values "L" (for res) or "N" (for no), reak), and Play has  Play No Yes Yes Yes No	4	3	1	1,2,3
b)	Consider the training data in classattribute. In the table, the low) or "H" (for high), Sunny h Wind hasvalues "S" (for strovalues "Yes" or "No".    Humidity   Su   L   H   H   H   H   H   H   H   H   H	Humidina value ng) or '  nny  N  Y  N  Y  ne follow idate elin	Wind  Wind  W S  Wind  W S  W S  W S  W S  W S  W S  W S  W	Play No Yes Yes No widty=1, Sunny=N,	4	3	1	1,2,3

	Major	e following datase	Tie	Hired?					
	CS			NO NO					
	CS	programming	pretty	NO	3/1	The Control of			
	CS	programming	pretty	YES					
	CS	management	pretty	YES					
	business	management	ugly						
		programming	pretty	YES					
	business	programming	ugly	YES					
	business	management	pretty	NO					
	business	management	pretty	NO					
. a) 1	Illustrate Expecta	ation Maximizatio	n clustering a	lgorithm.		4	2	3	1,2
b)		Bayes n	et L: The lect R: The lect M: The lect	ture started by 10:35 turer arrives late ture concerns robots turer is Manuela		4	3	3	1,2,3
			S: It is sun					/	<i>i</i> ,
	P(s)=0.3	<b>s</b> )	(M)P	(M)=0.6		W. T. T.		/	
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_)=0.3	(R)			122		
	P(L ~M^S)=0.1 P(L ~M^~S)=0.2 Find the value of	T	~L)=0.8				11.		
	Find the value of	P(S^~M^L~F	-L)=0.8 R^T)?			4	2	4	1,2
	Find the value of Discuss the signif	P(S^~M^L~F	C^T)? weighted regr	ession.		4 4	2 3	4 4	1,2 1,2,3
a) I	Find the value of Discuss the significant	P(T)  P(S^~M^L~F)  ficance of locally  Height	C ^ T)? weighted regr	ession.  Weight		4	2 3	4	
a) I	Find the value of Discuss the signification of the value	P(T)  P(S^~M^L~F)  ficance of locally  Height  5	-L)=0.8  ( ^ T)?  weighted regr  Age  45	ression.  Weight 77		4 4	2 3	4 4	
. a) I	Find the value of Discuss the significant the Discuss the significant the Discussion the Discussion the Discuss the Significant the Discussion th	P(T)  P(S^~M^L~F)  ficance of locally  Height  5 5.11	-L)=0.8  R ^ T)?  weighted regr  Age  45  26	Weight 77 47		4 4	2 3	4 4	
. a) I	Find the value of Discuss the significant by the si	P(T)  P(S^~M^L~F)  ficance of locally  Height  5  5.11  5.6	Age 45 26 30	Weight 77 47 55		4 4	2 3	4 4	
. a) I	Find the value of Discuss the significant the value of 1 2 3 4	P(T)  TP (S ^ ~M ^ L ~F)  ficance of locally  Height 5 5.11 5.6 5.9	Age 45 26 30 34	Weight 77 47 55 59		4 4	2 3	4 4	
. a) I	Find the value of Discuss the signification of the value	P(T)  P(S^~M^L~F)  ficance of locally  Height  5  5.11  5.6  5.9  4.8	Age 45 26 30 34 40	Weight 77 47 55 59 72		4 4	2 3	4 4	
. a) I	Find the value of Discuss the significant	P(T)-  P(S^~M^L~F)  ficance of locally  Height  5  5.11  5.6  5.9  4.8  5.8	Age 45 26 30 34 40 36	Weight 77 47 55 59 72 60		4 4	2 3	4 4	
. a) I	P(L   ~M^~S)=0.2	P(S^~M^L~F)  FP(S^~M^L~F)  ficance of locally  Height 5 5.11 5.6 5.9 4.8 5.8 5.3	Age 45 26 30 34 40 36 19	Weight 77 47 55 59 72 60 40		4 4	2 3	4 4	
. a) I	P(L   ~M^~S)=0.2   Find the value of Discuss the significant	P(S^~M^L~F)  TP (S^~M^L~F)  ficance of locally  Height 5 5.11 5.6 5.9 4.8 5.8 5.3 5.8	Age 45 26 30 34 40 36 19 28	ression.  Weight 77 47 55 59 72 60 40 60		4 4	2 3	4 4	
. a) I	P(L   ~M^~S)=0.2	P(S ^ ~M ^ L ~F  ficance of locally  Height 5 5.11 5.6 5.9 4.8 5.8 5.3 5.8 5.5	Age 45 26 30 34 40 36 19 28 23	Weight 77 47 55 59 72 60 40 60 45		4 4	2 3	4 4	
a) I	P(L   ~M^~S)=0.2     Find the value of Discuss the significant   D	P(S ^ ~M ^ L ~F ficance of locally  Height  5 5.11 5.6 5.9 4.8 5.8 5.3 5.8 5.5 5.6	Age 45 26 30 34 40 36 19 28 23 32	ression.    Weight   77   47   55   59   72   60   40   60   45   58		4 4	2 3	4 4	
4. a) I b) C tl	Find the value of Discuss the significant of the value of Discuss the significant of the Discussion of the Disc	P(S ^ ~M ^ L ~F  ficance of locally  Height 5 5.11 5.6 5.9 4.8 5.8 5.3 5.8 5.5	Age  45 26 30 34 40 36 19 28 23 32 38 utes of 10 persing Simple Ki	weight 77 47 55 59 72 60 40 60 45 58 ? sons given about the series of th	ove. Find	4 4	2 3	4 4	

b)	What is Deep learning? Explain the Recurrent Neural Network (RNN) architecture and training steps involved while constructing RNN Model.	4	2	5	1,2
16. a)	What is an Inductive Bias? Explain the List then Eliminate Algorithm.	4	1	1	1,2
b)	What is Artificial Neural Network? Calculate the output where the threshold t=0.0 and take four combinations of inputs for x and y where bias=-1.	4	3	2	1,2,3
	1 0,				
	0 1,				
	0 0,				
	11.				
	$\begin{array}{c} -1 \\ W = 0.3 \\ \hline \\ W = 0.5 \end{array}$				
	W0.4				
17.	Answer any <i>two</i> of the following:				
a)	What is E -exhaustive? What are the true error and training error in version space? Give with an example.	4	1	3	1,2
b)	Explain the following Instance-based learning techniques.	4	2	4	1,2
c)	i. Case-based Reasoning ii. Radial basis networks  Consider the CNN Image below with filter values. Compute the output of convolution 1 with zero padding and stride 1.And mention the outcome after applying ReLu Function.	4	3	5	1,2,3
	Input Image Fitter				
	3 8 8 4 8 4 1 0 -1 1 0 -1 2 8 7 2 7 5 4 4 5 4				

M: Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	30%
iii)	Blooms Taxonomy Level – 3 & 4	50%

\*\*\*\*