Question Bank

Module 1

Q No	Question	CO	RBT
1	Distinguish between the terms, data, information, knowledge	CO1	L4
	and wisdom.		
2	Compare between supervised learning and unsupervised	CO1	L4
	learning.		
3	Compare between classification and regression.	CO1	L4
4	Differentiate between classification and cluster analysis by	CO1	L4
	considering suitable diagram.		
5	Explain machine learning process model with a neat diagram.	CO1	L2
6	Explain the different applications of machine learning.	CO1	L2
7	Explain machine learning in relation to other fields.	CO1	L2
8	Explain the challenges of machine learning?	CO1	L2
9	Compare between categorical data and numerical data.	CO1	L4
10	Compare between 4 types of data analytics.	CO1	L4
11	Compare between 3 types of data available in big data.	CO1	L4
12	Illustrate different types of 'bad data' by considering	CO1	L4
	appropriate example.		
13	Explain in detail about 6V's of big data.	CO1	L2
14	Apply various binning techniques for the following set: $S = \{12, $	CO1	L3
	14, 19, 22, 24, 26, 28, 31, 34} and show the result.		
15	Apply Min-Max procedure for the following set $V = \{88, 90,$	CO1	L3
	92, 94} and map the marks to a new range $0-1$.		
16	For a given univariate dataset S={5,10,15,20,25,30} of marks.	CO1	L3
	Find mean, median, mode, standard deviation and variance.		
17	For a given univariate dataset $S = \{5,10,15,20,25,30\}$ of marks.	CO1	L3
	Find five-point summary and plot the box chart.		
18	Explain 4 layer architecture of big data analysis framework.	CO1	L2

19	For patient's age list {12,14,19,22,24,26,28,31,34}. Find the	CO1	L3
	IQR		
20	Compare between bar chart and histogram with appropriate	CO1	L4
	diagram		

Module 2

Q	Question	CO	RB
Ν			Т
0			
1	Solve the following set of equations using Gaussian elimination method.	CO	L3
	$2x_1+4x_2=6$ and $4x_1+3x_2=7$	2	
2	Find out the LU decomposition of the following matrix	CO	L3
	$A = \begin{bmatrix} 1 & 2 & 4 \\ 3 & 3 & 2 \end{bmatrix}$	2	
3	Explain briefly about different continuous and discrete probability	CO	L2
	distributions.	2	
4	Find covariance and correlation coefficients for the following two sets of	CO	L3
	data:	2	
	X: 1 2 6 12		
	Y: 8 12 18 22		
5	Explain about feature engineering and dimensionality reduction techniques.	CO	L2
		2	
6	Explain principal component analysis.	СО	L2
		2	
7	Apply the PCA for the data points $\begin{bmatrix} 2 \\ 6 \end{bmatrix}$ and $\begin{bmatrix} 1 \\ 7 \end{bmatrix}$ and find the transformed	СО	L3
	data Again apply the inverse and prove that PCA works	2	
0	Eind SVD of the matrix	CO	1.2
ð			
	$A = \begin{bmatrix} 1 & 2 \\ 4 & 9 \end{bmatrix}$	2	

9	Explain	the steps involve	d in the design	n of a lea	arning syste	em.		CO	L2
								2	
10	Outline t	the different steps	s of Find-S alg	gorithm.				CO	L2
								2	
11	Outline	the different steps	s of Candidate	e elimina	ation algori	thm.		CO	L2
								2	
12	Outline	the different steps	s of List then o	eliminat	e algorithm	l .		CO	L2
								2	
13	Outline t	the steps of K-fol	d cross valida	tion.				CO	L2
								2	
14	Outline	the steps of Leave	e one out Cros	ss valida	tion (LOO	C)		CO	L2
								2	
15	Compare	e Find-S and ca	ndidate elimi	nation a	algorithm a	and highli	ight the	CO	L4
	limitatio	ns of Find-S algo	orithm?					2	
16	Explain	about different m	etrics that car	n be deri	ved from c	ontingenc	y table.	CO	L2
								2	
17	Apply Fi	ind S algorithm fo	or the following	ng traini	ng dataset	and find	the final	СО	L3
	CGP	Interactivenes	Practical	Skill	Logical	Interes	Offe	2	
	A	s	Knowledg	S	Thinkin	t	r		
			e		g				
	>=9	Yes	Excellent	Good	Fast	Yes	Yes		
	>=9	Yes	Good	Good	Fast	Yes	Yes		
	>=8	No	Good	Good	Fast	No	No		
10	>=9	Yes	Good	Good	Slow	No	Yes		1.0
18	Apply C	andidate elimina	ition algorithm	n for th	e following	g training	dataset	CO	L3
	and find	the final version	space.	1	ſ	1		2	
	CGP	Interactivenes	Practical	Skill	Logical	Interes	Offe		
	A	S	Knowledg	S	Thinkin	t	r		
		37	e E		g E	NZ.	NZ		
	>=9	r es Vec	Excellent	Good	Fast	Yes	Yes		
	>=9	I es No	Good	Good	Fast Foot	i es	1 es		
	>-0	NU Ves	Good	Good	rast Slow	No	INU Ves		
	/-7	1 62	0000	0000	WOLG		102	1	

19	Explain heatmap and pairplot along with diagram	CO	L2
		2	

Module 3

Q No			Quest	ion		CO	RBT
1	Explain	k-NN alg	orithm by con	nsidering paramet	ers such as	CO3	L2
	input, o	utput, predi	iction and steps	5.			
2	Explain	weighted	k-NN algorith	m by considering	parameters	CO3	L2
	such as	input, outp	ut, prediction a	and steps.			
3	Conside	er the stude	ent performand	ce training datase	t of 8 data	CO3	L3
	instance	es shown	in following	Table which de	escribes the		
	perform	ance of inc	lividual studen	ts in a course and	their CGPA		
	obtaine	d in the pre	evious semeste	rs. The independe	nt attributes		
	are CG	PA, Asses	sment and Pro-	oject. The target	variable is		
	'Result	' which is a	discrete valued	l variable that take	s two values		
	'Pass' c	or 'Fail'. Ba	used on the perf	formance of a stud	ent, classify		
	whether	r a student v	will pass or fail	in that course.			
	S No	CGPA	Assessment	Project	Result		
				Submitted			
	1	9.2	85	8	Pass		
	2	8	80	7	Pass		
	3	8.5	81	8	Pass		
	4	6	45	5	Fail		
	5	6.5	50	4	Fail		
	6	8.2	72	7	Pass		
	7	5.8	38	5	Fail		
	8	8.9	91	9	Pass		
			1		<u> </u>		

	Apply k	k-NN algor	ithm to determ	ine the r	esult. Tes	t instance is		
	(6.1,40,	5)						
4	Conside	er the stud	ent performan	ce traini	ng datase	t of 8 data	CO3	L3
	instances shown in following Table which describes the							
	perform	ance of inc	lividual studen	ts in a co	urse and	their CGPA		
	obtaine	d in the pre	evious semeste	rs. The i	ndepende	nt attributes		
	are CGPA, Assessment and Project. The target variable is							
	'Result	' which is a	discrete valued	l variable	that take	s two values		
	'Pass' c	or 'Fail'. Ba	sed on the perf	formance	of a stud	ent, classify		
	whether	a student v	will pass or fail	in that c	ourse.			
	S No	CGPA	Assessment	Pro	ject	Result		
				Subr	nitted			
	1	9.2	85		8	Pass		
	2	8	80	,	7	Pass		
	3	8.5	81		8	Pass		
	4	6	45		5	Fail		
	5	6.5	50		4	Fail		
	6	8.2	72	,	7	Pass		
	7	5.8	38		5	Fail		
	8	8.9	91		9	Pass		
	Apply v	veighted k-	NN algorithm t	to determ	ine the re	sult. Test		
	instance	e is (7.6,60,	8)					
5	Outline	the steps of	f nearest centro	oid classi	fier algori	thm.	CO3	L2
6	Classify	v test instan	ce (6,5) into a	ppropriat	e class us	sing Nearest	CO3	L4
	centroic	$\frac{1 \text{ classifier.}}{\mathbf{X}}$	Use the follow	ing samp	ole data .	lass		
		3	1		0	A		
		5	2			А		
		4	3			A		
		/ 6	6			в R		
		8	5			B		
7	Explain	about loca	lly weighted re	gression		1	CO3	L2

Machine Learning BCS602

S.No	Salary(in lakhs)	Expenditure (in thousands)	
1	5	25	
2	1	5	
3	2	7	
4	1	8	