Apr-25

P-3

SCORING INDICATORS

COURSE NAME: MATHEMATICS FOR ML

COURSE CODE: 4341 **QID: 2102250062**

Q No	Scoring Indicators	Split score	Sub Total	Total score
	PART A			9
I.1	Definition of linearly independent vectors.	1	1	
I.2	Any example of a vector space.	1	1	
I.3	13	1	1	
I.4	$\frac{\partial z}{\partial x} = 2x+2y$ $\frac{\partial z}{\partial y} = 2x$	½ ½	1	
I.5	Definition of limit.	1	1	
I.6	Definition of simple event.	1	1	
I.7	Yes $\sum f(x) = 1$	½ ½	1	
I.8	Definition of confidence interval.	1	1	
I.9	Definition of Type-II error	1	1	

	PART B.			24
II.1	For reducing the matrix Rank = 3	2 1	3	
II.2	Characteristic equation is x^2-7x+6=0. Eigen values are 1 and 6.	2 1	3	
II.3	For substituting values Limit = $\frac{1}{2}$	2 1	3	
II.4	$f_x = 3x^2y^2z^4+2y$ $f_{xx} = 6xy^2z^4$ $f_{xz} = 12x^2y^2z^3$	1 1 1	3	

II.5	P(A/B)=1/2 P(B/A)=1/5	1.5 1.5	3	
II.6	1). k =0.2 2). P(1≤X≤3) = 0.7 3). P(X>3) = 0.2	1 1 1	3	
II.7	$\bar{X}$ =23 Mean deviation about mean= $\sum \frac{f\|x-\bar{X}\|}{N}$ = 8.4	1 2	3	
II.8	P(X)= $3C_x(.4)^x(.6)^{3-x}$ P(X=0) = $(.6)^3$	2 1	3	
II.9	$\bar{x}$=33 SD=7.89	1 2	3	
II.10	f_x = 0 , x =2 f_y=0 , y =2 (2,2) is the critical point	1 1 1	3	

	PART C			42
III	Characteristic equation- x^2-4x-5=0 Eigen values = 5,-1 Eigen vector corresponding to -1= (-2,1) Eigen vector corresponding to 5= (1,1)	2 1 2 2	7	
IV	Elimination process x =2, y = 1, z =0	5 2	7	
V	f_x = 8x-8y^4 $f_y = -32xy^3 + 35y^4$, $f_{xx} = 8$ $f_{yy} = -96xy^2 + 140y^3$.	1 2+2 2	7	
VI	1). Definition of continuity 2). $\lim_{(x,y)\to(0,0)} \frac{xy}{x^2+y^2}$ does not exist. The function is not continuous.	3 2 2	7	

VII	P(A)= 3/6, P(B)=3/6, P(A∩B)=2/6 P(A/B)= 2/3 P(B/A)= 2/3	3 2 2	7	
VIII	np=4, npq=2, q=1/2, p=1/2, n=8 1). P(X=2)=7/64 2). P(x<2)=9/256 3). P(x>6)=9/256 4). P(at least 2)=247/256	2 1 1 1 2	7	
IX	A_i= { message is from account i} for i=1,2,3, B={message is spam} $P(A_1) = .70, P(A_2) = .20, P(A_3) = .10$ $P(B/A_1) = .01, P(B/A_2) = .02, P(B/A_3) = .05$ P(B)= $P(B/A_1)P(A_1) + P(B/A_2)\,P(A_2) + P(B/A_3)\,P(A_3) = .016.$	2 2 3	7	
X	P(X)= $\frac{e^{-1}1^x}{x!}$ 1). P(X=0)= .36788 2). P(X=1)= .36788 3). P(X≥2)= 1-P(X<2)=.2642	1 2 2 2	7	
XI	Mean= 29.6 Median= 24.5 Mode= 3Median-2Mean = 19.7	2 3 2	7	
XII	H_0: μ = 400 , H_1: μ ≠ 400 Z= $\frac{\bar{X}-\mu}{\frac{\sigma}{\sqrt{n}}}$ = -42.42 Z critical values (-1.96,1.96) -42.42 does not lies between -1.96 and 1.96 Reject null hypothesis.	1 2 1 2 1	7	
XIII	Q_1= 50.2 Q_3= 74.67 QD= 12.23 Quartile coefficient of dispersion= Q_3-Q_1/$Q_3 + Q_1$ = .196	2 2 1.5 1.5	7	
XIV	$\bar{X}$-z($\frac{\sigma}{\sqrt{n}}$)<μ<$\bar{X}$ +z($\frac{\sigma}{\sqrt{n}}$) 23.2-1.96($\frac{2}{\sqrt{50}}$)<μ<23.2 + 1.96($\frac{2}{\sqrt{50}}$) 22.6<μ<23.8	3 2 2	7	

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