ALLAMA IQBAL OPEN UNIVERSITY
Semester Terminal Exam Autumn 2020

Program /level:	BA/B.Com/Associate Degree Program	Maximum Marks	100
Title /Course Code	**Business Math (1429)**	Pass marks	40/50

Instructions for Exams:

1. Attempt All Questions.
2. Write answers in your own words and avoid copying from an internet source or any book.
3. Be precise, avoid unnecessary details, answer to each question must be between 600-800 words.
4. Students can attempt paper on any white page. Mention Roll No. , Name & Signature on every page. Attach undertaking with each course code.
5. Students are advised to post their answer sheets to their tutor well in time so the same must reach on or before **20-06-2021.**
6. Submissions after due date & time will not be entertained.

Q. No.	Questions	Marks
1	(a) The probability that a vehicle entering the Luray Caverns has Canadian license plates is 0.12; the probability that it is a camper is 0.28; and the probability that it is a camper with Canadian license plates is 0.09. What is the probability that **(i)** A camper entering the Luray Caverns has Canadian license Plates. **(ii)** A vehicle with Canadian license plates entering the Luray Caverns is a camper. **(iii)** A vehicle entering the Luray Caverns does not have Canadian plates or is not a camper. (b) Sketch the plane representing $-2x_2 = -8$ (c) Given the points (-4,8) and (6, -12): **(i)** Determine the midpoint of the line segment connecting the points. **(ii)** Determine the distance separating the two points.	15+8+10=33
2	(a) An economist believes there is a linear relationship between the market price of a particular commodity and the number of units suppliers of the commodity are willing to bring to the marketplace. Two sample observations indicate that when the price equals \$15 per unit, the weekly supply equals 30,000 units; and when the price equals \$20 per unit, the weekly supply equals 48,000 units.	18+15=33

	(i) If price per unit, p, is plotted on the horizontal axis and the quantity supplied q is plotted on the vertical axis, determine the slope-intercept form of the equation of the line which passes through these two points. (ii) Interpret the slope of the equation in this application. (iii) Predict the weekly supply if the market price equals \$25 per unit. (b) Global Insurance Company has four salespeople working in Hill town. The number of policies sold during the last month is given in matrix A, as $A=\begin{matrix} \\ \\ \\ \\ \end{matrix}\begin{matrix} O'Malley & Caponi & Steomberg & Deutsch \\ \end{matrix}$ $\begin{bmatrix} 8 & 7 & 6 & 8 \\ 6 & 9 & 11 & 5 \\ 4 & 3 & 2 & 0 \\ 0 & 2 & 1 & 3 \end{bmatrix}\begin{matrix} Automobile \\ Life \\ Health \\ Homeowners \end{matrix}$ i) Let S= [1 1 1 1]. Find SA and interpret its elements. ii) Find AS^t and interpret its elements.	
3	(a) Find $f_x(x,y)$, $f_y(x,y)$, $f_x(1,3)$, and $f_y(-2,4)$ for the given function. If $z = f(x,y) = 3x^3y^2 - x^2y^3 + 4x + 9$ (b) A firm estimates that it can sell Q units of its product with an advertising expenditure of x thousand dollars where $Q = Q(x) = -x^2 + 600x + 25$ i) Over what level of advertising expenditure is the number of units of product sold increasing? ii) Over what level of advertising expenditure is the number of units of product sold decreasing? c) Determine the location and values of the absolute maximum and absolute minimum for the given function: $f(x) = (-x+2)^4, \ where \ 0 \le x \le 3$	12+15+7=34