



ALLAMA IQBAL OPEN UNIVERSITY
Semester Terminal Exam Autumn 2020

Program /level:	BS/Graduation	Maximum Marks	100
Title /Course Code	Pre-Calculus (4431)	Pass marks	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 are advised to upload their answer sheets/solutions on LMS portal as soon as they complete their answers and not to wait for 8:30 PM.
5. Submissions after due date & time will not be entertained. Attach undertaking with each course code which were allowed to attempt in Urdu.
6. If plagiarism found, Student may be declared fail.

Q. No.	Questions	Marks
1	(a) Let U =The set of the English alphabet, $A = \{x x \text{ is a vowel}\}$, $B = \{y y \text{ is a consonant}\}$ Verify De Morgan's Law for these sets. (b) Find the inverse of the given relation. Tell whether the relation and its inverse is a function or not:- $\{(1,3), (2,5), (3,7), (4,9), (5,11)\}$ (c) Show that AA^t and A^tA are symmetric for any matrix of order 2×3 .	12+11+10=33
2	(a) Show that the roots of $x^2 + (mx + c)^2 = a^2$ will be equal, if $c^2 = a^2(1 + m^2)$ (b) If an automobile depreciates in values 5% every year, at the end of 4 years what is the value of the automobile purchased for Rs. 12,000? (c) Solve graphically: i) $\sin x = \cos x \quad x \in [0, \pi]$	11+10+12=33
3	(a) Evaluate the definite integral: i) $\int_{-1}^5 x - 3 dx$ (b) Find the area between the x-axis and the curve $y = \sin 2x$ from $x = 0$ to $x = \frac{\pi}{3}$ c) Discuss the maximum and minimum values of the function defined as: $f(x) = \sin x + \cos x$ occurring in the interval $[0, 2\pi]$.	8+12+14=34