



ALLAMA IQBAL OPEN UNIVERSITY  
Semester Terminal Exam Autumn 2020

Program /level:	B. Ed	Maximum Marks	100
Title /Course Code	Mathematics-II (6447)	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
Q.1a b. c.	State Idempotent, Nilpotent, Periodic and Hermitian matrices with the help of examples. Without expansion show that $\begin{vmatrix} 0 & a & b \\ -a & 0 & c \\ -b & -c & 0 \end{vmatrix} = 0$ Solve the following system of equations using Gauss Elimination method. $2x_1 + 3x_2 - x_3 = 3, x_1 + x_2 + x_3 = 4, 3x_1 + 4x_2 - 3x_3 = 1$	(15+8+8)
Q.2a b. c.	What is abelian group and how it is different from a group. Suppose G is abelian group show that $(xy)^n = x^n y^n$ State and prove the Lagrange's Theorem. Prove that $\cos 5\theta = 16\cos^5\theta - 20\cos^3\theta + 5\cos\theta$	(14+10+9)
Q.3a b. c.	Separate into real and imaginary parts of $\cot^{-1}(x + iy)$ Define sequence properties and Find the next three terms of the sequence and the general term is 3, 12, 27, 48, ... Define the basic comparison test and use it to investigate the convergence or divergence of series $\sum_{n=1}^{\infty} \frac{3}{5+n^2}$	(10+14+10)