**ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD**

**(Department of Mathematics and Statistics)**

**WARNING**

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE’S OWN WILL BE PENALIZED AS DEFINED IN “AIOU PLAGIARISM POLICY”.**

**Course: Mathematics-I (1307) Semester: Spring, 2011**

**Level: F.A. Total Marks: 100**

**Pass Marks: 40**

**ASSIGNMENT No. 1**

**(Units: 1–4)**

**Note: Attempt all questions. All questions carry equal marks.**

Q. 1 (a) Verify De Morgan’s Laws by using Venn diagrams and also using suitable sets.

 (b) Define with examples the following properties of real numbers.

 i. Addition Laws ii. Multiplication Laws

 iii. Multiplication Addition Laws iv. Properties of Equality

 v. Order Properties

Q. 2 (a) State and prove five different properties of the modules of the complex numbers.

 (b) Show that the set of cube roots of unity possess is group w.r.t multiplication?

Q. 3 (a) If  and . Show that .

 (b) A ball in dropped from height 10 m. The distance traveled by the ball each time it hits the ground is ½ of the previous height. Find the total distance traveled by the ball.

Q. 4 (a) Prove that all non-singular matrices over the real field form a non-abelian group under matrix multiplication.

 (b) State the properties of determinants with examples.

Q. 5 (a) Determine the criterion for a system of (up to 3) linear equations with three variables to be consistent and inconsistent with examples.

 (b) Find the value of for which the following system does not possess a unique solution. Also solve the system for the value of.



**ASSIGNMENT No. 2**

**(Units: 4–8)**

Q. 1 (a) A man deposits in a bank Rs. 1000 in first month. After first month 10% of original amount increases every month. Find the amount after 10th month.

 (b) If are the roots of the general quadratic equation. Then form the equations whose roots are

 i.  ii. 

 iii.  iv. 

 v.  vi. 

 vii.  viii. 

Q. 2 (a) Prove by mathematical induction that for any integer if x is a positive integer.

 (b) Discuss with examples the different cases of partial fraction resolution.

Q. 3 (a) Show that the roots of equation

  are real.

 b) Find n A.Ms, G.Ms and H.Ms between two numbers a and b.

Q. 4 (a) Define the Permutation and Combinations and derive the formulae for permutations and combinations of n different objects taken at a time.

 (b) Define the following with examples

 i. Probability ii. Sample Space and Events

 iii. Addition of probabilities iv. Multiplication of probabilities

Q. 5 (a) Find the general term in the expansion of when 

 (b) State and prove binomial theorem for any positive integer n.

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