INSTITUTE OF DISTANCE AND OPEN LEARNING
Gauhati University
H O M E A S S I G N M E N T
M. A./M.Sc. Mathematics
3rd Semester
(Session- 2013-2014)

GUIDELINES FOR SUBMISSION OF HOME ASSIGNMENTS:

1. Write your **NAME, ROLL NUMBER, SESSION, PAPER NUMBER, TOPIC SELECTED** and **EXAMINATION,** clearly on the top of the Front page of each paper.
2. Submit your Assignments **PAPER-WISE Separately.**
3. Each answer (Essay) caries a weightage of **20 marks**.
4. Keep a margin of about 1 inch on each side of the page.
5. **Stick File** is not necessary.
6. **Copying** from others including **Xerox** from others strictly prohibited.
7. You can submit the essay written in your own hand-writing on **A-4** sized paper on **One Side** of each page **Only**.
8. Submit your Assignments strictly on or before the due date as notified. Assignments received after the due date may not be considered for evaluation.
9. The last date of submission is ***25th October, 2014***.

N.B. Students are requested to follow the instructions strictly.

M301: Computer Programming in C (Answer any one)

1. Give an overview of programming with emphasis on Algorithms, Flow charts, Programming language, efficiency and analysis of algorithms.
2. Discuss in brief about C Essentials giving importance on variables, constants, type conversions and basic input/output operations.

M302: Number Theory (Answer any one)

1. Write an essay on Quadratic Residues giving emphasis on Euler's criterion.
2. Write an essay on operation of congruences including Chinese remainder theorem.

M303: Continuum Mechanics (Answer any one)

1. Write a brief note on fundamental laws of Continuum Mechanics.
2. Discuss Generalized Hooke's law on the basis of the theory of linear elasticity.

M304: Space Dynamics (*Optional*) (Answer any one)

1. Explain Kepler's equation and give an idea of solution by Hamilton Jacobi theorem.
2. Discuss Lagrange's planetary equations in terms of perturbing forces and in terms of perturbed Hamiltonian.

M304: Algebra II (*Optional*) (Answer any one)

1. Give the concept of modular and distributive lattice with suitable examples. Show that a distributive lattice is always modular but the converse is not true.
2. Explain with suitable examples the concept of Free groups, Free-abelian groups and Free product of groups. Explain how to construct a free group on an arbitrary non-empty set.

M305: Special Theory of Relativity (*Optional*) (Answer any one)

1. Give an idea of Lorentz transformation giving importance on Lorentz Fitzgerald contraction, Time dilation, simultaneity of events, proper length and proper time.
2. Discuss the effect of gravitation on the clock paradox using the principle of equivalence.

M305: Mathematical Logic (*Optional*) (Answer any one)

1. Discuss in brief the informal statement of calculus with emphasis on statements and connectives, truth function and truth tables, arguments and validity.
2. Discuss all the axioms of first order system with equality.

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