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

1st Semester

(Session- 2014-2015)

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.

M101: Real Analysis and Lebesgue Measure (Answer any one)

1. Discuss uniform convergence at an interval with Cauchy's criterion.
2. Write a note on measurable sets with some properties.
3. Write a note on comparion of Riemann and Lebesgue integral.

M102: Topology (Answer any one)

1. Write a note on completely regular spaces.
2. Discuss that a topological space (X,T) is a T_1—space if and only if every finite subset of X is closed.
3. Give an idea of compact spaces and explain that every sequentially compact metric spacies totally bounded.

M103: Algebra (Answer any one)

1. Discuss solvable groups with examples and properties.
2. Discuss the Sylvester law of nullity
3. Discuss the dual space of a vector space over a field F.

M104: Differential Equation (Answer any one)

1. Write a note on Wronksian with necessary explanation and some examples.
2. Discuss Lagrange's method of solving 1st order linear partial differential equation with suitable example.
3. Explain Charpit's method for solving non linear 1st order PDE equations with its special cases.

M105: Tensor and Mechanics (Answer any one)

1. Write a note on tensors with emphasis on its properties.
2. Discuss in brief about Christoffel's brackets and their properties.
3. Explain Euler's dynamical equations for the motion of a body about a fixed paint.
4. Write a note on Kepler's laws of planetary motion and their significances.

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