

# **MASTER OF COMPUTER APPLICATIONS (MCA\_NEW)**

**ASSIGNMENTS  
OF MCA\_NEW (2Yrs) PROGRAMME  
SEMESTER-II**

**(July - 2025 & January - 2026)**

**MCS-218, MCS-219, MCS-220, MCS-221**

**MCSL-222, MCSL-223**



**SCHOOL OF COMPUTER AND INFORMATION SCIENCES  
INDIRA GANDHI NATIONAL OPEN UNIVERSITY  
MAIDAN GARHI, NEW DELHI – 110 068**

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### Important Notes

1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.
2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to Programme Guide of MCA (2Yrs).
3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the Programme Guide of MCA (2yrs).
4. The viva voce is compulsory for the assignments. For any course, if a student submitted the assignment and not attended the viva-voce, then the assignment is treated as not successfully completed and would be marked as ZERO.

<b>Course Code</b>	:	<b>MCS-221</b>
<b>Course Title</b>	:	<b>Data Warehousing and Data Mining</b>
<b>Assignment Number</b>	:	<b>MCA_NEW(II)/221/Assign/2025-26</b>
<b>Maximum Marks</b>	:	<b>100</b>
<b>Weightage</b>	:	<b>30%</b>
<b>Last Date of Submission</b>	:	<b>31<sup>st</sup> October, 2025 (For July, 2025 Session)</b> <b>15<sup>th</sup> April, 2026 (For January, 2026 Session)</b>

**This assignment has ten questions. All the questions are compulsory and there is no choice. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide.**

- Q1:** Critically evaluate the top-down and bottom-up approaches to data warehouse design, highlighting scenarios where one may significantly outperform the other in a real-world enterprise environment. **(8 Marks)**
- Q2:** Analyze the role of OLAP operations (Roll-up, Drill-down, Slice, Dice, and Pivot) in multidimensional data analysis. Support your explanation with a practical business intelligence scenario demonstrating how these operations aid decision-making. **(8 Marks)**
- Q3:** Discuss the impact of data granularity on query performance, storage, and decision-making accuracy in a data warehouse. Illustrate your answer by comparing fine-grained and coarse-grained data examples. **(8 Marks)**
- Q4:** Explain how ETL processes influence the accuracy, consistency, and timeliness of data in a data warehouse. Suggest strategies to handle common ETL challenges such as missing values and inconsistent data formats. **(8 Marks)**
- Q5:** Dimensional modeling techniques such as star schema, snowflake schema, and fact constellation each have their advantages and limitations. Compare these with respect to query performance, ease of maintenance, and user accessibility in a business context. **(8 Marks)**
- Q6:** Data preprocessing is a vital step in data mining. Analyze the significance of handling missing data, noise removal, and normalization in improving the performance of classification algorithms. **(8 Marks)**
- Q7:** Compare and contrast classification and clustering techniques in data mining with reference to their objectives, algorithms used, and real-world use cases. Provide examples where both techniques could be applied complementarily. **(8 Marks)**
- Q8:** Evaluate the importance of frequent pattern mining in the retail industry. How do algorithms like Apriori and FP-Growth help in mining association rules, and what are the trade-offs between them? **(8 Marks)**
- Q9:** Discuss the ethical implications and privacy concerns in deploying data mining applications on consumer data. Propose methods that ensure responsible data mining while preserving the value derived from large datasets. **(8 Marks)**

**Q10:** Web and text mining are extensions of traditional data mining. Discuss the challenges unique to unstructured data and propose techniques that are effective for extracting useful insights from web logs and textual documents. **(8 Marks)**