

**MASTER OF SCIENCE
(INFORMATION SECURITY)
(MSCIS)**

MSCIS/ASSIGN/2026

**ASSIGNMENTS
JAN 2026**

Semester-III

MSE-029, MSE-030, MSE-031, MCS-226 and MSEL-032

**SCHOOL OF VOCATIONAL EDUCATION AND TRAINING
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

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Course Code	:	MSE-029
Course Title	:	Cyber Attack: Use of Technology in Cyberspace
Maximum Marks	:	100
Weightage	:	30%
Last date of Submission	:	31st March, 2026 (For latest update, Pl. check IGNOU's Website)

Attempt any five questions out of seven questions. Each question carries 20 marks. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Q1: Describe steps of Server Security in detail.

Q2: List out the Cybercrimes groups and describe the primary categories of Cybercrime with examples.

Q3: What do you mean by OSINT Tools. Discuss different OSINT Tools in detail.

Q4: What are types of Security attacks? Explain different vulnerabilities with examples.

Q5: What do you mean by Penetration testing? Describe Pen Testing Process and Penetration testing methods.

Q6: What is the classification and types of networks? Explain in detail with examples.

Q7: Explain triad's components of Cybersecurity in detail.

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Course Code	:	MSE-030
Course Title	:	Cloud and Infrastructure Security
Maximum Marks	:	100
Weightage	:	30%
Last date of Submission	:	31st March, 2026 (For latest update, Pl. check IGNOU's Website)

Attempt any five questions out of seven questions. Each question carries 20 marks. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

- Q1: Explain Cloud architecture and layers of Cloud anatomy in detail.
- Q2: What is Resource Pooling? Describe Resource Pooling architecture in detail.
- Q3: Discuss Characteristics, Benefits, Applications and challenges of Cloud Computing.
- Q4: Discuss important characteristics of virtualization.
- Q5: What do you mean by Scaling and explain its strategies in detail.
- Q6: Explain Cloud deployment models in detail.
- Q7: Discuss auto scaling in cloud.

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Course Code	:	MSE-031
Course Title	:	Cyber Security using Python
Maximum Marks	:	100
Weightage	:	30%
Last date of Submission	:	31st March, 2026 (For latest update, Pl. check IGNOU's Website)

Attempt any five questions out of seven questions. Each question carries 20 marks. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

Q1: Describe Python Libraries for Cyber Security. How is Python used in Pen Testing.

Q2: Describe Object Oriented approach, Classes and Methods, Libraries, Networking for Python.

Q3: What do you mean by Cyber Security? Describe its importance, threats, purpose and benefit of python for Cyber security.

Q4: Briefly discuss about the concepts of UBUNTU for Python. Which word is used before every command for a user for running commands in LINUX terminal? Give your examples.

Q5: What do you mean by Cryptography? Describe its data security techniques.

Q6: Describe basics of Networking. How many communication links are required to connect n devices in case of mesh topology.

Q7: a) How Social media platforms can be used to expand intelligence? b) Explain malicious web scraping and its uses

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Course Code : **MSEL-032**
Course Title : **Practical (Cyber Attacks, Cloud Security and Data Recovery etc)**
Maximum Marks : **100**
Weightage : **30%**
Last date of Submission : **31st March, 2026 (For latest update, Pl. check IGNOU's Website)**

This assignment has two Questions, answer all questions. Each Question is of 20 marks. Your Lab Records will carry 40 Marks (20 Marks for each Question). 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 for the format of presentation.

Note: You must execute the program and submit the program logic, sample input and output along with the necessary documentation. Assumptions can be made wherever necessary.

Q1: Discuss the Deployment of OpenStack using DevStack with all steps. (20 marks)

Q2: Explain Man in the middle attack (MITM) using Ettercap (20 marks)

Note: Make necessary assumptions if any.

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Course Code	:	MCS-226
Course Title	:	Data Science and Big Data
Maximum Marks	:	100
Weightage	:	30%
Last date of Submission	:	31st March, 2026 (For latest update, Pl. check IGNOU's Website)

This assignment has ten questions of 8 Marks each, answer all questions. 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 for the format of presentation.

Q1: Define the term Data Science. Explain the role of data sampling in Data Science. Differentiate between descriptive, inferential, and causal data analysis with suitable examples.

Q2: What is Correlation in statistics? Explain the difference between positive correlation and negative correlation with examples. Discuss how the Central Limit Theorem is applied in Data Science projects.

Q3: Discuss the data cleaning process in detail. Explain missing value imputation techniques and the impact of data quality on predictive model performance.

Q4: What are the Four Vs of Big Data? Give real-world examples for each. Compare Big Data systems with traditional data warehouses in terms of architecture and functionality.

Q5: Explain the Hadoop Distributed File System (HDFS) architecture with a diagram. Describe the role of NameNode and DataNodes in storing and retrieving large-scale datasets.

Q6: Compare MapReduce and Apache Spark with respect to data processing speed, fault tolerance, and ease of use. Provide a real-world use case where Spark is more beneficial than MapReduce.

Q7: What are Column-based, Document-based, and Graph-based NoSQL databases? For each type, give an example and explain a real-world use case where it is most suitable.

Q8: Explain Cosine Similarity and Jaccard Similarity with examples. How are these measures used in recommendation systems and document similarity analysis?

Q9: What is the Flajolet–Martin algorithm? Explain its steps for estimating the number of unique elements in a data stream. Compare it with the use of a Bloom Filter.

Q10: Write an R program to:

- Create a Decision Tree classifier for a sample dataset. Display the results visually using appropriate R plotting functions. Explain the outputs obtained.
- Apply K-Means clustering to group similar data points. Display the results visually using appropriate R plotting functions. Explain the outputs obtained.