

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

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

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

**MCS-224, MCS-225, MCS-226, MCS-227**

**MCSL-228, MCSL-229**



**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>:</b>	<b>MCS-227</b>
<b>Course Title</b>	<b>:</b>	<b>Cloud Computing and IoT</b>
<b>Assignment Number</b>	<b>:</b>	<b>MCA_NEW(III)/227/Assign/2025</b>
<b>Maximum Marks</b>	<b>:</b>	<b>100</b>
<b>Weightage</b>	<b>:</b>	<b>30%</b>
<b>Last Dates for Submission</b>	<b>:</b>	<b>30<sup>th</sup> April, 2025 (for January session)</b> <b>31<sup>st</sup> October, 2025 (for July session)</b>

**This assignment has 16 questions of 5 Marks each, amounting to 80 marks. 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:** What is Cloud Computing ? How Cloud Computing differs from Cluster Computing , Grid Computing ? Explain the characteristics of Cloud Computing. Also, give benefits & applications of Cloud Computing.
- Q2:** What do you understand by the term “Cloud Deployment Model”. Explain the following Cloud Deployment Models, with suitable example for each.
- Public Cloud Deployment Model
  - Private Cloud Deployment Model
  - Community Cloud Deployment Model
  - Hybrid Cloud Deployment Model
- Also, discuss when it is suitable to use which cloud deployment model
- Q3:** Explain the virtualization environment with the help of suitable diagram and example
- Q4:** Explain the following features of virtualization:
- (i) Sharing
  - (ii) Aggregation
  - (iii) Emulation
  - (iv) Isolation
- Q5:** Explain the term Server Level Virtualization. What are the advantages of Server Level Virtualization. List the various Server Level Virtualization techniques used in cloud computing.
- Q6:** What is an Hypervisor? Compare the functionality of Type-1 and Type-2 Hypervisor with the help of suitable block diagram for each, also give advantages and disadvantages of each.
- Q7:** Differentiate between the following:
- (i) Full virtualization and Para-virtualization
  - (ii) Citrix XenServer hypervisors and VMware hypervisors
- Q8:** What is a Resource pool ? Explain Resource pooling architecture. Explain the various types of storage pools available.
- Q9:** What to do you understand by the term Resource Sharing? How the concept of Resource Sharing relates to cloud computing ?
- Q10:** What is Tenancy in context of cloud computing ? Compare Multi-Tenancy model and Single Tenancy model of resource sharing.

- Q11:** Explain the term Resource Provisioning in context of cloud computing. Also, explain the various approaches used for Resource Provisioning. Discuss the problems of Over-provisioning and Under-provisioning.
- Q12:** Explain the term Virtual Machine(VM) sizing. Also, compare the Individual VM based sizing with Joint VM based sizing.
- Q13:** Explain the importance of scaling in cloud computing? How proactive scaling is achieved through virtualization? Write differences between proactive and reactive scaling strategies.
- Q14:** Explain the term Internet of Things (IoT).List and explain the various components used to implement IoT. Give characteristics of IoT. Briefly discuss the following types of IoT:
- (i) Consumer IoT (CIoT)
  - (ii) Industrial IoT(IIoT)
  - (iii) Infrastructure IoT
  - (iv) Internet of Military Things (IoMT)
- Q15:** What are sensors? Give static and dynamic characteristics of sensors. How sensors differs from actuators? Discuss the role of Sensors and Actuators in IoT. Also elaborate, How Machine to Machine (M2M) technology differs from IoT.
- Q16:** What is Edge computing? Discuss the working of Edge computing. Also, describe the relation between Edge computing, Fog computing and Cloud Computing, with the help of a suitable block diagram ?