

**MASTER OF COMPUTER
APPLICATIONS
(MCA-NEW)**

**Term-End Examination
December, 2024**

MCS-227 : CLOUD COMPUTING AND IOT

Time : 3 Hours

Maximum Marks : 100

Weightage : 70%

Note : (i) *Question No. 1 is compulsory.*

(ii) *Answer any **three** questions from the rest.*

1. (a) What are the key characteristics that define cloud computing, and how to they differentiate cloud services from traditional computing model ? 10

- (b) How does virtualization operate at the machine or server level ? What are the key distinctions among full virtualization, para-virtualization and hardware-assisted virtualization ? 10
 - (c) What are the benefits of Security as a Service (SECaaS) ? How does SECaaS enhance overall cloud security ? 10
 - (d) Compare and contrast popular open-source IoT platforms. Highlight key features, scalability and customization capabilities to assist organizations in making informed decisions when selecting a platform for their IoT projects. 10
2. (a) What are the effective strategies to mitigate security issues in IoT environments ? Briefly discuss approaches such as encryption, secure device management and regular software updates

to ensure the resilience of IoT system against cyber threats. 10

(b) What are the key features of a smart grid ? How do these features contribute to the overall efficiency and resilience of energy distribution system ? 10

3. (a) Differentiate between Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS) in cloud computing. 10

(b) What are the fundamental differences between static and dynamic resource provisioning ? How do these approaches address the challenges of resource allocation and scalability in cloud computing environment ? 10

4. (a) How does auto-scaling contribute to optimizing resource utilization in the context of both vertical scaling and horizontal scaling ? 10
- (b) How does the concept of edge computing relate to the IoT and what advantages does it offer in terms of data processing and response time for IoT application ? 10
5. Write short notes on the following : 4×5=20
- (i) IoT security challenges
 - (ii) Horizontal *vs.* Vertical scaling
 - (iii) Fog *vs.* Edge computing
 - (iv) Technologies used for M2M Communication

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