Question Gen

Section 1 (10 marks per question)

Q1. Elaborate on the cloud computing paradigm, highlighting its key concepts and distinguishing features. Discuss how these concepts and features contribute to its popularity and widespread adoption.

Component	Marks
Definition/Introduction	2 marks
Detailed Explanation	3 marks
Diagram/Illustration	2 marks
Advantages/Disadvantages	2 marks
Applications/Examples	1 mark

Q2. Provide a comprehensive analysis of the convergence between cloud computing and the Internet of Things (IoT). Explore the synergies and potential benefits that emerge from this convergence, and explain how it addresses the challenges encountered in both domains.

Component	Marks
Definition/Introduction	2 marks
Detailed Explanation	3 marks
Diagram/Illustration	2 marks
Advantages/Disadvantages	2 marks
Applications/Examples	1 mark

Q3. Discuss the specific resource management challenges posed by large-scale IoT applications. Explain how cloud computing infrastructures can alleviate these challenges, and describe the key mechanisms and techniques that are employed to optimize resource consumption and utilization.

Component	Marks

Definition/Introduction	2 marks
Detailed Explanation	3 marks
Diagram/Illustration	2 marks
Advantages/Disadvantages	2 marks
Applications/Examples	1 mark

Q4. Explain the role of metadata in IoT resource management. Discuss the types and significance of metadata, and analyze how its richness influences the development and implementation of effective optimization strategies.

Component	*Marks*
Definition/Introduction	2 marks
Detailed Explanation	3 marks
Diagram/Illustration	2 marks
Advantages/Disadvantages	2 marks
Applications/Examples	1 mark

Q5. Describe the concept of scheduling in the context of IoT resource management. Explain the process of regulating access to cloud and sensor resources, and analyze the challenges and trade-offs involved in implementing effective scheduling strategies.

Component	*Marks*
Definition/Introduction	2 marks
Detailed Explanation	3 marks
Diagram/Illustration	2 marks
Advantages/Disadvantages	2 marks
Applications/Examples	1 mark

Q6. Discuss the role of resource optimization techniques in IoT resource management. Explain how these techniques can improve the performance and efficiency of IoT applications, and analyze the different types of optimization techniques that can be employed.

Component	Marks
Definition/Introduction	2 marks
Detailed Explanation	3 marks
Diagram/Illustration	2 marks
Advantages/Disadvantages	2 marks
Applications/Examples	1 mark

Q7. Analyze the security risks and challenges associated with IoT resource management. Discuss the specific vulnerabilities that arise when IoT devices and services are deployed in a cloud environment, and explain the security mechanisms and best practices that can be employed to mitigate these risks.

Component	Marks
Definition/Introduction	2 marks
Detailed Explanation	3 marks
Diagram/Illustration	2 marks
Advantages/Disadvantages	2 marks
Applications/Examples	1 mark

Q8. Discuss the future trends and research directions in open source semantic web infrastructure for managing IoT resources in the cloud. Identify emerging technologies and concepts that are shaping the future of IoT resource management, and analyze their potential impact on the design and implementation of next-generation IoT systems.

Component	Marks
Definition/Introduction	2 marks
Detailed Explanation	3 marks
Diagram/Illustration	2 marks
Advantages/Disadvantages	2 marks
Applications/Examples	1 mark