

28 M.E. CSE

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 5027

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – JUNE 2023

Second Semester

Computer Science and Engineering

P19CSE09 – CLOUD COMPUTING TECHNOLOGIES

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What is the role of a cloud auditor?	2	K2	CO1
2.	List the example services available to a cloud consumer.	2	K1	CO1
3.	What do you understand by binaries/libraries in virtualization?	2	K3	CO2
4.	Differentiate between the least privileged mode and most privileged mode in the context of virtualization.	2	K2	CO2
5.	What are the differences between overprovisioning and under provisioning?	2	K4	CO3
6.	Differentiate the cloud from the perspectives of providers, vendors and users.	2	K1	CO3
7.	What are the different methods for the authentication of Google compute engine API?	2	K2	CO4
8.	What are the limitations of Open Nebula?	2	K5	CO4
9.	How will the compliance department perform its activity when there is a considerable lack of control over application workflows?	2	K2	CO5
10.	How to ensure virtual machine security in cloud computing?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Compare and contrast cloud computing, cluster computing, utility computing and grid computing.	13	K2	CO1
	(OR)			
b)	Explain the NIST cloud computing reference architecture with a suitable diagram and major actors.	13	K1	CO1
12. a)	Discuss different types of virtualization with their pros and cons.	13	K2	CO2
	(OR)			
b)	Compare and contrast desktop and server virtualization.	13	K2	CO2
13. a)	Draw and explain a stack of six layers of cloud services and their providers.	13	K3	CO3
	(OR)			
b)	Explain the inter-cloud exchange of cloud resources through brokering with a suitable diagram.	13	K2	CO3
14. a) i.	In a MapReduce framework, consider the HDFS block size is 64 MB. We have three files of sizes 64 KB, 65 MB and 127 MB. How many blocks will be created by the Hadoop framework? Assume that the number of replicas is 3.	3	K4	CO4
ii.	Write the pseudo-codes (for map and reduce functions) for calculating the average of a set of integers in MapReduce. Suppose A = (10, 20, 30, 40, 50) is a set of integers. Show the map and reduce outputs.	10		
	(OR)			
b)	Explain the salient features of any three Amazon AWS services.	13	K3	CO4
15. a)	Explain how Google and Amazon achieve their design goals to secure data integrity and maintain data consistency.	13	K3	CO5
	(OR)			
b)	Why is cloud security architecture important? Discuss the architecture with a suitable diagram.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

- | Q.No. | Questions | Marks | KL | CO |
|--------|--|-------|----|-----|
| 16. a) | Describe with the help of examples the various service models and deployment models of cloud computing. Give one real example of each type of service model and one example situation where each type of deployment model could be used. | 15 | K1 | CO4 |

(OR)

- | | | | |
|----|--|----|-----|
| b) | An organization, ABC, needs to support a spike in demand when it becomes popular, followed potentially by a reduction once some of the visitors turn away. The organization has two options to satisfy the requirements, which are given in the following table. | K5 | CO1 |
|----|--|----|-----|

Expenditure	In-House Server (INR)	Cloud Server (INR)
Purchase cost	70000	-
Cost/hour (over a three-year span)	-	7
Efficiency	40%	80%
Power and cooling (cost/hour)	30	-
Management cost (cost/hour)	20	1

- | | | |
|-----|--|----|
| i. | Calculate the total cost/effective-hour for both options. If the company wants to make its service available to the customers throughout the day (for over three years) and aims at earning daily revenue of INR 3000, calculate the expected profits if either of the approaches is followed. | 10 |
| ii. | Calculate the modified efficiency of the in-house server, so that the in-house cost is equal to the cloud cost. | 5 |

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Question Paper Code: 5022

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – JUNE 2023

Second Semester

Computer Science and Engineering
P19CS207 - INTERNET OF THINGS
(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What are the steps involved in IoT system design methodology?	2	K1	CO1
2.	Should the consumers be concerned about security and privacy issues considering the amount of data internet of things (IoT) collects? Justify your answer	2	K4	CO1
3.	Which OGC service standard is used for data encoding?	2	K3	CO2
4.	What are the seven layers present in the IoT Reference Model?	2	K2	CO2
5.	Which modulation technique is used in IEEE 802.15.4?	2	K1	CO3
6.	Which security protocols are used by CoAP?	2	K3	CO3
7.	How to run Raspberry pi in headless mode?	2	K5	CO4
8.	What are the functions used to read analog and digital data from a sensor in Arduino?	2	K1	CO4
9.	What are the three main networking services that are used in AWS?	2	K1	CO5
10.	What is API in cloud services?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Briefly explain IoT System Management with NETCONF-YANG-IoT Platforms Design Methodology.	13	K3	CO1
	(OR)			
b)	How many IoT deployment templates are there? Briefly explain each type.	13	K2	CO1
12. a)	Briefly explain ETSI M2M high level architecture with a suitable diagram	13	K1	CO2
	(OR)			
b)	Explain Functional View, Information View, Deployment and Operational View, Other Relevant architectural views of IoT reference architecture.	13	K2	CO2
13. a)	Briefly discuss Zigbee Architecture with neat diagram	13	K3	CO3
	(OR)			
b) i.	What is the BACnet Protocol and how is it used in Building Automation Systems to Control Data Exchange?	8	K4	CO3
ii.	State the differences between SCADA, M2M and IoT.	5		
14. a) i.	Briefly explain the basic building blocks of an IoT architecture with a Raspberry Pi device?	9	K5	CO4
ii.	List available wireless communications boards available in Raspberry Pi?	4		
	(OR)			
b) i.	State the relationship between Arduino and IoT.	4	K2	CO4
ii.	Briefly explain the functional blocks of Arduino with a suitable diagram.	9		
15. a) i.	How AWS service will be used to manage the IoT devices?	5	K3	CO5
ii.	Briefly discuss the virtual disk cloud storage model with a suitable diagram?	8		
	(OR)			
b)	Explain in detail the application of Internet of Things in asset management and Industrial Automation.	13	K1	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	i. How wireless communications might affect the development and implementation of the internet of things (IoT)?	8	K6	CO4
	ii. What will happen in terms of jobs losses and skills as IoT makes devices and robots more intelligent?	7		
	(OR)			
b)	i. What protocols are used in 6LoWPAN stack and what are its functions?	6	K5	CO5
	ii. Briefly explain the role of 6LoWPAN in Smart Grid and in Industrial Monitoring.	9		

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Question Paper Code: 5019

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – JUNE 2023

Second Semester

Computer Science and Engineering
 P19CS206 – ADVANCED NETWORKS
 (Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 – Evaluating
	K2 – Understanding	K4 – Analyzing	K6 – Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	How biological networks behaves?	2	K2	CO1
2.	List four network metrics.	2	K1	CO1
3.	Define the small world effect.	2	K1	CO2
4.	Define Clustering coefficients.	2	K1	CO2
5.	Give some advantages of adjacency matrices.	2	K2	CO3
6.	What are the demerits of adjacency lists?	2	K2	CO3
7.	Define Random graphs.	2	K1	CO4
8.	What are the applications of network models?	2	K1	CO4
9.	What is dynamical systems on networks?	2	K1	CO5
10.	Define the term 'Web Search'.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	List some examples of technological networks. Write brief explanations for each example with a real time application.	13	K1	CO1
(OR)				
b)	Discuss the mathematics of networks, including graph theory and its applications in studying network structures and properties.	13	K1	CO1

12.	a)	Analyze the concept of the small-world effect and its implications for network connectivity. Discuss the experiments conducted by Stanley Milgram and Duncan Watts to study the small-world phenomenon.	13	K3	CO2
		(OR)			
	b)	Discuss the characteristics types of Assortative mixing in detail.	13	K1	CO2
13.	a)	Explain the concept of computational complexity in the context of network algorithms.	13	K1	CO3
		(OR)			
	b)	Explore matrix algorithms and graph partitioning techniques.	13	K1	CO3
14.	a)	Explain the role of network models in studying complex networks. Give examples of network models and discuss their applications.	13	K2	CO4
		(OR)			
	b)	Describe the concept of exponent random graphs. How do they differ from random graphs with general degree distributions?	13	K3	CO4
15.	a)	Analyze percolation on networks, including uniform and non-uniform removal of vertices.	13	K4	CO5
		(OR)			
	b)	Discuss the dynamics of epidemics on networks. Explain how the structure of networks affects the spread of epidemics and the development of strategies to control them.	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16.	a) A healthcare organization wants to implement a telemedicine system that allows doctors to remotely diagnose and treat patients. The system should enable real-time audio and video communication between doctors and patients while ensuring data privacy and security. Design a network solution that meets the requirements of the telemedicine system. Discuss the network components, protocols, and security measures you would implement. Mention the challenges while implementing the same and time bound of the network.	15	K5	CO5
	(OR)			
	b) Consider a large university campus with multiple buildings, departments, and thousands of students and staff members. Design a campus-wide network that provides high-speed internet connectivity, seamless mobility, and supports various network services like video streaming, VoIP, and file sharing. Explain the network architecture, including the core, distribution, and access layers, along with the technologies and protocols used in each layer.	15	K5	CO5

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Question Paper Code: 5024

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – JUNE 2023

Second Semester

Computer Science and Engineering

P19CS208 - DATA ANALYTICS

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What is the purpose of regression analysis?	2	K1	CO1
2.	What is sampling?	2	K1	CO1
3.	What is overfitting? How it affects performance?	2	K3	CO2
4.	Why PCA is needed?	2	K3	CO2
5.	Mention any two applications of time series analysis	2	K3	CO3
6.	What is rule induction?	2	K1	CO3
7.	What is perceptron?	2	K1	CO4
8.	Mention Applications of reinforcement learning	2	K3	CO4
9.	Why visualization is needed?	2	K2	CO5
10.	Mention any two visualization tools	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	i. Write short notes on statistical inference.	6	K2	CO1
	ii. Explain multivariate analysis in details.	7	K2	CO1
(OR)				
b)	i. What is the need for resampling, explain?	6	K2	CO1
	ii. Write short notes on prediction error in regression	7	K2	CO1

12.	a)	Explain PCA with an Example.	13	K3	CO2
		(OR)			
	b)	Explain Bayesian model with an example.	13	K3	CO2
13.	a)	i. Write Short notes on non-linear dynamics	6	K1	CO3
		ii. Explain Propositional Rule Learning with example	7	K3	CO3
		(OR)			
	b)	i. Explain Delay coordinate embedding.	6	K1	CO3
		ii. Explain Propositional Rule Induction with example.	7	K3	CO3
14.	a)	Explain in detail competitive learning and principle component analysis in neural networks.	8+5	K2	CO4
		(OR)			
	b)	Explain prescriptive analysis and reinforcement learning in detail.	13	K2	CO4
15.	a)	What is the purpose of visualization? Explain visualization techniques in detail.	13	K3	CO5
		(OR)			
	b)	Explain interaction techniques and specific visual data analysis techniques in detail.	13	K3	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16.	a) Consider a use case for your institute. How do you apply visualization techniques for your institute? In what ways it will help to project your institution's achievements? What visualization techniques will you use?	15	K4	CO5
	(OR)			
	b) Explain SVM model with an example. Why SVM is binary classifier? How do you apply for multiclass?	15	K4	CO2

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Question Paper Code: 5030

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – JUNE 2023

Second Semester

Computer Science and Engineering

P19CSE15 - ETHICAL HACKING AND DIGITAL FORENSICS

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	(10 x 2 = 20 Marks)		
		Marks	KL	CO
1.	What is networking hacking?	2	K1	CO1
2.	Give two examples for SQL injection attack	2	K1	CO1
3.	What do you mean by port scanning?	2	K2	CO2
4.	What is a Smurf attack?	2	K3	CO2
5.	Write a note on inside attack.	2	K4	CO3
6.	List the major types of computer fraud.	2	K2	CO3
7.	List challenges in website security.	2	K3	CO4
8.	What are the different types of intrusion detection systems?	2	K4	CO4
9.	Define Disk forensic.	2	K5	CO5
10.	What is a journal risk?	2	K6	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	(5 x 13 = 65 Marks)		
		Marks	KL	CO
11. a)	i. What is ethical hacking? What are its different categories? List the advantages and disadvantages of hacking.	7	K1	CO1
	ii. What is a buffer overflow attack? How to prevent this attack? Explain.	6		

		(OR)			
	b)	What is password guessing attack? What are its types? Explain.	13	K2	CO1
12.	a)	Discuss in brief about the different types of denial-of-service attack, citing examples.	13	K2	CO2
		(OR)			
	b)	i. What is a UDP flood attack? What are its signs? Why are they dangerous? Explain.	7	K3	CO2
		ii. With diagrams, explain the working of packet filtering firewall.	6	K2	CO2
13.	a)	Discuss in brief about the classification, challenges and prevention of computer fraud.	13	K3	CO3
		(OR)			
	b)	i. With a neat block diagram, explain the framework for predicting insider attacks.	7	K4	CO3
		ii. What is threat management? Discuss in brief about the common threat management challenges.	6	K4	CO3
14.	a)	Explain in brief about the security tips to protect social media and email from hackers.	13	K3	CO4
		(OR)			
	b)	i. Compare HIDS with NIDS	7	K3	CO4
		ii. Discuss the methods used to reduce the transaction risks.	6	K4	CO4
15.	a)	i. Explain in detail about the types and characteristics of Computer forensics.	7	K3	CO5
		ii. Highlight the advantages and disadvantages of computer forensics.	6	K3	CO5
		(OR)			
	b)	i. How do you identify and address threats with a Risk control matrix? Explain with an example.	7	K3	CO5
		ii. How are neural networks useful in misuse detection?	6	K3	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	With a neat diagram, explain the concept of DNS spoofing. Discuss in brief about the various techniques that can be used to prevent DNS spoofing in a network.	15	K4	CO2
	(OR)			
b)	With appropriate diagrams, explain the working, classification and benefits of IDS	15	K3	CO4