ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION   WINTER SEMESTER, 2022-2023
DURATION: 1 HOUR 30 MINUTES   FULL MARKS: 75

CSE 4749: Introduction to Cloud Computing
Programmable calculators are not allowed. Do not write anything on the question paper.
Answer all 3 (three) questions. Figures in the right margin indicate full marks of questions whereas
corresponding CO and PO are written within parentheses.

1.	a) What is Service Oriented Architecture (SOA)? Explain how SOA is an enabling technology in cloud computing.	5 (CO1) (PO1)
	b) Compare the three cloud service models, SaaS, PaaS, and IaaS. Give examples of each one of the service models.	8 (CO1) (PO1)
	c) Differentiate between the following concepts: i. Utility Computing and Cloud Computing. ii. Scalability and Elasticity. iii. Type-1 and Type-2 Hypervisors.	3 × 4 (CO1) (PO1)
2.	a) Define virtualization and its security risk. What are the differences between Para Virtualization and Full Virtualization?	2 + 6 (CO1) (PO1)
	b) In a traditional computing environment, the problem of under-provisioning and low utilization of resources might arise. How are these problems addressed in a cloud environment?	5 (CO2) (PO1)
	c) Write short notes on the following concepts: i. Load Balancing. ii. Security groups. iii. Identity and Access Management (IAM)	3 × 4 (CO1) (PO1)
3.	a) Describe the process of Live Migration of Virtual Machine (VM) from one host to another. Explain any memory reclamation method used by the host machine Virtual Machine Manager (VMM) when its memory is not enough.	4 + 4 (CO1) (PO1)
	b) Define multi-tenancy. What is the difference between virtual and organic multi-tenancy?	5 (CO1) (PO1)
	c) Assume that you are an IT manager at a software company that specializes in social media analytics. You are tasked to design a cloud application using the Cloud Component Model. Some of the functionalities of the application are as follows: • A cloud-based Social Media Analytics application. • Collects the social media feeds (posts from Facebook) on a specific keyword in real-time, analyzes the sentiments of the tweets, and provides aggregate results. • Generates a weekly report based on specific topics and sentiments.	
	i. What are the design considerations you should consider to make your cloud application reliable and scalable?	4 (CO2) (PO1)
	ii. Draw the component design and the deployment design of the application.	8 (CO4) (PO2)