Total No. of Printed Pages: 3

PRN No.	

PAPER CODE	U314-252 (ESE)

(AY:2024-25) December 2024 (ENDSEM) EXAM

TY(SEMESTER - I)

COURSE NAME:	Branch:	COURSE CODE:
Computer Network And Internet Of Things	**CSE (AIML)**	**CMUA31202**

(T.YPATTERN 2020)

Time: [1Hr 30 Min] **[Max. Marks: 40]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.Use of scientific calculator is allowed**
2) **Use suitable data wherever required**
3) **All questions are compulsory. Solve any two sub question each from Questions 1 and 2**
4) **Solve any one subquestion (2 marks) from Questions 3 ,4 ,5 and 6 and sub question of 4 marks is compulsory from questions 3,4,5,and 6**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a)Compare between guided and unguided media in networking. Provide examples of each and discuss their respective advantages and limitations in different network environments.	[4]	1	Understand Analyze
	b)Compare and contrast circuit-switched networks and packet-switched networks in terms of efficiency, delay, and overall performance. Provide practical scenarios where each type of network would be most effective	[4]	1	Understand Analyze
	c)Discuss the various types of Digital Subscriber Lines (DSL), including ADSL, HDSL, SDSL, and VDSL. How does each type of DSL cater to different user needs and what are their respective bandwidth capacities?	[4]	1	Understand Analyze
Q2	a)Compare and contrast the Client-Server architecture and Peer-to-Peer (P2P) architecture. Which use cases are better suited for each type of architecture.	[4]	2	Understand Analyze
	b)Compare and contrast a hub and a switch. What are the advantages of using a switch over a hub in a network?	[4]	2	Understand Analyze

	c)Explain the key differences between LAN (Local Area Network) and WAN (Wide Area Network). How do their functions and scope vary?	[4]	2	Understand Analyze
Q3	a)Explain the purpose of the Address Resolution Protocol (ARP) in networking. How does it help in mapping IP addresses to MAC addresses?	[2]	3	Understand
	OR			
	b)What is Media Access Control (MAC)? How does it determine how devices on a network access the shared communication medium?	[2]	3	Understand
	c) Compare and contrast Forward Error Correction (FEC) and Retransmission as error correction techniques. Under what network conditions would one be preferred over the other?	[4]	3	Analyze
Q4	a)What is the primary role of the Transport Layer in the TCP/IP model? How does it ensure reliable communication between devices?	[2]	4	Understand
	OR			
	b)Explain the functions of the Presentation and Session layers in the OSI model. How do they contribute to the overall functionality of network communication?	[2]	4	Understand
	c)Given a scenario where real-time communication is critical, such as online gaming or VoIP, explain why UDP would be preferred over TCP. Justify your answer with the characteristics of both protocols.	[4]	4	Apply
Q.5	a)What are the key enabling technologies for IoT?	[2]	5	Understand
	OR			
	b)What are the core requirements and functionalities of an IoT system?	[2]	5	Understand
	c)Describe the different types of communication devices used in IoT. How do these devices contribute to the overall architecture and functionality of IoT systems?	[4]	5	Understand

Q.6	a)Explain the role of sensors and actuators in an Arduino-based system. OR	[2]	6	Understand
	b)What are the General Purpose Input/Output (GPIO) pins on a Raspberry Pi used for?	[2]	6	Understand
	c)Using the RPi.GPIO library in Python, explain how you would configure and access the general-purpose input/output (GPIO) pins on the Raspberry Pi. Provide an example of generating a PWM (Pulse Width Modulation) signal using Python.	[4]	6	Apply