Reg. No.																

Question Paper Code	14418

B.E. / B. Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Fourth Semester

Computer Science and Engineering (AIML)

24AMPC402 - COMPUTER NETWORKS AND SECURITY

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART – A (i) (MCQ)
(16 × 1 = 16 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which layer of the OSI model is responsible for data formatting and encryption? a) Physical Layer b) Data Link Layer c) Presentation Layer d) Transport Layer	1	K1	CO1
2.	What is the maximum distance covered by a typical Ethernet LAN? a) 100 meters b) 1 kilometer c) 10 kilometers d) 100 kilometers	1	K1	CO1
3.	_____ mode that takes the longest time for data transmission. a) Serial b) Simplex c) Parallel d) Wired	1	K2	CO1
4.	Which of the following is not a role in a Bluetooth connection? a) Initiator b) Responder c) Observer d) Controller	1	K1	CO2
5.	Cable television uses _____ network architecture. a) peer-to-peer b) client-server c) mesh d) hybrid	1	K1	CO2
6.	_____kind of radio channel used for transmission of information from the base station to the mobile station. a) control channel b) forward channel c) reverse channel d) channel assignment	1	K2	CO2
7.	Which of the following reduces transmission delay in network communication? a) Increasing the number of routers b) Using smaller packet sizes c) Switching to circuit-switched networks d) Disabling flow control mechanisms	1	K1	CO3
8.	Which of the following layers provides host-to-host communication services for applications? a) Data link layer b) Network layer c) Transport layer d) Application layer	1	K1	CO3
9.	_____ is the size of an IPv4 address in terms of bits. a) 32 b) 36 c) 42 d) 46	1	K2	CO3
10.	_____ uniquely identifies an application within a computer. a) Port Number b) IP address c) MAC Address d) Subnet Mask	1	K1	CO4
11.	Which of the following fields in the IP header ensures the integrity of the header? a) Time to Live b) Header Checksum c) Identification d) Protocol	1	K1	CO4
12.	Infer and how does the Transport Layer handle "reliability" of data transmission? a) By providing end-to-end encryption b) Through error detection and correction c) By filtering packets based on content d) By assigning IP addresses to devices	1	K2	CO4
13.	Which of the following is an example of a presentation layer service? a) JPEG compression b) IP addressing c) MAC forwarding d) TCP flow control	1	K1	CO5

14.	_____ port does HTTP use in the transport layer? a) 80 b) 443 c) 20 d) 21	*1*	*K2*	*CO5*
15.	A VPN primarily provides_____. a) secure communication b) faster bandwidth c) free internet d) file compression	*1*	*K1*	*CO6*
16.	_____is the default encryption algorithm used in IKE. a) AES b) MD5 c) DES d) HMAC-SHA-1	*1*	*K2*	*CO6*

PART – A (ii) (Short Answer Questions)
(6 × 3 = 18 Marks)
Answer ALL Questions

17.	Explain the half-duplex transmission in detail.	*3*	*K2*	*CO1*
18.	Outline the framing methods.	*3*	*K2*	*CO2*
19.	Demonstrate the functions of IP.	*3*	*K2*	*CO3*
20.	Identify how UDP works and mention its key characteristics.	*3*	*K3*	*CO4*
21.	Apply the concepts of HTTP to explain how web communication takes place between a client and a server.	*3*	*K3*	*CO5*
22.	Develop an explanation of how IKE (Internet Key Exchange) works in establishing secure communication.	*3*	*K3*	*CO6*

PART - B (Descriptive Answer Questions)
(6 × 11 = 66 Marks)
Answer ALL Questions

23.	a)	Construct the seven layers of the OSI model with a neat diagram.	*11*	*K3*	*CO1*
		OR			
	b)	Apply the concept of transmission modes to illustrate their types with a neat diagram.	*11*	*K3*	*CO1*
24.	a)	Identify the services provided by the Data Link Layer in the OSI model in detail.	*11*	*K3*	*CO2*
		OR			
	b)	Model the framing techniques, error detection, and error correction methods in detail.	*11*	*K3*	*CO2*
25.	a)	Develop the functions and services of the Network Layer in detail.	*11*	*K3*	*CO3*
		OR			
	b)	Model the architecture and operation of IEEE 802.11 with a neat diagram.	*11*	*K3*	*CO3*
26.	a)	Apply the concept of Transport Layer services to demonstrate how end-to-end delivery is achieved in a client-server model.	*11*	*K3*	*CO4*
		OR			
	b)	Experiment with UDP communication and explain its behavior in terms of speed and reliability.	*11*	*K3*	*CO4*
27.	a)	Model the working of the DNS system in detail.	*11*	*K3*	*CO5*
		OR			
	b)	Make use of the FTP protocol to explain how files are transferred securely between systems.	*11*	*K3*	*CO5*
28.	a)	Model the SSL architecture in securing transport layer communication in detail.	*11*	*K3*	*CO6*
		OR			
	b)	Model the working of a firewall in controlling incoming and outgoing network traffic in detail.	*11*	*K3*	*CO6*