SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
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Puttur -517583, Tirupati District, A.P. (India)

QUESTION BANK (DESCRIPTIVE)

Subject with Code	(23CS0517) COMPUTER NETWORKS & INTERNET PROTOCOLS	Course & Branch	B.Tech – CSE, CSIT & CAD
Year & Sem	III & I	Regulation	R23

UNIT - I

Computer Networks and the Internet

1	a)	Define the Internet in simple terms.	[L1][CO1]	[2 M]
	b)	What is meant by a host (end system) in a computer network?	[L1][CO1]	[2 M]
	c)	List any two differences between packet switching and circuit switching.	[L1][CO1]	[2 M]
	d)	Define propagation delay and transmission delay.	[L1][CO1]	[2 M]
	e)	What is the difference between packet loss and packet delay?	[L1][CO1]	[2 M]
2		Explain in detail the structure of the Internet. Discuss hosts, ISPs, and protocols.	[L2][CO1]	[10 M]
3	a)	Explain the concept of the network edge with suitable examples.	[L2][CO1]	[05 M]
	b)	Describe the concept of packet switching in Network core.	[L2][CO1]	[05 M]
4	a)	Describe the concept of circuit switching in Network core.	[L2][CO1]	[05 M]
	b)	Differentiate between packet switching and circuit switching in Network core.	[L2][CO1]	[05 M]
5	a)	Discuss about the Processing Delay, Queuing Delay and Transmission Delay in Packet-Switched network.	[L2][CO1]	[05 M]
	b)	Compare Transmission Delay and Propagation Delay in in Packet-Switched network.	[L2][CO1]	[05 M]
6	a)	Discuss about the Queuing Delay and Packet Loss in Packet-Switched network.	[L2][CO1]	[05 M]
	b)	Explain the concept of throughput in a computer network.	[L2][CO1]	[05 M]
7		Explain OSI reference models with suitable diagrams.	[L2][CO1]	[05 M]
8	a)	Explain TCP/IP reference models with suitable diagrams	[L2][CO1]	[05 M]
	b)	Compare OSI and TCP/IP reference models.	[L2][CO1]	[05 M]
9	a)	Describe the characteristics of twisted pair and coaxial cables.	[L2][CO1]	[05 M]
	b)	Illustrate the effectiveness of fiber optic cables in modern communication systems.	[L2][CO1]	[05 M]
10	a)	Explain any two types of transmission media used in wireless communication.	[L2][CO1]	[05 M]
	b)	What are the drawbacks of the OSI reference model?	[L2][CO1]	[05 M]
11		Compare Guided and unguided transmission media in multimedia networks	[L2][CO1]	[10 M]

UNIT - II
The Data Link Layer, Access Networks, and LANs

1	a)	What is burst error give an example?	[L2][CO2]	[2M]
	b)	Differentiate between Error Control and Flow Control.	[L2][CO2]	[2M]
	c)	Mention the two types of Sliding Window Protocol.	[L2][CO2]	[2M]
	d)	Name two Services provided by the link layer.	[L2][CO2]	[2M]
	e)	Define DNS resolution?	[L2][CO2]	[2M]
2	a)	Explain about Data Link Layer Design Issues.	[L4][CO2]	[05 M]
	b)	Describe Error control and flow control in data link layer.	[L4][CO2]	[05 M]
3		What is framing? Explain its architecture.	[L2][CO2]	[10M]
4		Demonstrate with an example how Hamming codes correct a single-bit error in data transmission.	[L2][CO2]	[10M]
5	a)	How Cyclic codes are effective in error correction? Explain.	[L4][CO2]	[05 M]
	b)	Which elementary data link protocols are used for Data link layer? Explain.	[L2][CO2]	[05 M]
6	a)	Explain Stop-and-Wait Protocol for a noisy channel.	[L4][CO2]	[05 M]
	b)	Explain Go-Back-N sliding window Protocol.	[L4][CO2]	[05 M]
7	a)	Write about Pure ALOHA protocol.	[L3][CO2]	[05 M]

	b)	A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces
		      i. 1000 frames per second
		      ii. 500 frames per second
		      iii. 250 frames per second.
		 Note: The frame transmission time is 200/200 kbps or 1 ms.
			[L3][CO2]	[05 M]

8		Explain in detail about Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Protocol.	[L2][CO2]	[10M]
9		Explain the concept of a Switched LAN. How it is different from a Hub based LAN.	[L2][CO2]	[10M]
10	a)	What is Link Virtualization. Explain its goals and importance in computer Network	[L2][CO2]	[05 M]
	b)	Discuss the advantages and Limitations of Link Virtualization	[L3][CO2]	[05 M]
11	a)	Describe the Three tier architecture of Data Center Working with a neat diagram.	[L4][CO2]	[05 M]
	b)	Analyze the role of DNS, TCP, and HTTP in the sequence of events during a web page request.	[L2][CO2]	[05 M]

UNIT - III

The Network Layer

1	a)	Define the term "routing algorithm" and state its primary purpose in a network	[L3][CO3]	[2M]
	b)	What is internetworking, and why is it necessary in computer networks?	[L2][CO3]	[2M]
	c)	Name any two devices used in internetworking and briefly state their functions	[L2][CO3]	[2M]
	d)	What is the primary function of the network layer in the OSI model?	[L3][CO3]	[2M]
	e)	Differentiate between static routing and dynamic routing.	[L3][CO3]	[2M]
2		What are the Network Layer Design Issues. Explain it in detail.	[L1][CO3]	[10M]
3	a)	Explain about Static Routing algorithms.	[L2][CO3]	[05 M]
	b)	Explain about dynamic Routing algorithms.	[L3][CO3]	[05 M]
4	a)	Calculate the Shortest Path Algorithm considering an example.	[L3][CO3]	[05 M]
	b)	Explain Flooding concept.	[L2][CO3]	[05 M]
5	a)	Explain distance vector routing algorithm.	[L2][CO3]	[05 M]
	b)	Briefly state what is count to infinity problem.	[L3][CO3]	[05 M]
6		Illustrate Link State Routing algorithm to find the route and ages of Routers.	[L3][CO3]	[10M]
7	a)	Discuss about Broadcast routing algorithm.	[L2][CO3]	[05 M]
	b)	Discuss about Multicast routing algorithm.	[L2][CO3]	[05 M]
8	a)	List and explain congestion control algorithms in network layer.	[L1][CO3]	[05 M]
	b)	Explain in detail the responsibilities of the network layer in the Internet with examples.	[L2][CO3]	[05 M]
9	a)	Explain about quality of service in network layer.	[L2][CO3]	[05 M]
	b)	Describe the term internetworking in network layer.	[L2][CO3]	[05 M]
10	a)	Explain the concept of internetworking.	[L3][CO3]	[05 M]
	b)	Explain how it is important in modern communication systems?	[L2][CO3]	[05 M]
11	a)	Sketch and explain in detail about IPV4protocol.	[L3][CO3]	[05 M]
	b)	Sketch and explain in detail about IPV6protocol.	[L3][CO3]	[05 M]

UNIT - IV
The Transport Layer

1	a)	What is function of transport layer?	[L1][CO4]	[2M]
	b)	List four aspects related to the reliable delivery of data?	[L1][CO4]	[2M]
	c)	What is meant by segmentation?	[L1][CO4]	[2M]
	d)	Describe two possible transport services?	[L2][CO4]	[2M]
	e)	Define TCP?	[L2][CO4]	[2M]
2	a)	Explain about UDP segment structure	[L2][CO4]	[05M]
	b)	How to check UDP Checksum	[L1][CO4]	[05M]
3	a)	Discuss about connectionless Transport	[L2][CO4]	[05M]
	b)	Compare between Transport and network layers	[L4][CO4]	[05M]
4	a)	Demonstrate TCP Connection Management Modeling	[L3][CO4]	[05M]
	b)	Write in detail Transmission control protocol	[L5][CO4]	[05M]
5	a)	Identify TCP Sliding window	[L1][CO4]	[05M]
	b)	List out the various TCP service model	[L1][CO4]	[05M]
6	a)	Explain the TCP protocol with neat sketch	[L2][CO4]	[05M]
	b)	Illustrate TCP segment header	[L2][CO4]	[05M]
7	a)	Explain about each field of TCP segment header.	[L2][CO4]	[05M]
	b)	Describe about TCP connection Establishment.	[L2][CO4]	[05M]
8	a)	Outline about TCP Connection Release.	[L2][CO4]	[05M]
	b)	Discuss the various timers used by TCP to perform its operations.	[L2][CO4]	[05M]
9	a)	Summarize TCP congestion control in transport layer.	[L1][CO4]	[05M]
	b)	Explain in detail Congestion Policy in TCP	[L2][CO4]	[05M]
10	a)	What are the three phases of TCP congestion control?	[L2][CO4]	[05M]
	b)	Compare between AIMD and slow start?	[L1][CO4]	[05M]
11		What is additive increase multiplicative decrease in TCP congestion control?	[L2][CO4]	[10M]

UNIT –V
The Application Layer

1	a)	Illustrate the P2P Architecture in Network Application Architectures.	[L3][CO2]	[2M]
	b)	Differentiate between HTTP and HTTPS.	[L4][CO3]	[2M]
	c)	What is the role of DNS in the Internet?	[L2][CO5]	[2M]
	d)	Illustrate the structure of high-level Internet e-mail system	[L3][CO4]	[2M]
	e)	What is meant by Content Distribution Networks (CDN) ?	[L1][CO1]	[2M]
2	a)	Evaluate the effectiveness of client–server architecture in handling large-scale applications.	[L5][CO2]	[05 M]
	b)	Describe how the transport layer supports application layer processes.	[L2][CO6]	[05 M]
3	a)	Explain the TCP protocol with neat sketch.	[L2][CO5]	[05 M]
	b)	Sketch and explain in detail about User Datagram Protocol (UDP).	[L3][CO6]	[05 M]
4	a)	Discuss the features of HTTP and explain its operation.	[L2][CO5]	[05 M]
	b)	List out the difference between Non-Persistent and Persistent Connections.	[L1][CO5]	[05 M]
5	a)	Explain how HTTP uses Cookies in application Layer?	[L2][CO4]	[05 M]
	b)	What is proxy server? Explain with suitable diagram.	[L3][CO1]	[05 M]
6	a)	Explain the working of SMTP and how it helps in email transmission.	[L2][CO5]	[05 M]
	b)	Describe the functions and components of POP3 protocol in E-mail System.	[L2][CO4]	[05 M]
7	a)	Explain about IMAP in E-mail System.	[L2][CO5]	[05 M]
	b)	List out the Services Provided by DNS.	[L1][CO3]	[05 M]
8	a)	Illustrate DNS message format.	[L3][CO5]	[05 M]
	b)	Write in detail about DNS in application Layer.	[L2][CO1]	[05 M]
9	a)	Explain in detail about Peer-to-Peer File Distribution.	[L2][CO4]	[05 M]
	b)	Discuss about BitTorrent Protocol with neat sketch.	[L4][CO5]	[05 M]
10	a)	Describe the Internet Video Streaming and DASH.	[L2][CO5]	[05 M]
	b)	Explain about Content Distribution Networks (CDNs) with suitable diagram.	[L3][CO2]	[05 M]
11		Compare the streaming architectures of Netflix, YouTube, and Kankan	[L6][CO5]	[10M]