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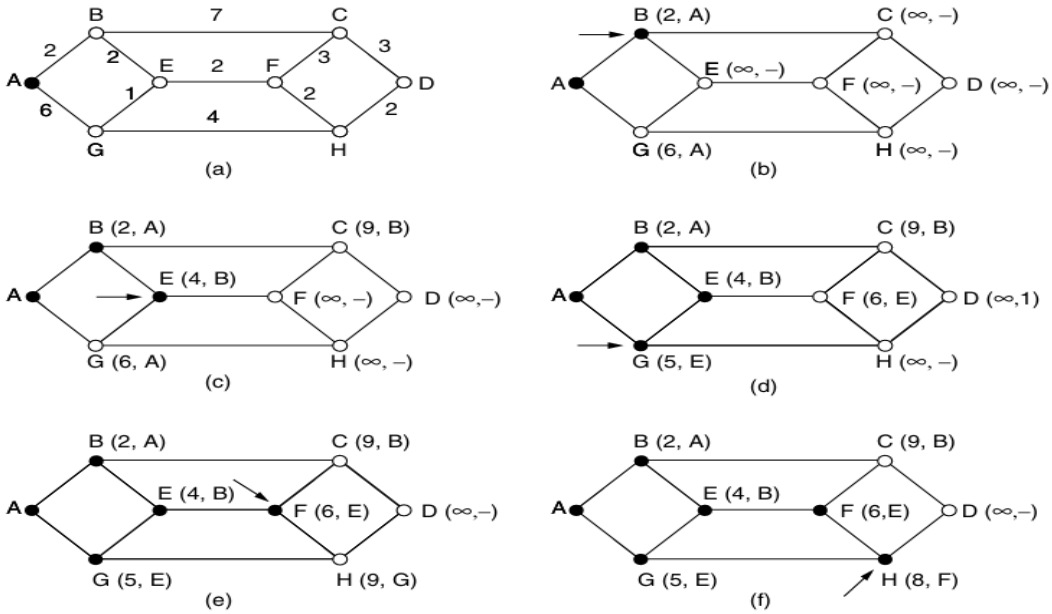
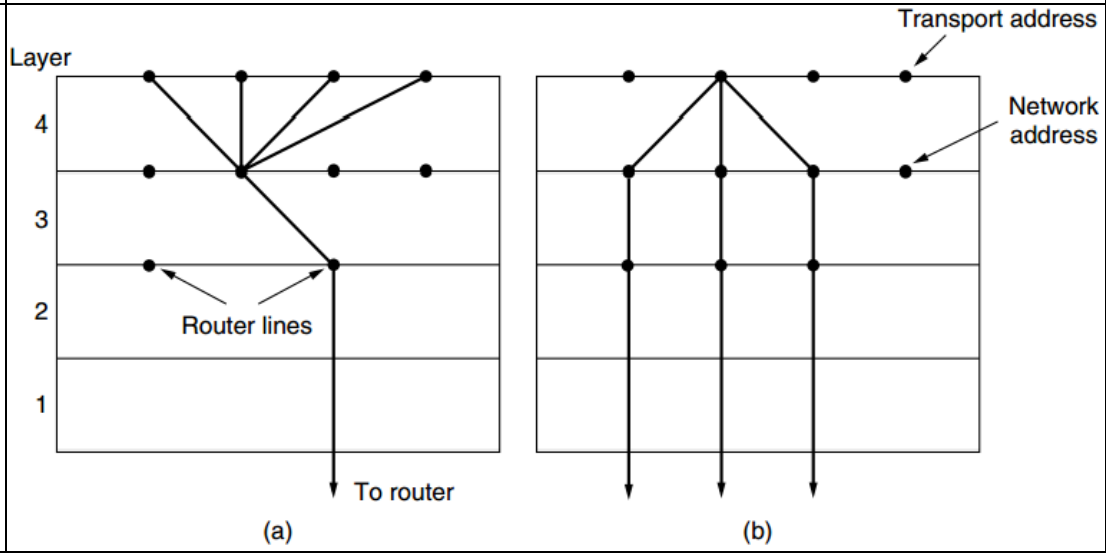
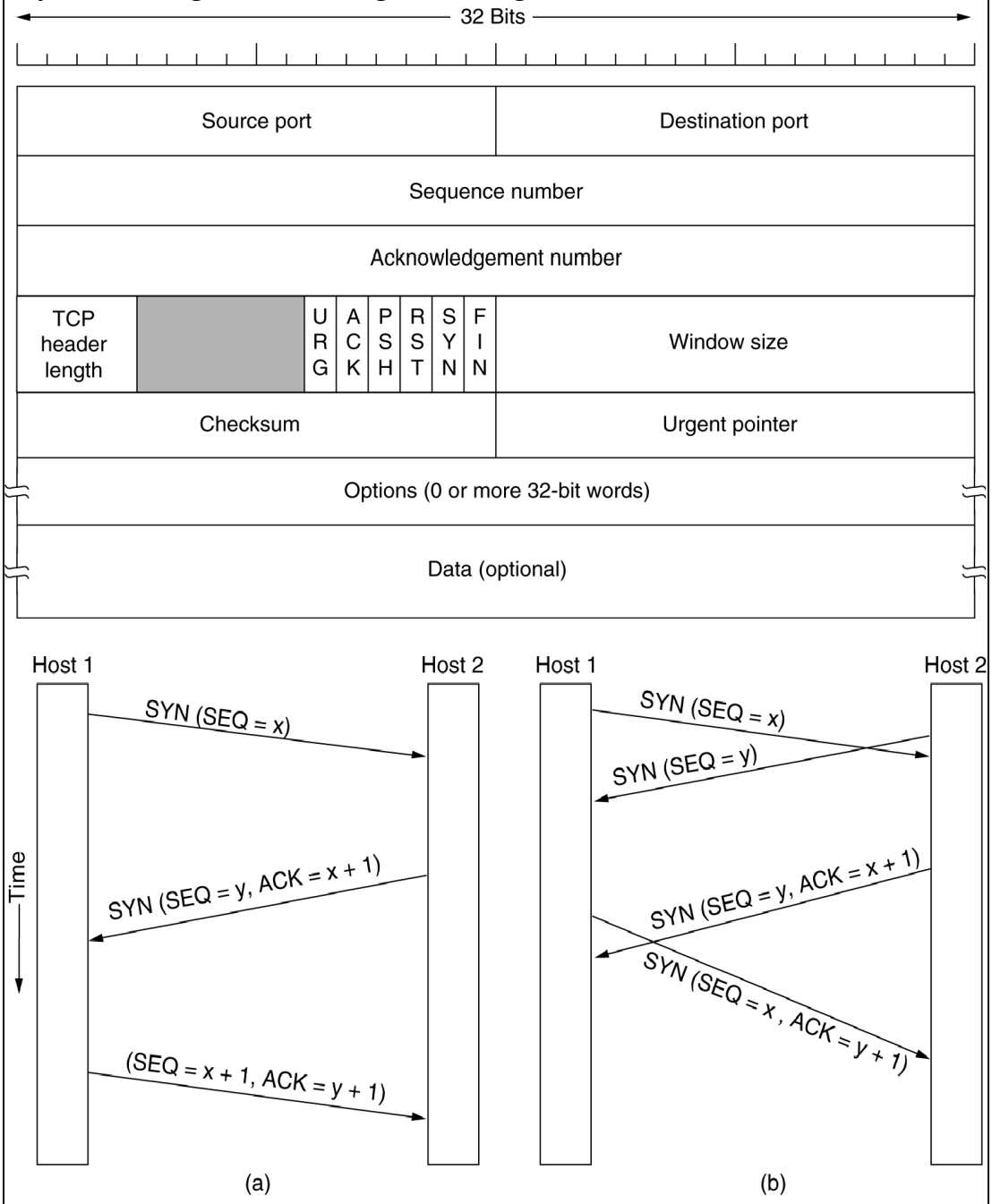
Internal Assessment Test 3 – December 2023

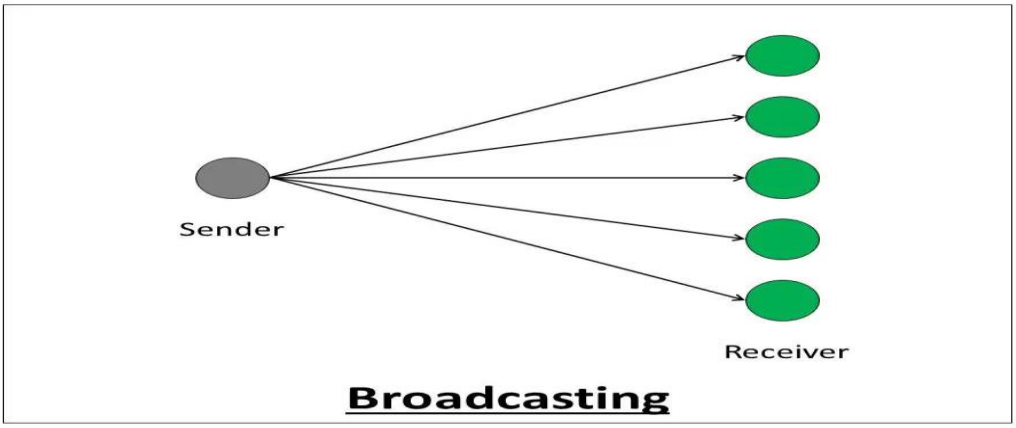
Date:	13/03/2024	Duration:	90 minutes	Max Marks:	50	Sem	V	OBE

		Answer Any Five	**MARKS**	**CO**	**RBT**
1		Explain Dijkstra's Algorithm with an example?  **Figure 5-7.** The first six steps used in computing the shortest path from *A* to *D*. The arrows indicate the working node. [5M] Tentative Node, Current working Node, Permanent Node • Several algorithms for computing the shortest path between two nodes of a graph are known. • Dijkstra algorithm **finds the shortest paths between a source and all destinations in the network.** • **Each node is labeled (in parentheses) with its distance from the source node along the best known path.** • The distances must be **non-negative,** as they will be if they are based on real quantities like bandwidth and delay. • Initially, **no paths are known, so all nodes are labeled with infinity**. As the algorithm proceeds and paths are found, the labels may change, **reflecting better paths.** A label may be either tentative or permanent. • Initially, all labels are **tentative.** When it is discovered that a label represents the shortest possible path from the source to that node, it is made **permanent and never changed thereafter.** [5M]	[10]	2	L2

2		Explain Web Caching and Cookies mechanisms with diagrams? *goal:* satisfy client request without involving origin server[5M] user sets browser: Web accesses via cache browser sends all HTTP requests to cache object in cache: cache returns object else cache requests object from origin server, then returns object to client • reduce response time for client request • reduce traffic on an institution's access link • Internet dense with caches: enables "poor" content providers to effectively deliver content (so too does P2P file sharing) many Web sites use cookies [5M] *four components:* 1) cookie header line of HTTP *response* message 2) cookie header line in next HTTP *request* message 3) cookie file kept on user's host, managed by user's browser 4) back-end database at Web site	[10]	2	L2
3	a	Describe UDP segment, Explain multiplexing and demultiplexing at transport layer? [2M] 32 Bits Source port | Destination port UDP length | UDP checksum	[2]	2	L2
			[3]		

	b	Compare and Contrast HTTP and SMTP protocols? • Main difference between **HTTP** and **SMTP** is: -HTTP is mainly a **pull protocol**—someone loads information on a Web server and users use HTTP to pull the information from the server at their convenience. -SMTP is primarily a **push protocol**—the sending mail server pushes the file to the receiving mail server. Both protocols (HTTP and SMTP) are used to transfer files from one host to another: -HTTP transfers files (also called objects) from a Web server to a Web client (typically a browser); -SMTP transfers files (that is, e-mail messages) from one mail server to another mail server.	[5]	2	L3
4		Describe in detail the services offered by DNS? Explain DNS message format?[5M] • *distributed database* implemented in hierarchy of many *name servers* • *application-layer protocol:* hosts, name servers communicate to *resolve* names (address/name translation) • note: core Internet function, implemented as application-layer protocol • complexity at network's "edge" message header [5M] • identification: 16 bit # for query, reply to query uses same # • flags: • query or reply • recursion desired • recursion available • reply is authoritative	[10]	2	L2

5		Explain all fields in the TCP Segment? TCP Connection management by using three way handshaking for establishing and closing connections?  	[10]	2	L2

6		Explain various types of broadcast routing algorithms?  Reverse Path Routing ● When a broadcast packet **arrives** at a router, the router **checks** to see if the packet arrived on the link that is normally used for sending packets toward the source of the broadcast. If so, there is an **excellent chance** that the broadcast packet **itself followed the best route from the router** and is therefore the **first copy to arrive at the router.** This being the case, the router **forwards copies of it onto all links** except the one it arrived on. ● If, however, the broadcast packet arrived on a link other than the **preferred one** for reaching the source, **the packet is discarded as a likely duplicate.** Multicast routing ● Sending a message to such a group is called **multicasting**, and the routing algorithm used is called **multicast routing.** Anycast routing ● So far, we have covered **delivery models** in which a source sends to a **single destination** (called **unicast**), t**o all destinations** (called **broadcast**), and **to a group of destinations** (called **multicast**). ● Another delivery model, called **anycast** is also useful. In anycast, **a packet is delivered to the nearest member of a group**. Schemes that find these paths are called **anycast routing.**	[10]	2	L2