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RV COLLEGE OF ENGINEERING®

(An Autonomous Institution affiliated to VTU)

IV Semester B. E Examinations Oct - 2023

Computer Science and Engineering

COMPUTER NETWORKS

Time: 03 Hours ***Maximum Marks: 100***

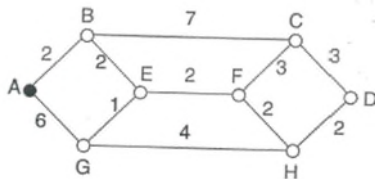
Instructions to candidates:

1. Answer all questions from Part A. Part A questions should be answered in first three pages of the answer book only.
2. Answer FIVE full questions from Part B. In Part B question number 2, 7 and 8 are compulsory. Answer any one full question from 3 and 4 & one full question from 5 and 6.

PART-A

1	1.1	Performance of a network is often evaluated by two networking metrics: _____.	01
	1.2	For n devices in a network, what is the number of cable links required for a mesh topology?	01
	1.3	The presentation layer ensures _____ between communication devices through transformation of data into a mutually agreed upon format.	01
	1.4	What is the maximums overhead in byte stuffing algorithm?	01
	1.5	Which category of *HDLC* frames undergoes error and flow control mechanism by comprising send and receive sequence numbers?	01
	1.6	A subset of a network that includes all the routers but contains no loops is called _____.	01
	1.7	Which functionality of the network layer deals with the necessity of a three way handshake usually before the transmission of data from sender to receiver?	01
	1.8	The ability of a single network to span multiple physical networks is known as _____.	01
	1.9	What is the purpose of using source and destination port numbers respectively in the addressing method of transport layer?	01
	1.10	How are frames recognized in bit and byte stuffing?	02
	1.11	Name any two *GUI* based user agents?	01
	1.12	Application layer offers _____ service.	01
	1.13	*SMTP* is a _____ protocol.	01
	1.14	The packet of information at the application layer is called _____.	01
	1.15	The *ASCII* encoding of binary data is called _____.	01
	1.16	In virtual circuit network each packet contains _____.	01
	1.17	Why subnetting is required?	01
	1.18	Which transmission media has the highest transmission speed in a network?	01
	1.19	When displaying a web page, the application layer uses the _____.	01

PART-B

2	a	How does information get passed from one layer to the next in the internet model?	05
	b	Differentiate between a port address, a logical address, and a physical address?	06
	c	Suppose a computer sends a frame to another computer on a bus topology LAN. The physical destination address of the frame is corrupted during the transmission. What happens to the frame? How can the sender be informed about the situation?	05
3	a	Elucidate the implementation of connectionless service in the network layer with the help of a neat diagram.	08
	b	Give two example applications for which connection oriented service is appropriate. Also give two examples for which connectionless service is best. Highlight the differences between the connection oriented and connectionless services.	08
		OR	
4	a	Distance vector routing takes long time to converge after the network topology changed. Suggest an algorithm which overcomes the above problem? Specify the steps involved with an example.	08
	b	Consider the network given below:  Using Shortest path algorithm, find the shortest path from A to D, illustrating all the steps.	08
5	a	Summarize the approaches used for congestion control in the network.	04
	b	Discuss any two congestion control methods used in TCP.	04
	c	Explain the flow based and class based services with examples.	08
		OR	
6	a	The source and destination hosts are on the same type of network, but there is a different network in between, communication between these two networks is difficult. Which approach or method is used to establish communication? Depict with an example.	08
	b	Differentiate between the transparent and non-transparent fragmentation.	08
7	a	Illustrate the IPv4 header with a neat diagram.	08
	b	A network on the internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle?	04
	c	The operation of the internet is monitored closely by the routers. When something unexpected occurs during packet processing at a router, the event is reported to the sender. Identify the protocol used to send messages. Can you specify any three messages?	04
8	a	Illustrate three way handshake scenarios for establishing a connection.	08
	b	Differentiate between Nagle's and clark's solution.	04
	c	Highlight the requirement of message transfer agents and user agents in email.	04