Date: **Reg.No:**

FRANCIS XAVIER ENGINEERING COLLEGE
(An Autonomous Institution)
Tirunelveli-627003
Department of Computer Science and Engineering
CONTINUOUS ASSESSMENT TEST -II
Month & Year: November & 2022
Year/ Semester: Third Year/ Fifth Semester
Academic Year: 2022-2023/ODD
Course Code/Title: 19CS5602 COMPUTER NETWORKS
(Regulation 2019)

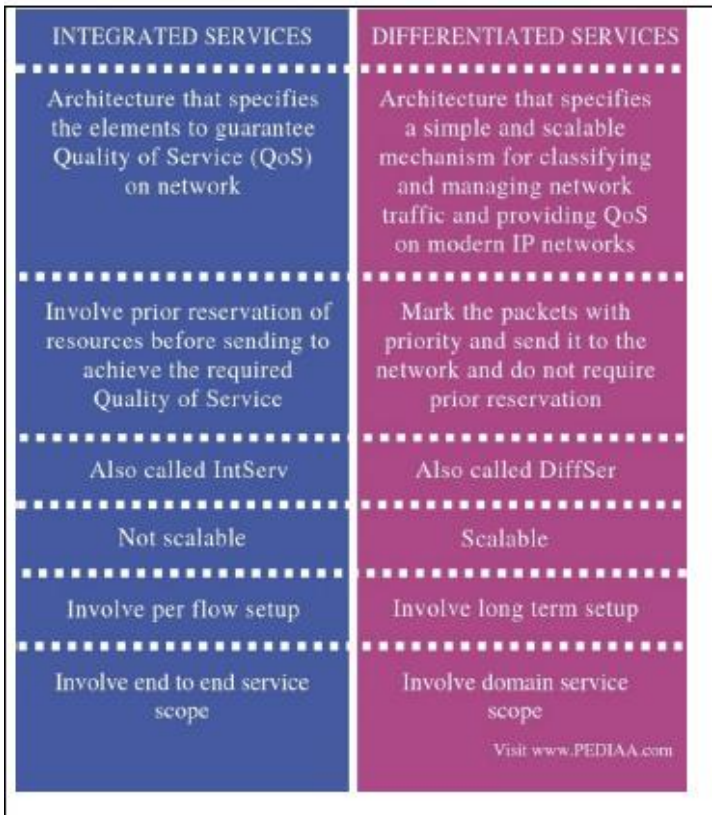
Time: Three hours **Maximum: 100 Marks**

Answer ALL Questions

PART – A (10 x 2 = 20 Marks)

Q.No	Question	Max. Marks	CO-K Level	PO-PI Code
1.	What is the purpose of including the IPv4 header and the first 8 bytes of datagram data in the error-reporting ICMPv4 messages? The error-reporting messages report problems that a router or a host (destination) may encounter when it processes an IP packet. One of the main responsibilities of ICMP is to report errors. Although technology has produced increasingly reliable transmission media, errors still exist and must be handled. IP is an unreliable protocol. This means that error checking and error control are not a concern of IP. ICMP was designed, in part, to compensate for this shortcoming. However, ICMP does not correct errors-it simply reports them. Error correction is left to the higher-level protocols. Error messages are always sent to the original source because the only information available in the datagram about the route is the source and destination IP addresses. ICMP uses the source IP address to send the error message to the source (originator) of the datagram.	2	CO3-K2	2.2.4
2.	What are the metrics used in determining the best path for a routing protocol? • Hop count.	2	CO3-K2	2.2.4

	• Path reliability. • Path speed. • Load. • Bandwidth. • Latency. • Maximum transmission unit			
3.	UDP is a message-oriented protocol. TCP is a byte-oriented protocol. If an application needs to protect the boundaries of its message, which protocol should be used, UDP or TCP? ***UDP*** is preferred because each user datagram can be used for each chunk of data.	2	CO4-K4	2.2.4
4.	Compare the TCP header and the UDP header. List the fields in the TCP header that are missing from UDP header. Give the reason for their absence. Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) are the two standard transport layers used with internet protocol (IP). TCP will be connection-oriented – after an interconnection is made, data is usually mailed bidirectional. UDP is often a simpler, connectionless Web protocol. Multiple communications usually are sent as packages throughout pieces exploitation UDP. The field that are missing in the UDP header but present in the TCP header are - The sequence number, acknowledge number, and Window fields. This is because UDP is significantly more limited in capability than TCP, its headers are much smaller. A UDP header contains 8 bytes, whereas each TCP header has ten required fields totalling up to 20 bytes (160 bits) in size. They can also optionally	2	CO4-K2	1.3.1

	include an additional data section up to 40 bytes in size.			
5.	Differentiate Connectionless and Connection-Oriented Services of transport layer protocols. In connection less service there is no connection between transmitter & receiver Ex: UDP In connection oriented service there is a connection between transmitter & receiver Ex: TCP	2	CO4-K2	1.3.1
6.	What is the major difference between Integrated Services and Differentiated Services?  	2	CO4-K2	1.3.1
7.	Classify the types of WWW documents. The documents in the WWW can be grouped into three broad categories: static, dynamic and active. A) Static: Fixed-content documents that are created and stored in a server. B) Dynamic: Created by web server whenever a browser requests the document. C) Active: A program to be run at the client side.	2	CO5-K2	2.2.3

8.	What are the parts of a browser? Each browser usually consists of three parts: a controller, client protocol, and interpreters. The controller receives input from the keyboard or the mouse and uses the client programs to access the document. After the document has been accessed, the controller uses one of the interpreters to display the document on the screen. The client protocol can be one of the protocols such as FfP or HTIP. The interpreter can be HTML, Java, or JavaScript, depending on the type of document.	2	CO5-K2	2.2.3
9.	Write short notes on SSL. The Secure Socket Layer (SSL) is an open protocol designed by Netscape; it specifies a mechanism for providing data security layered between application protocols (such as HTTP, Telnet, NNTP, or FTP) and TCP/IP. It provides data encryption, server authentication, message integrity, and optional client authentication for a TCP/IP connection.	2	CO5-K2	2.2.3
10.	How is HTTP related to WWW? The Hypertext Transfer Protocol (HTTP) is a protocol used mainly to access data on the World Wide Web. HTTP functions as a combination of FTP and SMTP. It is similar to FfP because it transfers files and uses the services of TCP. However, it is much simpler than FfP because it uses only one TCP connection. There is no separate control connection; only data are transferred between the client and the server. HTTP is like SMTP because the data transferred between the client and the server look like SMTP messages.	2	CO5-K2	2.2.3

PART – B (5 x 13 = 65 Marks)

Q.No.	Question	Max. Marks	CO-K Level	PO-PI Code
11 (a)	List three transition strategies to move from IPv4 to IPv6. Explain the difference between tunneling and dual stack strategies during the transition period. When is each strategy used? - Dual stack (5) - Tunneling (4)	13	CO3-K4	2.2.4

	- Header translation (4)			
(Or)				
(b)	Explain LSP routing algorithm with its protocol in detail. - Reliable flooding (3) - Route calculation (3) - Dijikstra algorithm (4) - OSPF (3)	13	CO3-K2	1.3.1
12 (a)	Analyze the various unicast routing algorithms and explain the routing that is not based on least-cost routing. - Listing the unicast routing algorithms (2) - Path vector routing and BGP (11)	13	CO3-K4	2.2.4
(Or)				
(b)	Describe in detail about ICMP. - Error reporting messages (4) - Query messages (4) - Message format (5)	13	CO3-K2	1.3.1
13(a)	Is TCP connection oriented or connection-less protocol? Justify your answer. - Connection oriented (2) - TCP connection 1. connection establishment, (4) 2. data transfer, and (3) 3. connection termination (4)	13	CO4-K4	2.2.4
(Or)				
(b)	Identify and explain the various functionalities of SCTP. - Services (3) - Features (3) - Packet format (3) - Connection (4)	13	CO4-K2	1.3.1

14a)	Discuss in detail the various congestion control mechanisms in TCP. - Slow Start: Exponential Increase (5) - Congestion Avoidance: Additive Increase (4) - Congestion Detection: Multiplicative Decrease (4)	13	CO4-K2	1.3.1
	(Or)			
(b)	Infer how to improve QoS. 1. scheduling, (5) 2. traffic shaping, (4) 3. admission control, and (2) 4. resource reservation. (2)	13	CO4-K2	1.3.1
15 (a)	Write brief notes on WWW architecture and also describe how HTTP is related to WWW. - WWW (8) - HTTP (5)	13	CO4-K2	1.3.1
	(Or)			
(b)	Explain in detail about Domain Name System. - Namespace, Domain Name Space (4) - Resolution (4) - DNS messages (5)	13	CO4-K2	1.3.1

PART – C (1 x 15 = 15 marks)

Q.No.	Question	Max. Marks	CO-K Level	PO-PI Code
16 (a)	Analyze the message format and the message transfer and the underlying protocol involved in the working of electronic mail. - Architecture (5) - SMTP (5) - POP & IMAP (5)	15	CO5-K4	2.2.4
	(Or)			
(b)	What do you mean by firewall? How the firewall works in computer networks? And also explain how it protects the network from unauthorized access by the intruder.	15	CO5-K4	2.2.4

	- Firewall definition (2) - Packet-filter firewall (7) - Proxy firewall (6)			

Bloom's Taxonomy Level wise Marks and Course Outcome wise Marks Distribution Analysis:

Competence level	Blooms' Taxonomy	Question No.	Marks	BTL Contribution in %	Course Outcome	Marks	CO Contribution in %
K1	Remember				CO1		
K2	Understand	**1,2,4,5,6,7,8,9,10,11b,12b,13b, 14a,b,15a,b**	**109**	**60.6**	CO2		
K3	Apply				CO3	56	31.1
K4	Analyse	**3,11a,12a,13a,16a,16b**	**71**	**39.4**	CO4	60	33.3
K5	Evaluate				CO5	64	35.6
K6	Create						
Total			**180**	**100**		**180**	**100**

Prepared By **Verified By** **Approved By**