B.E. COMPUTER SCIENCE & ENGINEERING 4th YEAR 1ST SEMESTER EXAM- 2021

INTERNET TECHNOLOGIES

Time: 4 hours (including time for upload and download) Full Marks: 70

The answer scripts should be written by YOU
Please write your name and roll no on all pages
Your scanned answer scripts should reach us in time

Group A (Total Marks: 10) [CO1]

1.	**Answer any TWO questions:** a) Why is packet switching important for the Internet? What are *Interface Message Processors*? b) What are the responsibilities of IETF and IESG? c) i)What is an RFC? How are they published and managed? ii) What are the key requirements for designing the TCP/IP protocol suit?	5x2=10

Group B (Total Marks: 25) [CO2]
Answer any FIVE questions from this group.

2.	a) With an example, explain how the delayed acknowledgment increases Nagle's penalty. b) What is "Silly Window Syndrome"? Discuss a solution to this problem.	2.5 + 2.5
3.	a) Briefly explain how congestion is controlled in TCP. b) What is "Fast Recovery"? Why is it important?	3+2
4.	a) Assume that a sender using TCP connection has sent bytes up to 3503 and cwnd is set to 10. The receiver has sent an acknowledgment number of 3501 with an rwnd of 9 bytes. (i) With an example of Sliding Window, show which bytes the sender can send now. (ii) Next, the sender sends bytes up to 3507, and the sender receives a packet with an acknowledgment value of 3504 and an rwnd of 12. Show the sliding window after this communication. What is the value of cwnd now?	2+3
5.	Discuss how *address autoconfiguration* takes place in IPv6.	5
6.	Discuss how packet loss is handled in multimedia protocols.	5
7.	a) Explain why sequence numbers and timestamps, both are used in RTP protocol. b) What are the different types of packets sent by RTCP protocols ?	5

Group C (Total Marks: 10) [CO3]
Answer any ONE question.

8.	(a) "HTTP is a client driven protocol."-Discuss about one strategy adopted to overcome this limitation, especially for smartphone-based clients. (b) Discuss about the significance of MIME types for HTTP based applications. (c) Why and how are services built on top of HTTP?	4+3+3=10
9.	(a) How does a web application relate to the Internet? (b) Compare between HTTP and Websocket. (c) Discuss about an architectural design pattern.	3+4+3=10

Group D (Total Marks: 20) [CO4]
Answer any ONE question.

10.	An online apparel store sells different types of apparels. When a customer enters a generic name, the application asks for other details such as brand names and price ranges. It then displays suitable apparel matching the user's requirements or says "No items are available". (a) Write a servlet to handle the request from the client along with required annotations and the code for any model class. (b) How does the web container identify a returning user? (c) How would you share an object with any servlet and/or jsp of a web application? (d) Discuss about request dispatcher.	10+4+4+2=20
11.	(a) Describe a suitable layered architecture for developing web applications using Spring MVC framework. (b) A restaurant deploys a web application for taking online orders. The team plans to provide a list of customized platters for home delivery. Answer the following if the application is developed using the Spring framework. (i) Write the controllers needed (if any). (ii) How can dependency injection be implemented in this application? (c) What are the advantages of using a DispatcherServlet?	6+(5+5)+4=20

Group E (Total Marks: 5) [CO4 and CO5]
Answer any ONE question.

12.	How will you validate the data sent by the client for servlet-based web applications? Explain with an example.	5
13.	(a)Discuss about a design pattern that is heavily used in Spring framework. (b) How can security features be included in a web application built on the Spring framework?	3+2=5