

B.E. COMPUTER SCIENCE & ENGINEERING 4th YEAR 1ST SEMESTER EXAM- 2019**INTERNET TECHNOLOGIES**

Time: 3 hours

Full Marks: 100

Group A (Total Marks: 10) [CO1]**Answer any ONE question**

1.	What is a “Best Effort Service Model”? Explain how one such model is followed as an internetting principle. Who defines the different Internet standards and how? What is a Point of Presence or PoP?	10
2.	(a) What are the functions of Internet Society, Internet Engineering Task Force, and Internet Corporation for Assigned Names and Numbers? (b) Explain how TCP is considered as a “Guaranteed Service Protocol”.	6+4=10

Group B (Total Marks: 40) [CO2]**Answer any TWO questions from this group.**

3.	(a) How are the following flag bits used in TCP – RST, SYN, FIN? (b) Assume that a sender using TCP connection has sent bytes up to 3503 and cwnd is set to 20. The receiver has sent an acknowledgment number of 3501 with an rwnd of 9 bytes. (i) Explain what will be the contents of the next segment from the sender. (ii) Suppose in the earlier situation, the sender sends bytes up to 3507. Next, the sender receives a packet with an acknowledgment value of 3504 and an rwnd of 12. Explain what will be the contents of the next segment from the sender. What is the value of cwnd now? (iii) Suppose a timeout occurs for the retransmission timer. Now, how many bytes can be sent by the sender? (c) Explain how ‘delayed acknowledgement’ is used in TCP. (d) How is retransmission timer used in TCP for error control?	4+7+3+6=20
4.	(a) What are the different types of IPv6 Unicast addresses? What is the use of anycast address? (b) How ‘address autoconfiguration’ is performed in IPv6? (c) What are extension headers in IPv6? Discuss how fragmentation is supported in IPv6. (d) Explain how mobility is supported in IPv6 using ‘route optimization’.	5+4+5+6=20

[Turn over

5.	<p>(a) How do you use DNS records to find the IP address for a host? How do you use DNS records to find the name server for a domain? (Write the commands with field values in both cases).</p> <p>(b) How is a DHCP server discovered within a network? How does a DHCP client relinquish its lease on a network address?</p> <p>(c) What are the strategies for handling packet loss in real time applications? Explain the use of playback buffer for real-time audio and video.</p> <p>(d) Discuss the protocol stack for media streaming. What are the different types of RTCP packets?</p>	3+4+4+(4+5)=20
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Group C (Total Marks: 10) [CO3]**Answer any ONE question.**

6.	<p>(a) Define a web application. How is it related to the Internet?</p> <p>(b) State its disadvantages.</p> <p>(c) State the advantages of following design patterns while developing a web application.</p>	5+2+3=10
7.	<p>(a) How does a web container provide different output for different clients when the same servlet is requested?</p> <p>(b) Describe a suitable architecture for developing web applications.</p>	4+6=10

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

8.	<p>An online store sells different types of books. When a customer enters a topic, the application suggests the title of books available at the web store. If the customer then asks to filter the books according to a given price range, the application would display the updated list. It also displays the email id of admin. Each web page would display the same header that can be customized separately without modifying the request processing code.</p> <p>(a) Write the corresponding servlet(s) that handles the request(s) from the client.</p> <p>(b) Write a suitable deployment descriptor for the application.</p> <p>(c) To generate the view, which one would be appropriate- (i) <code><%@include..%></code> or (ii) <code>jsp:include</code>? Give reasons.</p> <p>(d) How does the container know when to destroy a session?</p>	8+4+4+4=20
9.	<p>(a) Discuss about the different design patterns used in Spring framework. Clearly mention where which pattern is used and how.</p> <p>(b) A restaurant deploys a web application for taking online orders. The team plans to provide special discounted menu for Christmas. Answer the following if the application is developed using Spring framework.</p> <p>(i) Write the service layer interface and corresponding xml file (if any).</p> <p>(ii) How can the Spring RequestDispatcher link to suitable controller and different views?</p>	9+(5+6)=20

Group E (Total Marks: 20) [CO4 and CO5]
Answer any ONE question.

11.	<p>(a) A web application “Shopping Cart” contains “MyServlet.class” servlet that can only be accessed by existing members of the shopping cart application. The members have a username and a password. Some of the members are assigned the “Member” role so that they can access “BuyWithDiscount.class” servlet. Other existing members are assigned the “Guest” role. Assume both the roles are defined in tomcat-users.xml file.</p> <p>(i) Write a suitable deployment descriptor for this web application. (ii) How to protect all http methods from unauthorized access?</p> <p>(b) What are the benefits of having a pageContext implicit object in JSP?</p> <p>(c) Differentiate between attribute and parameter.</p>	(10+2)+4+4=20
12	<p>(a) Describe the different layers of abstraction that a developer typically follows in case of Spring MVC framework.</p> <p>(b) Is there any advantage of following such layers of abstraction? Give reasons.</p> <p>(c) How can security features fit to these layers of abstraction?</p> <p>(d) How can a web application (developed using Spring framework) maintain multiple WebApplicationContext?</p>	9+3+5+3=20