

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: BTECH  
BRANCH: ECE**

**SEMESTER: VI  
SESSION: SP/2025**

**SUBJECT: EC351 COMPUTER NETWORKING**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions, each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	What is meant by a ring wiring concentrator used in Token Ring topology? What are the advantages of using it? Suppose the total wire length of a Token Ring operating at 16 Mbps is 800m. What number of stations must be attached to it so the token can circulate properly? Assume each host provides just 1 bit of buffering. Assume the speed of light as $2 \times 10^8$ m/s.	[5]	1
Q.1(b)	Differentiate the following, highlighting their layer of operation i) Active and Passive Hub, ii) Bridge and a layer two switch, iii) Layer two and layer three switches, iv) Packet-by-packet and flow-based layer three switches	[5]	1
Q.2(a)	Compare the individual fields of the IPv4 header with the IPv6 header. A TCP message of 2000 bytes of data and 20 bytes of TCP header is passed to the IP layer. IP layer appends 20 bytes of IP header to each fragment. Suppose this host is connected to a link with an MTU (maximum transmissible unit) size of 512 Bytes i) How many datagrams are sent out of the host? ii) What is the size (in bytes) of the last datagram? iii) What is the value of the offset field in the last fragment?	[5]	2
Q.2(b)	Differentiate the following: i) General, Group-specific, and Group and Source-specific query messages used by IGMP. ii) Exterior routing Protocols (ERP) and Interior routing protocols (IRP) with their examples.	[5]	2
Q.3(a)	Compare the following: i) Three-way handshaking versus two-way handshaking for connection establishment and termination in a failure-prone network. ii) Slow start versus dynamic sizing on the window in TCP congestion control.	[5]	3
Q.3(b)	Compare UDP(User Datagram Protocol ) with TCP (Transmission Control Protocol). Also, justify using UDP as a transport layer protocol by mentioning at least four of its applications.	[5]	3
Q.4(a)	Differentiate the following i) Active and passive security threats with their types, ii) Link and End-to-End encryption	[5]	4
Q.4(b)	What is Message Authentication? Write down the parameters to be checked to conclude that a message is authentic. What are the different approaches for Message authentication?	[5]	4
Q.5(a)	What is SNMP? Where is it used? What are the three types of parties? Briefly explain the following key elements in a network management system. i) Manager, ii) Agent, iii) Management Information Base, iv) Network management protocol.	[5]	5
Q.5(b)	Explain the architecture of the World Wide Web (WWW). Explain the function of different parts of a browser by giving an example of each.	[5]	5