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

CLASS: IMSc **SEMESTER : VIII**
BRANCH: MATHS &COMPUTING **SESSION : SP/19**

SUBJECT: CS6107 COMPUTER NETWORKS

TIME: 3 Hours **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
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.

Q.1(a) Describe the OSI layers and functionality with clear diagrams. [6]

Q.1(b) What is the delay X bandwidth of a point to point network 2 km in length, when the propagation delay becomes equal to the transmit delay for 100 byte packets? (Assume propagation delay= 2×10^8 m/sec) [6]

Q.2(a) Explain bit stuffing and byte stuffing with an example. Using bit stuffing show the bit sequence transmitted over the link in the following sequence: [6]
110101111101011111101011111110

Q.2(b) Give the NRZ, NRZI and Manchester coding for the given bit sequence: [6]
1101 1110 1010 1101 1011 1110 1110 1111

Q.3(a) What do you mean by capture effect in an ethernet back-off algorithm? [6]

Q.3(b) How does a monitor resolve the issue of a corrupted or orphaned frame in a token ring? What does a monitor do for missing tokens? [6]

Q.4(a) Why do we need subnetting? With an example explain how communication is made possible in virtual private networks? [6]

Q.4(b) Differentiate features of reliable flooding with OSPF routing protocol. [6]

Q.5(a) How is DVMRP different from PIM? Who decides to create a source specific tree in a PIM? Does the network structure thus created have problems? [6]

Q.5(b) Describe the MPLS scheme for multicast communications. Does it improve the router performance? Justify your answer. [6]

Q.6(a) Draw the UDP header and outline its main features. How does it ensure reliable transmission? [6]

Q.6(b) How does an RPS protocol ensure reliable message delivery and support for large message size? [6]

Q.7(a) Differentiate between windows based and rate based resource allocation scheme. How is the fairness index computed for a fair resource allocation? [6]

Q.7(b) Explain the slow start mechanism for TCP congestion control. How is it better than additive increase congestion control? [6]

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