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13/12/13 RV

Reg. No. : 

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**Question Paper Code : 75491**

5 Year. M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fifth Semester

Software Engineering

ESE 052 — COMPUTER NETWORKS

(Regulation 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is bit stuffing? Give an example.
2. State the need for flow control.
3. What is a repeater?
4. Distinguish between broadcast and multicast.
5. What is best-effort, connectionless service?
6. What is an IP address? Give an example.
7. State the advantages of IPv6 over IPv4 with respect to address space.
8. What are multicast distribution trees?
9. State why TCP is said to be a full-duplex protocol.
10. List the three fields the pseudoheader of UDP consists of.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain with diagrammatic illustration the open systems interconnection (OSI) architecture. (12)
- (ii) Represent the bit stream 0010111101000010 using NRZ encoding and Manchester encoding. (4)

Or



- (b) Using cyclic redundancy check (CRC) algorithm perform the following :  
 Given :  
 Message M = 1010101011 (10 bits)  
 Pattern P = 101110 (6 bits)
- (i) Calculate frame check sequence (FCS). Illustrate the FCS calculation step by step. (8)  
 (ii) What is the transmitted frame? (4)  
 (iii) Assume that the second bit and the fourth bit of the transmitted frame are toggled. Discuss how the receiver will detect the bits are toggled. (4)
12. (a) (i) Explain the working of CSMA/CD. (4)  
 (ii) Explain how the MAC protocol operates on a token ring. (8)  
 (iii) Explain the working of fiber distributed data interface (FDDI). (4)
- Or
- (b) (i) What is a routing table? Give two examples. (4)  
 (ii) Explain with an example and diagrammatic illustration the virtual circuit switching. (12)
13. (a) Explain distance-vector routing with an and diagrammatic illustrations. (16)
- Or
- (b) Explain with an example and diagrammatic illustrations the link-state routing. (16)
14. (a) (i) What is subnetting? Explain the same with an example and diagrammatic illustration. (8)  
 (ii) Explain classless interdomain routing (CIDR) with an example. (8)
- Or
- (b) Explain with an example how the distance-vector routing for unicast can be extended to support multicast. (16)
15. (a) (i) Explain with diagrammatic illustration the timeline for three-way handshake algorithm used by TCP to establish and terminate a connection. (4)  
 (ii) Explain with a state-transition diagram the states involved in opening a TCP connection and in closing a TCP connection. (12)
- Or
- (b) Explain with an example how UDP extends the host-to-host delivery service of the underlying network into a process-to-process communication service. (16)