2017/EVEN/08/24/MCS–602 (C)/566

UG Even Semester (CBCS) Exam., May—2017

COMPUTER SCIENCE

(6th Semester)

Course No. : MCS–602 (C)

(Computer Networks)

Full Marks : 75

Pass Marks : 30

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, selecting **one** from each Unit

UNIT—I

1. *(a)* Explain the OSI model in detail. 7

(b) Explain the following in brief : 2×4=8

(i) Dialog control

(ii) Connection control

(iii) Network virtual terminal

(iv) Socket address

2. *(a)* Give the difference between node-to-node, host-to-host, process-to-process delivery of data. 5

(b) If the data link layer can detect errors between hop, then why do you think we need another checking mechanism at the transport layer? 3

(c) What is a peer-to-peer process? 2

(d) What are the headers and trailers, and how do they get added and removed? 3

(e) What is the difference between a port address, a logical address and a physical address? 2

UNIT—II

3. *(a)* The signal-to-noise ratio is SNR_{dB} 36 and the channel bandwidth is 2 MHz. Calculate the channel capacity. 3

(b) What are the propagation time and transmission time for a 2·5 kbyte message, if the bandwidth of the network is 1 Gbps? Assume that the distance between the sender and the receiver is 12,000 km and the light travels at 2 4 10^8 m/s. Which time is dominant? Which one is negligible? 2+2+2=6

(c) Explain the cyclic redundancy check technique in detail with an example. 6

4. *(a)* Explain the checksum technique for error detection using 4 bits. 4

(b) For each of the following four networks, discuss the consequences if a connection fails : 4

(i) Six devices arranged in a bus topology

(ii) Four devices arranged in a ring topology

(iii) Four devices arranges in a mesh topology

(iv) Seven devices arranged in a star topology

(c) Draw a hybrid topology with a ring backbone and three bus networks. 3

(d) You have two computers connected by an Ethernet hub at your home. Is this a LAN, a MAN or a WAN? Explain your reason. 2

(e) Give the differences between circuit switching and packet switching. 2

UNIT—III

5. *(a)* Explain the selective repeat automatic repeat request protocol in detail. 6

(b) Give the comparative study of stop and wait, sliding window, selective repeat automatic repeat request protocol. 5

(c) How to calculate the vulnerable time for pure Aloha and slotted Aloha protocol? 4

6. *(a)* What do you mean by CSMA? How is it different from pure Aloha and slotted Aloha? 4

(b) Explain the Carrier Sense Multiple Access/Collision Detection (CSMA/CD) in detail. 7

(c) Explain the poll and select function. 2

(d) Explain the token passing method. 2

UNIT—IV

7. *(a)* Explain Network Address Translation in detail. 7

(b) Explain the classful and classless network in detail. 3+3=6

(c) What are the differences between ARP and RARP protocol? 2

8. *(a)* Explain the distance vector algorithm with an example. 8

(b) Explain the IPv4 datagram format in detail. 7

UNIT—V

9. *(a)* Explain the Congestion Control (AIMD) Technique in detail. 10

(b) Discuss the flow control technique for TCP protocol. 5

10. Write short notes on any *three* of the following : 5×3=15

(a) ICMP

(b) SNMP

(c) SMTP

(d) HTTP

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