



Name :

Roll No. :

Invigilator's Signature :

**CS/M.Tech(ECE)/SEM-1/MCE-105A/2011-12
2011**

COMPUTER COMMUNICATION AND NETWORKING

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Question No. 1 compulsory and answer any *four* from the rest.

1. a) Draw a hybrid topology with a star backbone and four-ring networks. 2
- b) When a party makes a local telephone call to another party, is this a point-to-point or multipoint connection ? Explain. 2
- c) What is the maximum number of characters or symbols that can be represented by unicode ? 2
- d) What are the concerns of the P.L. in the internet model ? 2



- e) What is the difference between a port address, a logical address and a physical address ? 2
- f) What is the purpose of cladding in an optical fibre ? 2
- g) Name the advantages of optical fibre over twisted pair and coaxial cable. 2
2. a) How are OSI and ISO related to each other ? 4
- b) Suppose a computer sends a packet at the network layer to another computer, somewhere in the internet. The logical destination address of the packet is corrupted. What happens, to the packet ? How can the source computer be informed of the situation ? 5
- c) There are several transport layer models in the OSI model. Find all of them. Explain the difference between them. 5
3. a) Describe the need for switching and define a switch. 3 + 2
- b) List four major components of a packet switch and their functions. 2 + 4
- c) Define blocking in a switched network. 3



4. a) What is dial-up modem technology ? 3
- b) Discuss the concept of redundancy in error detection and correction. 4
- c) What is the Hamming distance ? What is the minimum Hamming distance ? 2 + 2
- d) Which of the following CRC generators guarantee the detection of a single bit error ?
- i) $x^4 + x^2$
- ii) $x^3 + x + 1$
- iii) $x^2 + 1$
- iv) 1. 3
5. a) Compare and contrast flow control with error control. 3
- b) Compare and contrast the Go-Back-N ARQ protocol with Selective-Repeat ARQ. 4
- c) Briefly describe the services provided by the data link layer. 3
- d) Define random access and list three protocols in this category. 4



6. a) Can you explain why the vulnerable time in ALOHA depends on T_{Fr} , but in CSMA depends on T_p ? 5
- b) What are the advantages of dividing an Ethernet LAN with a bridge? 4
- c) An Ethernet MAC sublayer receives 38 bytes of data from the upper layer. How many bytes of padding must be added to the data? 5
7. a) What are the two types of links between a Bluetooth primary and a Bluetooth secondary? 5
- b) Compare and contrast CSMA/CD with CSMA/CA. 4
- c) Given a fragmented data gram (in IPv4) with an offset of 120. How can you determine the first and last byte numbers? 5
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