

2013 (A)

## COMPUTER NETWORKING

Time : 3 hours

Full Marks : 70

## Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt any **FIVE** questions.

1. Answer any seven of the following questions in short :

2×7=14

- ✓ (a) List out the four basic network topologies.
- (b) Distinguish between ADSL and SDSL.
- ✓ (c) Define flow control and error control.
- ✓ (d) How is a repeater different from an amplifier?
- ✓ (e) Find the class of each address :
  - (i) 00000001 00001011 00001011  
11101111
  - (ii) 14.23.120.8

- (f) Draw the general format of ICMP messages.
- (g) Suppose a TCP connection is transferring a file of 5000 bytes. The first byte is numbered 10001. What are the sequence numbers for each segment, if data are sent in five segments, each carrying 1000 bytes?
- (h) Mention the techniques used to improve QOS in process-to-process delivery.
- (i) Why do we need POP3 or IMAP4 for E-mail?

2. Describe briefly the various layers and functions of OSI model and compare OSI model with Internet model.

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3. Briefly explain the different types of packet switching techniques with suitable networks. Write each of its advantages and disadvantages.

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4. (a) What is CSMA/CD? How does it work? Distinguish between 1-persistent and non-persistent CSMA.
- (b) Explain in detail about the frame format and control field of HDLC.

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5. (a) Draw and explain the frame format of standard Ethernet. What are the physical media that Ethernet can run over? 7
- (b) Explain virtual private network in detail. 7
6. Explain the various classes of Internet (IPv4, IPv6) addressing with suitable examples. 14
7. (a) Draw the structure of TCP segment. Explain the features of TCP. 7
- (b) What do you understand by '3-way Handshake' in TCP? Explain 7
8. (a) Explain congestion control with a suitable example. Discuss various categories of congestion control. 7
- (b) Define QOS. Elaborate the characteristics of QOS. 7
9. (a) Describe how SMTP protocol is used in E-mail applications. 7
- (b) Illustrate the operation of FTP with a neat sketch. 7