

## Set-1

Full Marks : 70

Time : 3 hours

Answer Q. No. 1 which is compulsory and any five questions from the rest

The figures in the right-hand margin indicate marks

1. Answer all questions : 2 × 10

(a) Give two reasons for using layered protocols.

(b) What is the main difference between guided media and unguided media ?

(c) Which of the OSI layers handles each of the following ?

(i) Dividing the transmitted bit stream into frames.

(ii) Determining which route through the subnet to use.

(d) What is the main difference between TCP and UDP ?

(e) Consider the delay of pure ALOHA versus slotted ALOHA at low load. Which one is less ?

(f) What is FTP ?

(g) A bit string, 011110111110111110, needs to be transmitted at the data link layer. What is the string actually transmitted after bit stuffing ?

(h) Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimal notation.

(i) Write principles of circuit switching.

(j) Using the RSA public key cryptosystem, with  $a = 1$ ,  $b = 2$ , etc., using  $p = 5$ ,  $q = 11$  and  $d = 27$ , find  $e$  and encrypt "abcdefghij".

2. (a) Discuss the CSMA protocols for Local Area Network. 5
- (b) Discuss the PPP access and protocols. 5
3. (a) Explain various types of data link protocols in brief. Describe HDLC ? 5
- (b) Describe the various modulation techniques used in data communication system. 5
4. (a) Describe the various error correction protocols. 5
- (b) Discuss the reason of congestion and the control mechanism. 5
5. (a) Explain the basics of Wireless LANs. 5
- (b) Give an account of various Ethernet connections. 5

6. (a) Give a comparison between TCP and UDP. Both UDP and TCP use port numbers to identify the destination entity when delivering a message. Give two reasons for why these protocols invented a new abstract ID (port numbers), instead of using process IDs, which already existed when these protocols were designed. 6
- (b) Datagram fragmentation and reassembly are handled by IP and are invisible to TCP. Does this mean that TCP does not have to worry about data arriving in the wrong order ? Explain. 4
7. (a) What are the differences between IPv4 and IPv6 ? Explain. 5
- (b) How Domain Name System Works ? Suppose a person in India is connecting a website with .au TLD, then explain the process. Explain with diagram. 5

8. Write short notes on any two :

5 × 2

✓ (i) World Wide Web

(ii) SMTP

(iii) Time Division Multiplexing

✓ (iv) Line Coding.

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