B. Tech

BCSE 3306

Seventh Semester Examination – 2008

COMPUTER NETWORKS

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any ***five*** *from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) Find the number of bits that can be transmitted per second for a channel of 3000 Hz bandwidth with a signal to noise ratio of 30 dB.

(b) How do the virtual circuit and datagram differ on the issue of routing and state information ?

(c) How congestion control differs from flow control ?

(d) What does QOS refer to and what is its goal ?

(e) What is the difference between cryptography and cryptanalysis ?

(f) How is a repeater different from an amplifier ?

(g) Do you think that layering is needed for protocol hierarchies ? If so, Why ?

(h) What is the basic difference between a bridge and a router ?

(i) What are the advantages one can obtain when a workstation is connected to a computer network ?

(j) State how connection less protocol differs from connection oriented protocol ?

2. (a) What is Frequency Division Multiplexing (FDM) ? Write few applications of using FDM. Describe the synchronous Time-Division Multiplexing (TDM) technique. 5

(b) Specify different media for transmission used in computer network. Explain in brief

about the twisted pair and co-axial cable. Which one is better and why ? 5

3. (a) Describe the stop-and-wait ARQ. What is the difference between a Go-back-N ARQ and a Selective – repeat ARQ. 5

(b) Specify different error detection and correction mechanisms. Explain odd parity error correction scheme with an example. 5

4. (a) Mention difference between Traditional Ethernet and Fast Ethernet. Explain various components of Traditional Ethernet with a schematic diagram. 5

(b) Explain the Shortest path Routing with a suitable example. 5

5. (a) Draw the schematic diagram of the IPV4(Internet Protocol) Header. Explain in brief the function of each component. 5

(b) What is congestion ? Explain the principle and prevention policies of congestion control. 5

6. (a) Give an architectural overview of WWW with brief explanations on web pages, browser, URL. 5

(b) What is Hamming distance ? What kind of error is undetectable by the checksum ? 5

7. (a) Write down characteristic features of a Metropolitan Area Network (MAN). Compare LAN with WAN with respect to their typical costs and typical speeds. 5

(b) Discuss the layer functionalities of the OSI reference model. 5

8. (a) Why message security is important in communication ? Explain in brief the Symmetric key encipherment in cryptography. 5

(b) Write short notes on any *two* : 5

(i) DNS – The Domain Name System

(ii) Simple Mail Transfer Protocol (SMTP)

(iii) Network layer protocols.
