(Time: 3hrs)   (Marks 80)

N.B.: (1) Question No. 1 is compulsory .

(2) Attempt any three questions out of remaining questions .

(3) Make suitable assumptions whenever necessary.

Q1: a) Explain the need of layered design for communication and networking .Compare the OSI

reference model &TCP/IP.   (10)

Q1: b) i) How does the token Bucket Algorithm work?   (5)

ii) Explain in short different framing methods.   (5)

Q2: a) What is IPV4 Protocol ?Explain the Ipv4 Header format with diagram.   (10)

b) Explain sliding window protocol using Go Back –N technique.   (10)

Q3: a) What are transport service primitives? Explain   (10)

b) What is congestion control? Explain various Congestion prevention policies.   (10)

Q4: a) Explain CSMA Protocols. How are collisions handled in CSMA/CD   (10)

B) What are the steps involved in link state routing ? Explain the contents and requirements (10)

of link state packets .

Q5: a) Explain with the help of suitable diagram TCP connection management and release   (10)

b) Write a program for client server application using socket programming (TCP)   (10)

Q6: Write a Short notes on the Following   (20)

i) Virtual LAN

ii) SNMP

iii) SMTP

iv) DNS

(3 HOURS)   **[Total Marks: 80]**

N.B.:   (1) Question no. 1 is compulsory.

(2) Attempt any three questions from remaining.

(3) Assume suitable data wherever necessary.

Q1. (a) What is system? Which are the components of system? What are the differences between structured and object oriented system?   (**10**)

(b) Explain Business process re-engineering [BPR] of business processes.   (**10**)

Q2. (a) What is cohesion and coupling in the context of software design? Explain different types of coupling.   (**10**)

(b) Draw class diagram (minimum 4 classes) for customer complaint management system showing different relationships between classes.   (**10**)

Q3. (a) What is the importance of data flow diagram (DFD) in structured analysis and design? Draw DFD for suitable example.   (**10**)

(b) What are the different types of cost-benefit analysis? Explain ROI method with example.   (**10**)

Q4. (a) What is the use of deployment and component diagram? Prepare deployment and component diagram for ATM system.   (**10**)

(b) Explain modeling application architecture.   (**10**)

Q5. (a) Explain the need for system integrity, control and security.   (**10**)

(b) What is the purpose of use case diagram? Draw use case diagram with include and extends relationships for railway reservation system.   (**10**)

Q6. Write short notes (any two)   (**20**)
a) SRS document
b) Design of user interface
c) Requirement gathering techniques
d) Boundary class, entity class and control class