

[Time: 3 Hours]

[Marks:80]

N.B

- (1) Question no. 1 is compulsory.
- (2) Attempt any 3 from the remaining questions.
- (3) Assume suitable data if necessary.
- (4) Figures to right indicate full marks.

Q.1	Attempt any four of the following	Marks
a)	What is subnetting? Compare subnetting and supernetting	[5]
b)	What are three reasons for using layered protocols? What is two possible disadvantages of using layered protocols?	[5]
c)	Explain the count to infinity problem in detail.	[5]
d)	List two ways in which the OSI reference model and the TCP/IP reference model are the same. Now list two ways in which they differ.	[5]
e)	4-bit data bits with binary value 1010 is to be encoded using even parity Hamming code. What is the binary value after encoding?	[5]
Q.2	Attempt the following	
a)	Define guided transmission media? Illustrate with diagram the details for coaxial cable? State any 5 comparative characteristics of coaxial cable with fiber optics and twisted pair cables.	[10]
b)	Explain how collision handled in CSMA/CD? A 5 km long broadcast LAN uses CSMA has 10^7 bps bandwidth and uses CSMA/CD. The signal travels along the wire at 5×10^8 m/s. What is the minimum packet size that can be used on this network?	[10]
Q.3	Attempt the following	
a)	An organization has granted a block of addresses starting with 105.8.71.0/24, organization wanted to distribute this block to 11 subnets as follows <ol style="list-style-type: none"> 1. First Group has 3 medium size businesses, each need 16 addresses 2. The second Group has 4 medium size businesses, each need 32 addresses. 3. The third Group has 4 households, each need 4 addresses. Design the sub blocks and give slash notation for each subblock. Find how many addresses have been left after this allocation. 	[10]
b)	Explain classful IP addressing scheme in detail? List the advantages and disadvantages of classless IP addressing scheme.	[10]

Q.4 Attempt the following

- a) Explain the open loop congestion control and closed loop congestion control policies in detail [10]
- b) Explain the TCP connection establishment and Connection release. [10]

Q.5 Attempt the following

- a) Explain the concept of sliding protocol? Explain the selective repeat protocol with example? Compare the performance of Selective repeat & Go-back-N protocol. [10]
- b) Explain the link state routing algorithm with example? [10]

Q.6 Write a short note on following

- a) ARP & RARP [10]
- b) DNS [10]
