FS 81504

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

EC1009 HIGH SPEED NETWORKS

SUBJECT CODE : EC1009 **SEM / YEAR : VII / IV**
SUBJECT NAME : HIGH SPEED NETWORKS

UNIT - I
HIGH SPEED NETWORKS

PART- A (2 marks)

1. What are the data link control functions provided by LAPF?
2. What are the main features of ATM?
3. What is virtual path identifier and Virtual connection identifier?
4. What is ATM ?
5. List the levels of fiber channel and the functions of each level?
6. What is meant by SAR and CS?
7. What is the difference between AAL3/4 and AAL3/5.
8. Draw the diagram for ATM layers?
9. Give the data rates for frame relay and X.25?
10. Define NIC and Ethernet.
11. What are the key differences between frame relay and x.25 packet switching service?
12. What is need for AAL?
13. What are the uses of wireless LAN's?
14. what is access method used by wireless LAN's?
15. What is differences between class a and Class b services offered by ATM?

PART – B

1. Explains the Frame relay architecture & compare it with x.25**. (16)**
2. a. Explain the ATM cell with a suitable diagram and explain Generic Flow Control and Header error control. **(8)**
b. Explain varies ATM services. **(8)**
3. a. Discuss and compare the CPCS-PDU & SAR-PDU of AAL ¾ & AAL 5 **(8)**
b. Explain the architecture of AAL 1 **(8)**
4. Explain the architecture of 802.11 **(16)**
5. Explain the following:
a. Classical Ethernet **(8)**

b.IEEE 802.3 medium options at 10 Mbps **(8)**
6 a. Fast Ethernet **(8)**
b. gigabit Ethernet **(8)**
C.Explain Fiber channel Protocol architecture. **(8)**

UNIT- II
CONGESTION & TRAFFIC MANAGEMENT

PART- A (2 marks)

1. What is the role of DE lint in Frame relay?
2. How does frame relay report congestion?
3. Write Little's formula.
4. Define Traffic intensity or utilization factor and QOS.
5. What is the difference between committed burst size (Bc) and Excess burst size (Be).
6. Define terms Router, Bridge and Gateway.
7. What is Bluetooth?
8. Distinguish between Poisson and Exponential formulae.
9. How we calculate the percentile of packets transfer at a time in traffic management technique.
10 Define Arrival rate and service rate.
11. Write the little formula and exp[lain its uses?
12. Compare multiserver and multiple single server queues?
13. What are the drawbacks of Backpressure?
14. what is the difference between flow control and congestion control?
15. What is Reactive congestion control and preventive congestion control?
16. What are the causes of congestion ?
17. What are the Various Queue models? And its applications?

PART – B

1. Explain the single- server and multi server queering models**. (16)**
2. At an ATM machine in a supermarket, the average length of a transaction is 2 minutes,and on average, customers arrive to use the machine once every 5 minutes, How long is the average time that a person must spend waiting and using the machine? What is the 90th percentile of residence time? On average, how many people are waiting to use the machine? Assume M/M/1. **.(16)**
3. Consider a frame relay node that is handling a Poisson stream of incoming frames to betransmitted on a particular 1 – Mbps outgoing link. The stream consists of two types of frames. Both types pf frames have the same exponential distribution of frame length with a mean of 1000 bits.
a. Assume that priorities are not used. The combined arrival rate of frame of both types is 800 frames/second. What is the mean residences time (Tr) for all frames?
b. Now assume that the two types are assigned different priorities, with the arrival rate of type 1 of 200 frames/second and the arrival rate of type 2 of 600 frames/second. Calculate

the mean residence time for type 1, type2, and overall.

c. Repeat (b) for $\lambda_1 = \lambda_2 = 400$ frames/second.

d. Repeat (b) for $\lambda_1 = 600$ frames/second and $\lambda_2 = 200$ frames/second. **. (16)**

4. Messages arrive at a switching center for a particular outgoing communications line in a poisson manner with a mean arrival rate of 180 messages per hour. Message length is distributed exponentially with a mean length of 14,400 characters. Line speed is 9600 bps.

a. What is the mean waiting time in the switching center? **(6)**

b. How many messages will be waiting in the switching center for transmission on the average? **(10)**

5. a.Explain the effects of congestion. **(8)**

b. Explain the congestion control mechanisms in networks**. (8)**

6. What is Kendel's Notation. State the equations single server that follows the M/G/I model ?

7. Explain the need for queuing analysis?

UNIT – III
TCP AND ATM CONGESTION CONTROL

PART- A (2 marks)

1. Define the relationship between through put and TCP window size W.
2. Why is retransmission strategy essential in TCP?
3. What are the types of retransmit policy?
4. Why congestion control in a TCP/IP-based internet is complex.
5. Define cell delay variation.
6. Define CBR and ABR.
7. What are the advantages of sliding window protocol
8. State the conditions that must be met for a cell to conform?
9. What are the retransmit policies used in TCP traffic control?
10. why congestion control is difficult to implement in TCP?
11. Define sustainable Cell rate. What is the use of SCR?
12. What are the mechanisms used in ATM traffic control to avoid congestion conditions?
13. How is times useful to control congestion in TCP?
14. What is Protocol and give two examples?
 15.Give the significance of timer management in networking?

PART – B

1 a. Explain TCP flow & congestion control**. (10)**

b.Explain the Retransmissions Timer management techniques. **(6)**

2. Explain the five important window management techniques. **(16)**

3. a Explain the congestion control mechanism in ATM networks carrying TCP traffic.

b.Explain the ATM traffic control **(6)**

4. a. What are the requirements for ATM traffic and congestion control? **(10)**

b. Explain the ATM traffic – related attributes**. (6)**

5 a.. Explain in detail ABR traffic management. **(8)**

b. Explain in detail GFR traffic management**. (8)**

6. Write a notes on TCP over ATM?

UNIT- IV
INTEGRATED AND DIFFERENTIATED SERVICES

PART- A (2 marks)

1. What are the requirements for inelastic traffic?
2. State the drawbacks of FIFO queering discipline.?
3. What is global synchronization?
4. Distinguish between inelastic and elastic traffic.?
5. Define the format of DS field.?
6. What is Elastic Traffic?
7. What are the Key elements of controlled load devices?
8. What is an inelastic traffic? What are the requirements for inelastic traffic?
9. What are the different queuing disciplines used?
10. How random early detection helps in congestion avoidance?
11. What is meant by rate control? Give examples?
12. What is Label stacking?
13. What is DS node?
14. What is DS interior node?
15.Define global synchronization?

PART – B

1. Explain the block diagram for Integrated Services Architecture. and give details about components **(16)**
2.a. Explain the services offered by ISA **(8)**
b.Define Differentiated services**. (8)**
3. Explain the various queering disciplines in ISA. **(16)**
4. Explain the RED algorithm**. (16)**
5. Explain the various types of Traffic. **(16)**
6. What are the different types of PHB?

UNIT-V
PROTOCOLS FOR QOS SUPPORT

PART- A (2 marks)

1. What are the reservations attributes and styles in RSVP.
2. Define Forwarding equivalence class (FEC).
3. Define MPLS label format in RSVP.
4. Compare hop – lug – hop routing and explicit routing.
5. Define the format of RTP header.
6. What is wild card filter style?
7. What is a mixer in RTP?
8. What is the use of translator in RTP?
9. draw the diagram which shows the relationship among session , flow spec ad filter spec.
10. What is the advantage of Label switching?
11. What does RTCP provide to the sources?
12. Mention the protocol used for congestion control?
13. What is RTP?
14. Define flow specification in RSVP?
15. Define session in RSVP?

PART – B

1.a. Explain the characteristics of RSVP & the types of data flow**. (8)**
b. Explain the RSVP operation and protocol mechanisms**. (8)**
2. Explain the operation of multi protocol label switching**. (16)**
3 a. Explain the RTP protocol architecture. **(8)**
b. Explain the RTP data transfer protocol**. (8)**
4. Explain the MPLS characteristics and advantages**. (16)**
5. What are the functions that are performed by RTCP and explain the RTCP transmission in detail ?