

B.Tech INFORMATION TECHNOLOGY

VIII SEMESTER

IT9040 MULTIMEDIA NETWORKS (ELECTIVE)

MAX TIME: 3 HOURS

MAX MARKS: 100

PART A (10*2=20 Marks)

Answer ALL Questions

1. State the limitations of the Internet in the context of multimedia communication.
2. Write the expression that indicates the condition to decide if a flow is TCP friendly or not.
3. What do the terms 'ingress' and 'egress' refer in DSA networks?
4. The standard digital encoding of voice is done at 64 Kbps. What is the packetization delay if the size of the packet is 500 bytes?
5. Mention the major functions of a media player.
6. SIP is an out of band protocol. Justify this statement.
7. If a cell is overloaded in wireless networks, to accommodate either a handoff call or a new call it is necessary to degrade ongoing calls. What are the factors to be considered before degrading ongoing calls?
8. What is the difference between Layer 2 and Layer 3 of MPEG coding?
9. State any four QoS metrics.
10. Compute the bit rate for CD quality audio (stereo).

PART B (5*16=80 Marks)

11 i. A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps? (8)

ii. Describe the various functional components that are required to achieve Guaranteed Service model. (8)

12a. i. Explain the major features of Expedited Forwarding PHB and Assured Forwarding PHB. (8)

ii. Consider a router that is managing three flows, on which packets of constant size arrive at the following wall clock times:

Flow A: 1,2,4,6,7,9,10 Flow B: 2,6,8,11,12,15 Flow C: 1,2,3,5,6,7,8

All three flows share the same outbound link, on which the router can transmit one packet per time unit. Assume that there is an infinite amount of buffer space. Suppose the router implements fair

queuing. For each packet, give the wall clock time when it is transmitted by the router. Arrival time ties are to be recovered in order A, B, C. Note that wall clock time $T=2$ is FQ-clock time $A_i = 1.5$. (8)

(OR)

12b. i. Explain the process of establishing a LSP in MPLS networks with an example. (8)

ii. Assume that the link speed of a switch is 100 Mbps. It has started transmitting a packet of 5 KB. Another packet of size 2 KB arrives at the switch just after the switch has started transmitting. Estimate the time at which the transmission of the packet sized 2KB will be completed. (Note: Preemption of current packet is not allowed]. Now assume that the size of both the packets is 53 bytes and compute the time at which transmission of the second packet will get completed. Here also preemption is not allowed. (8)

13a. i. Explain the following streaming configurations.

- a. No direct interaction between media player and web server
- b. Direct interaction between media player and web server
- c. Interaction between media player and media server (8)

ii. Explain the do's and don'ts of RTP. Also explain the various fields of RTP header. (8)

(OR)

13b. i. Explain the procedure of setting up a call in SIP. (8)

ii. Explain the session initiation, involving SIP proxies and registrars. (8)

14a. i. Explain the utility functions of Adaptive RT traffic, hard RT traffic and non RT traffic. (8)

ii. Discuss the quantization of utility function into linear piecewise function. (8)

(OR)

14b. i. Explain SNR, spatial and temporal scalabilities. (6)

ii. Explain the features and framework of SVC and compare it with simulcast coding. (10)

15a. i. Explain the perceptual coding with respect to psychoacoustic model. (8)

ii. Explain the MPEG perceptual coder schematic. (8)

(OR)

15b. i. Explain the various frame types used in video compression. (8)

ii. Explain any one MPEG video compression scheme. (8)

-----*-----*