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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SECOND SEMESTER M.TECH DEGREE EXAMINATION, APRIL/MAY 2018

Branch: **Computer Science and Engineering**

Stream(s): **Computer Science and Engineering**

Course Code & Name:

01CS6106: Advanced Computer Networks

Answer *any two full* questions from *each* part.

Limit answers to the required points.

Max. Marks: 60 Duration: 3 hours

PART A

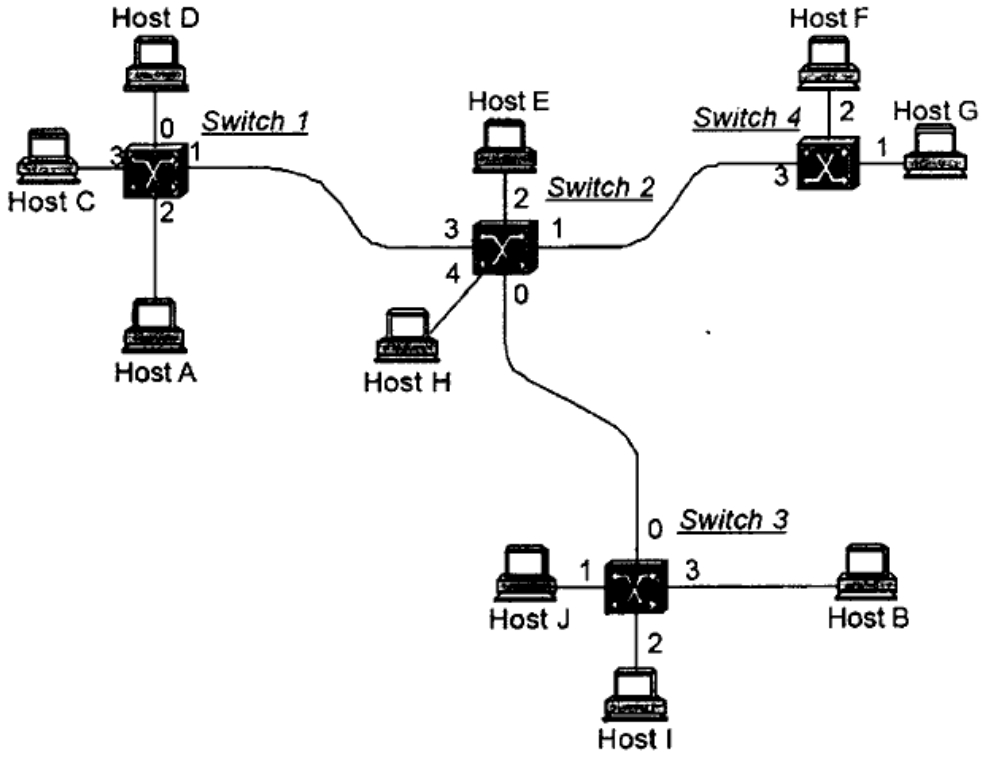
1. a. Suppose that an IP address of a host of a subnet is 198.65.12.67, with mask value 255.255.255.240; determine the subnet and the number of hosts the subnet contain. 5

   b. Which of the addresses provided here cannot be used as IP addresses of network interfaces for Internet hosts? For addresses that do not contain syntax error, determine the class: A, B, C, D, or E. 4
      a. 127.0.0.1
      b. 201.13.123.245
      c. 226.4.37.105
      d. 161.23.45.305

2. a. Which OSI layer is responsible for the following? 3
   (i) Determining the best path to route packets.
   (ii) Providing end-to-end communications with reliable service.
   (iii) Providing node-to-node communications with reliable service

   b. Why NAT? Describe different types of NATs. 6

3. Using the network in the figure overleaf, give the virtual circuit tables for all switches after each of the following connections is established. 9
   E connected to J
   C connected to F
   A connected to B
   D connected to G
   H connected to J
   Assume that the connections are cumulative: connection E to J is still up when connection C to F is established, and so on. Assume that the VCI assignment always selects the lowest unused VCI on each link, starting with 0. The ports of the switches are all numbered on the Figure.



PART B

4. a. Explain Silly Window Syndrome and solution to it. 5

   b. Explain with the help of diagram, how a connection is established in TCP. 4

5. a. Explain hidden and exposed station problems. 5

   b. Describe two major differences between the warning bit method and the RED method of congestion avoidance. 4

6. a. Consider an instance of TCP's Additive Increase Multiplicative Decrease (AIMD) algorithm where the window size at the start of the slow start phase is 2 MSS (maximum segment size) and the threshold at the start of the first transmission is 8 MSS. Assume that a time-out occurs during the fifth transmission. Find the congestion window size at the end of the tenth transmission. 5

   b. State the major difference between Distance Vector Routing and Link State Routing. 4

PART C

7. a. Discuss different types of VPNs. 6

   b. Describe how Differentiated Services (DS) is designed and how it overcomes the drawbacks of integrated services. 6

8. a. What is meant by peer-to-peer networks? What are the key architectures of peer-to-peer systems? 6

   b. If an RTP message arrives with a sequence number greater than the expected number, what does the protocol do? Why? 6

9.	a.	Explain the MPEG compression process.	6
	b.	Explain the LZ and LZW coding techniques.	6