# Computer Network/ IT-603/CSE & IT/6th/2015

**Mid-Semester Examination School of Computer Engineering KIIT University, Bhubaneswar-24**

***Time: 2hrs Full Mark:* 5*0***

(Answer any 5 questions, Question 1 is compulsory)

Q.1. [10]

(Question 1 has two parts, i.e., *Part A contains 4* ***marks*** and *Part B contains* ***6 marks) Part* A :** CY*ou will not receive anv points if vou choose multiple answers.)[8* x 0.5]

1. In the OSI networking stack, routing is performed by the \_
2. Four bits are used for sequence numbering in a sliding window protocol used in a computer network. What is the maximum window size?
3. Which of the following TCP/IP protocols is used for remote terminal connection services?
   1. TELNET b) FTP c) RARP d) UDP e) None of these choices
4. protocol is used for sending email on the Internet?
5. Which one of the following uses the greatest number oflayers in the TCP/IP stack?
   1. Switch b) Repeater c) Router d) End Host e) None of these choices
6. is the default port number for HTTP?
7. A basic telephone network is an example of

a) Packet Switching b) Cell Switching c) Circuit Switching

d) Message Switching e) none of these choices

1. Which one of the following is used to communicate between different networks?

a) ADSL b) HDSL c) Gateway/Router d)Modeme) None of these choices

***Part* B:** [2 x 3]

1. What advantage does a circuit-switched network have over a packet-switched network? What advantages does TDM have over FDM in a circuit-switched network?
2. Using Stop-and-Wait, how many bits are needed for the sequence number? Justify with proper example.
3. Explain with proper diagram/example how cookies can be used for recommendations in e­ commerce.

Q.2

1. Consider a packet switching architecture. [2+2+ 1]
   1. What are the main components of delay when we use packet switching and give details of each delay?
   2. What is the difference between transmission delay and propagation delay?
   3. How is propagation delay affected if the length of the packet is increased?
2. Consider two hosts, Aand ***B,*** connected by a single link ofrate ***R*** bps. Suppose that the [5]

two hostsare separated by *m* meters, and suppose the propagation speed:along the linkis *s*

meters/sec. Host *A* is to send a packet of size ***L*** bits to Host ***B.***

1. Express the propagation delay, *dprop,* in terms of ***m*** and s.

\*Note: Branch can be represented as: B. Tech (CSE)/B. Tech (IT)/B. Tech (CSE&IT)/M. Tech (CSE)/

* 1. Tech (CSIS)/M. Tech (SE)/ M. Tech (DBE)/ M. Tech (Dual)/ MBA (Dual)

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*b.* Determine the transmission time of the packet, *dtra11s,* in terms of Land ***R.***

*c.* Suppose Host Abegins to transmit the packet at time ***t* = *0.*** At time ***t*** = *dtrans,where* is the last bit of the packet?

*d.* Suppose *dpropis* greater than *dtrans·* At time ***t*** = *dtra11s,* where is the first bit ofthe packet?

*e.* Suppose s = 2.5 xl08, ***L*** = 120 bits, and ***R*** = 56 kbps. Find the distance mso that *dprop*

equals *dtra11s•*

Q.3 [5+3+2]

* + 1. What is the difference between pull and push network protocols? Explain the difference by using two example protocols.
    2. Describe how Web caching can reduce the delay in receiving a requestedobject. Will Web caching reduce the delay for all objects requested by a useror for only some of the objects? Why?
    3. How "Rarest First" works in peer to peer?

Q.4 [5+3+2]

1. Briefly describe what HTTP is and sketch its operation using a simple figure (i.e., the typical messages exchanged during operation of HTTP).
2. What is DNS and what is it used for? If all DNS servers could be "crashed" (taken offline), what would happen to the Internet (be precise).
3. Sketch the TCP connection initiation and connection termination packet flows using a timing diagram

***5*** *.?>*

Q.5 **[1+1+2]**

1. What is the in-efficiency of Stop-and-Wait protocol and how is overcome in sliding window protocol? And justify with proper diagram why the window size in selective repeat ARQ should be 2m-1, where m is the number of bits reserved for sequencing packets.
2. Consider the use Of 10 K-bit size frames on a 10 Mbps satellite channel with 270 ms delay.

What is the link utilization for stop-and-wait ARQ technique assuming P = 10-37

1. OSI is called as a model, whereas TCP/IP is called as a protocol suite. Be precise.
   1. *Answer all questions* [2.5x4]
      1. Checksum
      2. DHTs in P2P
      3. Utilization of stop and wait ARQ
      4. Connection oriented vs Connectionless communication

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