DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103

Winter Semester Examination – December – 2019

Branch: M. Tech. (Computer Engineering) Semester: I

Subject (Code) :- Advanced Computer Network (MTCE1103)

Date:- 17/12/2019 Time: 3 Hrs. Marks: 60

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Instructions to the Students

1. Each question carries 12 marks.
2. Attempt any ***FIVE*** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may assume appropriately and should mention it clearly before writing answer.

(Marks)

Q.1 **Attempt the following questions** (2 x 6)

A) Choose the correct answer from multiple alternatives.

(i) Which of the following protocols used UDP as a transport layer protocol?
a) DNS b) SMTP c) HTTP d) Telnet

(ii) What is the maximum number of IP addresses that can be assigned to hosts? Assume subnet is 255.255.255.229.
a) 4 b) 6 c) 8 d) 16

(iii) What is maximum size of Ethernet frame?
a) 32 bytes b) 64 bytes c) 1518 bytes d) 256 bytes

(iv) What is minimum size of IP header?
a) 60 bytes b) 20 bytes c) 10 bytes d) 30 bytes

(v) Which of the following describe function(s) of router?
a) packet filtering b) switching c) path selection d) all above

(vi) Which protocol is used to find the logical address of a local device from physical address?
a) ARP b) RARP c) ICMP d) IP

B) Calculate the latency (from first bit sent to last bit received) for the following:
(i) 1-Gbps Ethernet with a single store-and-forward switch in the path, and a packet size of 5000 bits. Assume that each link introduces a propagation delay of 10 μs and that the switch begins retransmitting immediately after it has finished receiving the packet.
(ii) Same as (i) but with three switches.

Q. 2 **Attempt the following questions** (2 x 6)

A) What is stop and wait protocol? Prove that **efficiency** of stop and wait protocol is **1/(1+2a)** and throughput is **efficiency x bandwidth**

B) What is TCP? Give differences between TCP and UDP. Also give three names of typical applications in which TCP is used as transport protocol.

Q. 3 **Attempt the following questions** (2 x 6)

A) A TCP connection is in the ESTABLISHED state. The following events occur one after another:

i) A FIN segment is received.

ii) The application sends a "close" message.

What is the state of the connection after each event? What is the action after each event?

B) What is fiber optic communication? Enlist the advantages of fiber optic technology in communication systems?

Q. 4 **Attempt the following questions** (2 x 6)

A) Consider two regions, 900 - 1000 nm and 1350 - 1550 nm in a fiber low-loss spectrum. Calculate the actual bandwidth provided by each region. (Assume velocity of light in fiber is 2.3×10^8 m / s.)

B) What is DHCP? What is necessicity of DHCP server in the network?

Q. 5 **Attempt the following questions** (2 x 6)

A) Discuss in detail, evolution of the WDM network.

B) What do you mean by GMPLS technology? How does MPLS work?

Q. 6 **Attempt the following questions** (2 x 6)

A) What is wavelength conversion? What are the characteristics of ideal wavelength converter should possess?

B) What is SONET? Explain with figure STS – 1 frame format.