



Date: 26/07/2015

Time: 4.00pm – 5.30pm

Answer All Questions

**QUESTION 1**

- 1.1) What is a *host* in a computer network? Describe the three network types *private*, *public* and *VPN*.
- 1.2) Describe the operation of a network router.
- 1.3) List the network standard numbers of the Ethernet, Bluetooth and wireless networks.
- 1.4) Describe three (3) types of switching techniques used in a modern network switch.
- 1.5) Explain the differences between circuit switching and packet switching.

**QUESTION 2**

- 2.1) Explain the basic functionality of *data link layer* in the OSI model.
- 2.2) Explain the *character count* and the *bit stuffing* techniques in the data link layer framing.
- 2.3) A channel has erroneous data of 16 kilo bytes per every 8 mega bytes of data sent over the channel which needs to be retransmitted. Each 512 bytes of erroneous data is acknowledged with a 128 byte packet and retransmitted with an additional overhead of 256 bytes. A file of 12 Gigabytes is sent over the channel.
  - (i) Calculate the amount of erroneous data which needs to be retransmitted.
  - (ii) Calculate the total amount of data including acknowledgements and overhead bytes used in the retransmission operation.

**QUESTION 3**

- 3.1) Give the color code of the 568B standard used in the UTP network cabling.
- 3.2) Compare the functionality of the p-persistent and the non-persistent CSMA protocol. Which of the above two protocols has the best throughput?
- 3.3) IP of a PC in a network is given as 192.168.3.39/27. Calculate the network address, broadcast address and the last PC address of the above network.