

# Computer Networking (CSE 3034)

## ASSIGNMENT – 1

1. What are two reasons for using layered protocols? What is one possible disadvantage of using layered protocols?
2. Given a set of protocols and protocol layers in column 1 and column 2 below. Find the correct match.

(a) SMTP	1. Application layer
(b) BGP	2. Transport layer
(c) TCP	3. Network layer
(d) PPP	4. Data link layer
	5. Physical layer

3. What is the principal difference between connectionless communication and connection oriented communication?
4. What is the main difference between TCP and UDP?
5. Briefly summarize the principles that were applied to design seven layers in OSI model.
6. List out the service primitives highlighting the functionality of each used for implementing a simple connection oriented service.
7. What is ad-hoc network? Briefly explain multipath fading.
8. Assume you want to send 8 bits at 600bps over an ordinary telephone line of bandwidth 3 KHz. Calculate the highest harmonic passed through telephone line.
9. What is the maximum data rate in a noiseless 6-kHz channel transmitting 16 bit signals?
10. What is the maximum data rate in a noisy 3-kHz channel with SNR 30 dB?
11. It is desired to send a sequence of computer screen images over an optical fiber. The screen is  $2560 \times 1600$  pixels, each pixel being 24 bits. There are 60 screen images per second. How much bandwidth is needed, and how many microns of wavelength are needed for this band at 1.30 microns?
12. Justify, why the refractive index of cladding is less than that of core in an optical fiber cable used for transmission of signal. Also state the difference between multimode and single mode fiber.
13. What is the minimum bandwidth needed to achieve a data rate of  $B$  bits/sec if the signal is transmitted using NRZ and Manchester encoding?
14. What signal to noise ratio is needed to put a T1 carrier on a 50-KHz line?
15. Two hosts are connected via a packet switch with 107 bits per second links. Each link has a propagation delay of 20 microseconds. The switch begins forwarding a packet 35 microseconds after it receives the same. If 10000 bits of data are to be transmitted between the two hosts using a packet size of 5000 bits, what is the time elapsed between the transmission of the first bit of data and the reception of the last bit of the data?