

International Islamic University Chittagong
Department of Electronic and Telecommunication Engineering
Final Examination, Spring 2018
Course Code: ETE-4729/4819

Course Title: Computer Networks/ Computer Networking and Security
Full Marks: 50 Time: 2h 30min
[Answer any two from Group-A and any three from Group-B of the following questions]

Group-A

- 1.a) Explain the Stop-and-Wait protocol using the Finite State Machine (FSM). 4
b) Design the encoder and decoder for Cyclic Redundancy Check in computer networks. 4
c) Outline the services provided by Point-to-Point Protocol (PPP)? 2
- 2.a) Write about the transfer modes of High-Level Data Link Control (HDLC) and HDLC frames. 4
b) Explain the following authentication protocols which are used in Point-to-Point Protocol (PPP). 6
(i) Password Authentication Protocol (PAP)
(ii) Challenge Handshake Authentication Protocol (CHAP)
- 3.a) Design a flow diagram for the following given scenario: 4
The first frame is sent and acknowledged. The second frame is sent, but lost. After time-out, it is resent. The third frame is sent and acknowledged, but the acknowledgement is lost. The frame is resent. The network layer at the receiver site receives two copies of the third packet.
b) Design a flow diagram for the following given scenario: 6
Considering the above scenario in 2(b) what will be solution to prevent duplicates. Design the proper flow diagram.

Group-B

- 4.a) Design the IP datagram header format. "IP datagram has a checksum field still it is called an unreliable protocol". Justify? 6
b) An IPv4 packet has arrived with the first few hexadecimal digits as shown. 4
0X45000028000100000102...
Demonstrate how many hops can this packet travel before being dropped? The data belong to what upper-layer protocol?
- 5.a) Suppose a TCP connection is transferring a file of 5000 bytes. The first byte is numbered 1001. What are the sequence numbers for each segment if data are sent in five segments, each carrying 1000 bytes? 4
b) The following is the content of a UDP header in hexadecimal format 6
CB8400D001C001C
(i) What is the source port number?
(ii) What is the destination port number?
(iii) What is the total length of the user datagram?
(iv) What is the length of the data?
(v) Is the packet directed from a client to a server or vice versa?
(vi) What is the client process?

- 6.a) What is FTP? Explain how FTP works. 4
b) Briefly describe the common scenario for the architecture of electronic mail and the protocols used in electronic mail with proper diagram. 6
- 7.a) What is label and domain name? Also show with figure. 3
b) Explain the security of DNS. 5
c) Write about persistent connection and nonpersistent connection. 2