IS 171 Introduction to Computer Networks
Test 2 (15 marks)
25ᵗʰ June 2018 – 1300 – 1400

Instructions:
1. This test consists of **20** questions.
2. Answer ALL questions.
3. Marks are allocated against each question.

Q1. For each of the following statements, choose the letter(s) of the most correct statement and write its letter in the answer sheet provided: (10 marks)

(i) The length of MAC addresses is:
   A. 24 bits
   B. 24 bytes
   C. 48 bytes
   D. 48 bits

(ii) Which type of connector is mostly used these days for connectivity with the network card?
   A. BNC
   B. RJ-45
   C. RJ-11
   D. RJ-33

(iii) The fibre optic cable in which the signals follow multiple paths is called:
   A. Single mode
   B. Multi mode
   C. Broadband
   D. Baseband

(iv) Which among the following uses RJ-45 connectors?
   A. Thick coaxial cable
   B. Unshielded twisted pair cable
   C. Shielded pair cable
   D. Thin coaxial cable

(v) What is the purpose of twisting the pairs of cables together in a UTP cable?
   A. To reduce attenuation
   B. To reduce crosstalk
   C. To reduce electro-magnetic interference
   D. To reduce noise

(vi) What is the recommended maximum length for a segment of UTP cable?
   A. 300m
   B. 100m
   C. 200m
   D. 150m

(vii) A network with 25 computers is required with the least number of cabling. Which among the following is the most suitable topology for such a network?
 A. Mesh topology
 B. Star topology
 C. Bus topology
 *D. Ring topology

(viii) If the Hamming distance between a dataword and the corresponding codeword is three, how many bits are in error?
 *A. 1
 B. 2
 C. 3
 D. 4

(ix) What is the difference between a phone cable and an Ethernet cable?
 A. Phone cable is thicker than Ethernet cable
 *B. Ethernet cable is thicker than phone cable
 C. Phone cable has a longer connector at the end
 D. Phone cable splits into two separate wires

(x) An Ethernet frame would contain one in the following list
 *A. MAC address
 B. IP address
 C. Both MAC and IP address
 D. None of the above

(xi) A point-to-point over Ethernet is a network protocol for
 A. Encapsulating PPP frames inside Ethernet frames
 B. Encapsulating Ethernet frames inside PPP frames
 C. Securing Ethernet frames
 D. Securing PPP frames

(xii) Which of the following media communicate in unicast mode?
 A. Radio waves
 B. Microwaves
 C. Infrared
 D. Bluetooth

(xiii) The maximum size of payload field in an Ethernet frame is
 A. 1000 bytes
 B. 1200 bytes
 C. 1300 bytes
 D. 1500 bytes

(xiv) The minimum size of an Ethernet frame is
 *A. 110 bytes
 B. 120 bytes
 C. 72 bytes
 D. 64 bytes

(xv) Which sub-layer of the data link layer performs data link functions that depend on the type of medium?

- A. Logical Link sub-layer
- **B. Media Access Control sub-layer**
- C. Network interface control sub-layer
- D. None of the above

(xvi) A sender sends the following string of bits: **0011000101** and the receiver receives: **0011001001**. This type of error is referred to as

- A. Random error
- B. Burst error
- C. Single error
- D. Inverted error

(xvii) Which of the following could not be an Ethernet unicast destination?

- A. 43:7B:6C:DE:10:00
- B. 44:AA:C1:23:45:32
- C. y66:5B:21:1A:DE:F4
- D. 48:32:21:21:4b:34

(xviii) The IEEE 802.5 is used in

- A. Token bus
- B. Ethernet
- C. Token ring
- D. Voice Data

(xix) In byte stuffing, a special byte is added to the data section of the frame when there is a character with the same pattern as:

- A. Flag
- B. Error
- C. Frame
- D. Trailer

(xx) The simplest and stop-and-wait protocols are for which types of channels?

- A. Noisy
- B. Noiseless
- C. Either A or B
- D. None of the above

(2) Write **TRUE** for valid and **FALSE** for invalid statements for each of the following statements: (5 marks)

(i) Connectivity devices such as repeaters and hubs operate at the Network layer of the OSI model.
(ii) Checksums are added to the data and verified at the destination.
(iii) Segments that belong to the same group of subdivided data can be identified by sequencing.
(iv) If a device does not know its own IP address, it can still use ARP.
(v) The hamming distance between equal codewords is 0.

(xv). Which sub-layer of the data link layer performs data link functions that depend on the type of medium?

A. Logical Link sub-layer
B. Media Access Control sub-layer .
C. Network interface control sub-layer
D. None of the above

(xvi). A sender sends the following string of bits: **0011000101** and the receiver receives: **0011001001**. This type of error is referred to as

A. Random error
B. Burst error
C. Single error
D. Inverted error

(xvii). Which of the following could not be an Ethernet unicast destination?

A. 43:78:6C:DE:10:00
B. 44:AA:C1:23:45:32
C. 46:56:21:1A:DE:F4
D. 48:32:21:21:4D:34

(xviii). The IEEE 802.5 is used in:

A. Token bus
B. Ethernet
C. Token ring
D. Voice Data

(xix). In byte stuffing, a special byte is added to the data section of the frame when there is a character with the same pattern as:

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(xx). The *simplest* and *stop-and-wait* protocols are for which types of channels?

A. Noisy
B. Noiseless
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Q2. Write **TRUE** for valid and **FALSE** for invalid statements for each of the following statements (5 marks)

(i). Connectivity devices such as repeaters and hubs operate at the Network layer of the OSI model. F
(ii). Checksums are added to the data and verified at the destination. T
(iii). Segments that belong to the same group of subdivided data can be identified by sequencing.
(iv). If a device does not know its own IP address, it can still use ARP. F
(v). The Hamming distance between equal codewords is 0.