

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION

WINTER SEMESTER, 2017-2018

DURATION: 1 Hour 30 Minutes

FULL MARKS: 75

CSE 6123: Computer Networks

Programmable calculators are not allowed. Do not write anything on the question paper.

There are **4 (four)** questions. Answer any **3 (three)** of them.

Figures in the right margin indicate marks.

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| 1. a) | Mention the necessary criteria for an effective and efficient network. Name the four basic network topologies. | 3+2 |
| b) | Draw the OSI Internet model and mention two major functionalities of each of the layers. | 10 |
| c) | Draw the send and receive window for 'Go-Back-N ARQ' protocol. How does 'Selective Repeat ARQ' protocol differ from 'Go-Back-N ARQ' protocol? | 6+4 |
| 2. a) | With the aid of a flowchart briefly explain the medium access procedure of pure ALOHA. | 8 |
| b) | What do you mean by vulnerable time? With the aid of diagrams, explain the vulnerable time of CSMA protocols. | 2+8 |
| c) | What is slot time in CSMA/CD? How does slot time is related to maximum network length? | 2+5 |
| 3. a) | Neatly sketch the frame structure of IEEE 802.3 MAC protocol. An Ethernet MAC sublayer receives 1540 bytes of data from the upper layer. Can the data be encapsulated in one frame? If not, how many frames need to be sent? What is the size of the data in each frame? | 3+5 |
| b) | Briefly explain different persistent methods used in CSMA protocol. | 9 |
| c) | Briefly explain the hidden station problem of IEEE 802.11 with one possible solution to eliminate the problem. | 8 |
| 4. a) | What is the significance of D (Duration) field in IEEE 802.11 frame? What does it signify when both the <i>To DS</i> and <i>From DS</i> flags of the Frame Control (FC) field of IEEE 803.11 frame represent 1? | 4+4 |
| b) | How does a bridge differ from a router? | 4 |
| c) | With the aid of necessary diagrams briefly explain the learning process of a transparent bridge. Demonstrate the major problem of a transparent bridge. | 6+7 |