

## ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)

## ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

FINAL EXAMINATION (Open Book Style)

SUMMER SEMESTER, 2019-2020

DURATION: 1 Hour 30 Minutes

FULL MARKS: 75

**CSE 4619: Peripherals, Interfacing and Embedded Systems**

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

Figures in the right margin indicate marks.

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1. a) Draw a block diagram for an 8237 DMA controller. Briefly explain the importance of using HOLD and HOLDA signals. 10
  - b) How the use of IR and RF differs from each other in terms of designing wireless interfaces? 05
  - c) “Memory-Read & I/O Write and I/O Read & Memory-Write signals are used simultaneously for DMA operation” – Explain. 05
  - d) “LoRaWAN devices send small amount of data for a longer distance” – Justify the statement with example. 05
2. a) What is CAN bus and why is it called a broadcast type bus? “CAN bus protocol remove  $\frac{n(n-1)}{2}$  connections complexity for an embedded system” – explain how? 10
  - b) “In CAN, with the bus length increment the transmission speed for data rate decreases” – True/False? Justify your answer. 05
  - c) ‘Isochronous communication is a special type of synchronous communication’ - How? 05
  - d) How does the priority of the devices is resolved at CAN bus? Briefly elaborate. 05
3. a) “In I<sup>2</sup>C bus connections, master bus can only be transmitter or transmitter-receiver whereas slave buses can only be receiver or receiver-transmitter” – Why? 10
  - b) Why does in I<sup>2</sup>C bus the Start-End condition and Data-Transition signaling are opposite to each other? Explain. 05
  - c) Draw the data formats of I<sup>2</sup>C protocol when the Master IC reads and writes to/from Slave IC. 05
  - d) How does 8259 PIC can be extended to handle 64 Interrupts request? Briefly show with diagram 05