

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) | <i>“Memory-Read & I/O Write and I/O Read & Memory-Write</i> 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 ² C bus connections, <i>master bus</i> can only be transmitter or transmitter-receiver whereas <i>slave buses</i> can only be receiver or receiver-transmitter” – Why? | 10 |
| b) | Why does in I ² C bus the Start-End condition and Data-Transition signaling are opposite to each other? Explain. | 05 |
| c) | Draw the data formats of I ² 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 |