ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION SUMMER SEMESTER, 2018-2019
DURATION: 1 Hour 30 Minutes FULL MARKS: 75

CSE 4619: Peripherals and Interfacing

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.

---

1. a) Write short note on ATmega16 Microcontroller. 10
   b) Differentiate between Microcontroller and Microprocessor. 10
   c) Suppose, it is given V_{in} = **0.7 volt**, V_{ref} = **1 volt** and 8-bit of resolution for a Successive Approximation A/D conWverter. Find an 8-bit digital output for the given V_{in}. 5

2. a) What are the steps involved in Analog-to-Digital (A/D) data conversion? Briefly explain the conditions to ensure accurate and precise A/D data conversion. 10
   b) Write the pros and cons of Delta-Sigma and Flash A/D converter. Suppose, you are given an analog quantization size of **2.50 volt**, where V_{min}=**0 volt** and V_{max}=**10 Volt**. Calculate the desired number of bits for an A/D converter. 10
   c) Write short notes on: 5
      i. Microprocessor controlled data transfer
      ii. Peripheral controlled data transfer

3. a) Distinguish between One-shot Mode and Software-triggered mode of 8254 PIT. 10
   b) Suppose, an 8086 microprocessor is asked to address the 15th 8255 and to write a control word at the control register of that 8255. Consider, Port-A is in Mode-2, Port-B is in Mode-1 as an output port and Port-C is working for handshaking signals. Now, derive the binary values of A7 – A0 pins and draw the control word format for 8255. 10
   c) Draw the sequential timing diagram for Port-B considering the handshaking and data signals (consider the scenario of Question 3.b). 5

4. a) Write down the features of 8255 PPI. 10
   b) Consider that an 8-bit control word is to be written to an 8254 PIT, where the control command asks for a 16-bit binary-counting from Counter # 2 using a square-wave generator. Now, derive the Control Logic pin values and draw the control word parameters. 10
   c) Write a short note on output handshake signals of 8155 Programmable Peripheral Interface. 5