



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

**MID SEMESTER EXAMINATION**  
**DURATION: 1 HOUR 30 MINUTES**

**SUMMER SEMESTER, 2021-2022**  
**FULL MARKS: 75**

**CSE 4619: Peripherals and Interfacing**

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

Answer **all 3 (three)** questions. Figures in the right margin indicate full marks of questions whereas corresponding CO and PO are written within parentheses.

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1. a) Write short notes on fixed and variable addresses. Explain the memory-mapped I/O concept using the fixed addressing scheme. 5 + 5  
(CO1)  
(PO1)
  - b) What is Harvard Architecture for microcontroller design? Explain the use and functions of appropriate pins of ATmega16 microcontroller for analog I/O and external clock input operation. 3 + 7  
(CO1)  
(PO1)
  - c) List out and describe the operations of at least two applications which use a microcontroller. 5  
(CO1)  
(PO1)
  
  2. a) If an analog data is converted into digital format, then is it possible to retrieve the same analog data from that digital one? Justify your answer with appropriate reason. 10  
(CO3)  
(PO1)
  - b) Suppose, it is given  $V_{in} = 0.5 \text{ Volt}$ ,  $V_{ref} = 1 \text{ Volt}$  and 12-bit of resolution for a *Successive Approximation A/D* converter. Find the 12-bit digital output for the given  $V_{in}$ . Also find the analog value for that digital output using the *Weighted Sum D/A* conversion method. 5 + 5  
(CO2)  
(PO1)
  - c) How can a 8259 PIC handle 64 Interrupt levels? Explain with necessary diagram. 5  
(CO1)  
(PO1)
  
  3. a) Suppose, an 8086 microprocessor is asked to address the 32<sup>nd</sup> and 64<sup>th</sup> 8255 sequentially 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. Now, derive the sequential binary values of A7 – A0 pins connected to 8255 and draw the control word format for 8255. 5 + 5  
(CO4)  
(PO2)
  - b) Write the basic differential features between 8155 and 8255 Programmable Peripheral Interface. 10  
(CO1)  
(PO1)
  - c) Draw the timing diagram of a 8255 PPI when its Port-A is used as input port having interrupt request with a 8-bit data of all '1's and Port-B is used as output port having no interrupt requested with a 8-bit data of all '0's; If Port-C is in the handshaking mode then also derive the command register value. 5  
(CO2)  
(PO2)