

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)**ORGANISATION OF ISLAMIC COOPERATION (OIC)****Department of Computer Science and Engineering (CSE)****MID SEMESTER EXAMINATION****SUMMER SEMESTER, 2020-2021****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.**

Answer **all 3 (three)** questions. Marks of each question and corresponding CO and PO are written in the right margin with brackets. Any Other Statements if necessary.

-
- | | | | |
|----|----|---|----------------------|
| 1. | a) | What is Aliasing Problem? How to solve it? Briefly explain the conditions to ensure accurate and precise A/D data conversion. | 10
(CO1)
(PO1) |
| | b) | Suppose, it is given $V_{in} = 0.75$ Volt, $V_{ref} = 1$ Volt and 8-bit of resolution for a Successive Approximation A/D converter. Find a 8-bit digital output for the given V_{in} . | 10
(CO1)
(PO1) |
| | c) | Differentiate among Weighted Sum and R-2R D/A converter. | 5
(CO1)
(PO1) |
| 2. | a) | Draw a block diagram using the specific ports pin numbers of ATmega16 microcontroller; where, you need to connect 2 input peripherals and 2 output peripherals. | 10
(CO2)
(PO1) |
| | b) | Suppose, a control register of 8155 PPI has an address of $1Fh$. If following instructions are executed in an 8085 microprocessor system, then derive the all the port functionalities (i.e., including pins) of the 8155 PPI.
MVI A, ABh
OUT 1Fh | 10
(CO4)
(PO2) |
| | c) | Suppose, in a serial system total 30 frames (each having a size of 5 bytes) need to be transmitted. In case of asynchronous transmission 1 byte overhead occurs either for start or stop byte and 1-bit overhead occurs for error checking using parity bit. In contrast, for synchronous transmission 1 byte of synchronization overhead occurs after each 5 frame transmissions. Now, mathematically show the performance efficiency comparison between Synchronous Transmission and Asynchronous Transmission. | 5
(CO2)
(PO2) |
| 3. | a) | Suppose, an 8086 microprocessor is asked to address the 48 th 8255 and to write a control word at the control register of that 8255. Consider, Port-A is in Mode-1 as an output port, Port-B is in Mode-1 as an input 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
(CO2)
(PO2) |
| | b) | Draw the sequential timing diagram for Port-A and Port-B considering the handshaking and data signals (consider the scenario of Question 3(a)). | 10
(CO2)
(PO2) |
| | c) | Differentiate among Delta-Sigma and Flash ADC. | 5
(CO1)
(PO1) |