



**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF MANAGEMENT

MAKE UP EXAMINATION – JAN 2023

Course Code: ECE 3003

Course Name: Microprocessor Programming and Interfacing

Program: B. Tech – ECE

Date: 28-Jan-2023

Time: 9:30AM to 12:30PM

Max Marks: 60

Weightage: 30%

Instructions:

(i) Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries THREE marks.

(6Qx 3M= 18M)

1. With a neat figure write the control word for 8255 PPI? (C.O.No.1) [Knowledge]
2. The CMP instruction can be used to compare two 8-bit or two 16-bit numbers. Which are the flag bits that get affected by the flag register. Explain how CMP instruction works? (C.O.No.2) [Knowledge]
3. Instructions are used to perform arithmetic operations like addition, subtraction, multiplication, division, etc.
MOV DL, 04H
MOV CL, 03H
ROR DL, CL,
What is the value of DL register for the above code? Show the operation clearly. (C.O.No.2) [Comprehension]
4. Pipelining increases the overall instruction throughput of any processor. Explain the feature of pipelining in Pentium processors. (C.O.No. 4) [Knowledge]
5. Write an ALP to take any two numbers from memory, add those two numbers and store the result back in the memory. (C.O.No. 4) [Knowledge]
6. What will happen if the following instruction is executed? Show the contents of all the registers used before and after execution.

MOV AX, FFFFH
MOV BX,0000H
AND AX, BX

(C.O.No.2) [Comprehension]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries EIGHT marks.

(3Qx8M=24M)

7. a. The 8255 simple I/O mode is used to interface a number of input devices like keypads and output devices like LEDs. In order to configure their operation, the control register of 8255 has to be programmed, Write the BSR control words for the following cases:
- I. PC3 to be set
 - II. PC1 to be reset
 - III. PC0 to be set
 - IV. PC7 to be reset
- b. In order to configure their operation, the control register of 8255 has to be programmed. Form the Control Word in Hex for configuring the 8255 in simple I/O mode with the details of Ports as indicated below:
Port CL = Input, Port CU = Output, Port B = Output in Mode 0, Port A = Output in Mode 1
If the base address is 02h. What will be the port addresses and control register address?
Identify the address lines that will be connected to 8255 A0 and A1 lines?

(C.O.No.3) [Comprehension]

8. Physical address are used in order to locate the position of the actual data. Given that the DS contains 2341h and the offset address is 3428h, then calculate the following addresses

Lower Range address in the Data Segment

Upper Range address in the Data Segment

Logical address

Physical address

(C.O.No.3) [Comprehension]

9. During real time application development delays need to introduced in the system that is being designed. Delays helps in proper operation of the system. Determine the total number of clock cycles needed to generate a delay of 10ms. Write an assembly level program to generate the same delay of 10ms, when the processor is operating at a clock Frequency of 10 MHz

(C.O.No. 3, 5) [Application]

Part C [Problem Solving Questions]

Answer all the Questions. Each question carries EIGHTEEN marks.

(1Qx18M=18M)

10. The interfacing process includes some key factors to match with the memory requirements and microprocessor signals. Interface 12 KB memory using three 2Kx8 PROMs and three 2Kx8 SRAM Memory Chips with the 8088/8086 microprocessor by indicating the necessary signals. Given the Rom is having a starting address as F000h. Use a suitable circuit for decoding.

(C.O.No. 3) [Application]