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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B.Tech Electronics

Semester –5th

Subject (Course): Microprocessor and peripherals

Max. Marks : 100

Course Code : ELEG 321

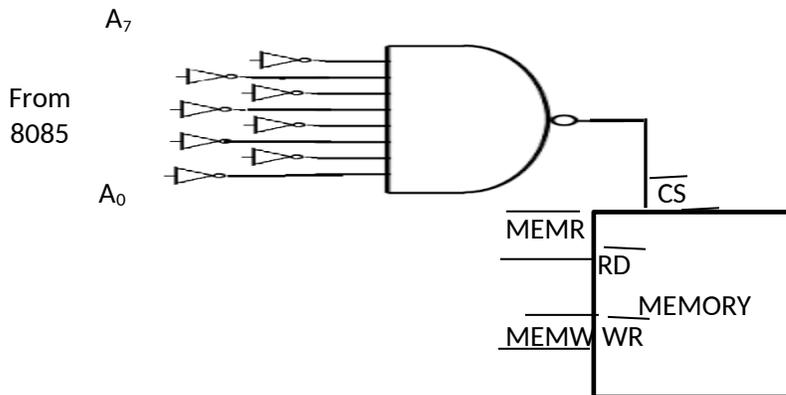
Duration : 3 Hrs

No. of page/s: 2

Part A

All questions are compulsory. (5x4)

1. Explain with the help of a block diagram the 8085 bus architecture.
2. What will be the address range of the of a memory chip interfaced with 8085 where Address lines A₀-A₇ are connected via inverters to the NAND gate whose output is connected to chip select line of the memory. RD and WR of the chip is connected to MEMR and MEMW .



3. Explain the function of the bidirectional trans receiver 74 LS 245.
4. What are the interrupt pins available in 8085? Explain briefly.
5. Explain the input control signals of programmable peripheral interface 8255 in mode 1.

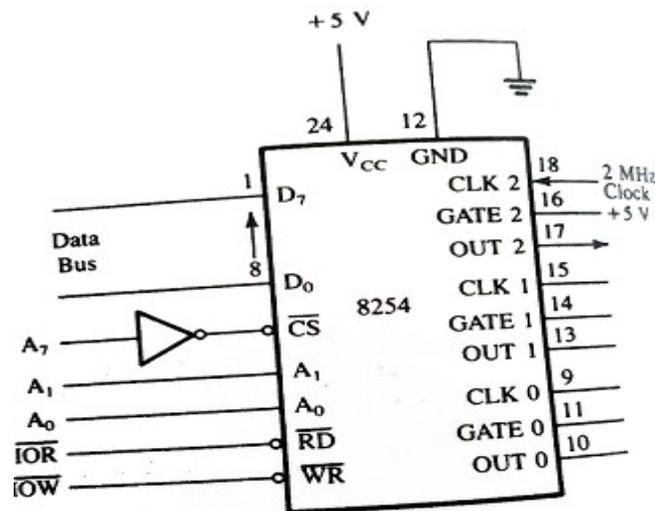
PART B (4x10)

6. Write a program to count from 0-9 with a one second delay between each count.

7. Assuming the microprocessor is completing an RST 7.5 interrupt request,. Write a program to check to see if RST 6.5 is pending. If it is pending enable RST 6.5 without affecting any other interrupts. Otherwise return to main program.
8. Explain the operation of programmable keyboard/display interface ,8279 with block diagram.
9. 8255 is being used in BSR mode for setting and resetting the bits of port C. peripheral based I/O scheme is being used. Find the port addresses and control register addresses if A2-A7 of 8085 are connected to the input of NAND gate whose output is connected to the chip select pin of 8255. Write a BSR control word subroutine to set bits PC7 and PC3 and reset then after a delay 10 ms. Assume that delay subroutine is available.

PART C (20x2)

10. Consider the following interfacing diagram of 8254 with the 8085. Identify the port addresses of the control register and counter 2. Write a subroutine to count 50000 on the fly using counter 2 in mode 0. Write a main program to display seconds by calling the subroutine as many times as necessary.



11. Design an interfacing circuit for interfacing keyboard in the input port of 8085 and a printer in the output port of 8085 using 8255 in mode 1. the address decoding should be such that the port addresses are FC, FD,FE respectively for port A,B and C and that of control register is FF.The keyboard is connected to port A and the printer is connected to port B. Determine the BSR word to enable $INTE_A$. Determine the masking byte to verify the OBF_B line in the status check I/O. Write initialization instructions and printer subroutine to output characters that are stored in memory.

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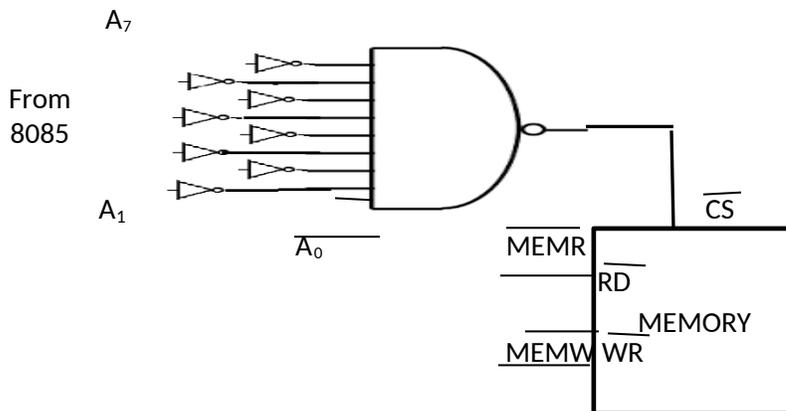
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PART A (5x4)

1. Explain the data bus, address bus and control bus of the 8085.
2. What will be the address range of the of a memory chip interfaced with 8085 where Address lines A1-A7 are connected via inverters and A0 is connected directly. Explain to the NAND gate whose output is connected to chip select line of the memory. RD and WR of the chip is connected to MEMR and MEMW.



3. Explain the function of the 3 to 8 decoder 74 LS 138
4. Show the 8085 interrupts with vector locations
5. Explain the output control signals of programmable peripheral interface 8255 in mode 1

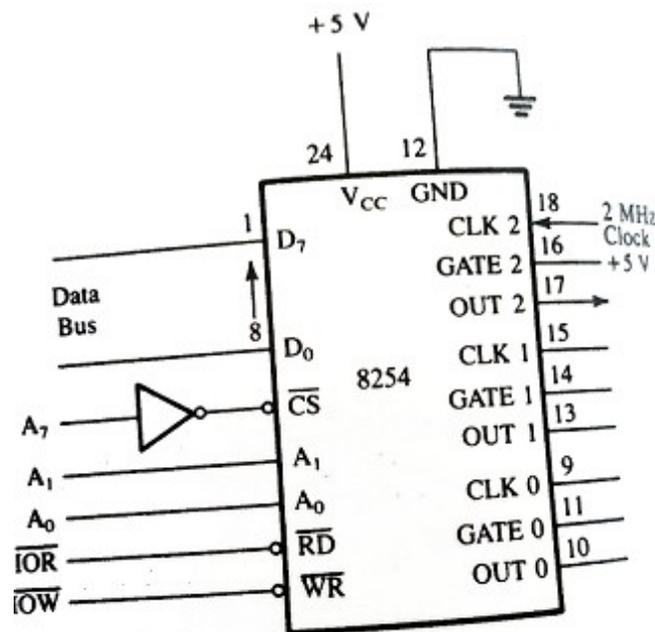
PART B (4x10)

6. Write a Program to count continuously from FF to 00 in hexadecimal with a delay of one millisecond between each count.
7. Explain with the help of a block diagram the operation of 8259 A Programmable Interrupt controller.

8. Explain the operation of Programmable interval timer 8254 with the help of a block diagram
9. Write a program sequence which initializes the mode register of USART 8251 and gives a command to enable the transmitter and begin an asynchronous transmission of 7-bit characters followed by an even-parity bit and 2 stop bits . Assume that the addresses of the mode and control word registers with justification.

PART C (2x20)

10. Consider the following interfacing diagram of 8254 with the 8085. Identify the port addresses of the control register and counters. Write instructions to generate a pulse every 50 microseconds from counter 0. Also write instructions to generate an interrupt every 1 sec.



11. Design an interfacing circuit for interfacing keyboard in the input port of 8085 and a printer in the output port of 8085 using 8255 in mode 1. the address decoding should be such that the port addresses are FC, FD,FE respectively for port A,B and C and that of control register is FF.The keyboard is connected to port A and the printer is connected to port B. Determine the BSR word to enable \overline{INTE}_A . Determine the masking byte to verify the OBF_B line in the status check I/O. Write initialization instructions and printer subroutine to output characters that are stored in memory.

