B.E. Electronics & Telecommunication / Communication Engineering (Old CBS & CBCS Pattern)
Sem-IV

ET-402 / 4 BEET05 : Microprocessor and Interfacing

P. Pages : 2 **GUG/S/19/11939**

Time : Three Hours * 3 7 2 5 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Use of Non-programmable calculator is permitted.

1. a) Draw the neat block diagram of 8085 microprocessor and explain in detail its different functional unit. **8**

b) What is the use of program counter and stack pointer in 8085. **8**

OR

2. a) Draw the programmers model of 8085 microprocessor, neatly labeling the registers. **8**

b) Explain the Addressing modes of 8085, Give example of at least one instruction for each addressing mode. **8**

3. a) Given the component as listed design an interfacing circuit for 8085 with memory to meet the following specifications : **10**

i) 74LS138 : 3 – to – 8 decoder.

ii) 2732 (4Kx8) ; EPROM address range should begin at 0000H and additional 4K memory space should be available for future expansion.

iii) 6116 (2Kx8) CMOS R/W memory.

b) Explain the need to demultiplex the $AD_7 - AD_0$. **6**

OR

4. a) Design a seven segment LED output port with the device address, FSH using a 74LS138 3-to-8 decoder, a 74LS20 4 input NAND gate, 74LS02 NOR gate and a common anode seven-segment LED. **10**

b) If the input port and output port can have the same 8 bit address, how does the 8085 differentiate between the ports? **6**

5. a) Explain with block diagram the programmable peripheral interface 8255. What are the different modes? Give the format of control word. **8**

b) Find out the CWR format for IC 8255 with the following specification. **8**

i) Mode 0
ii) Port A as input port ; and
iii) Port B and C as output port

Also Write an instruction sequence in 8085 to read data from port A and send it to port B and C respectively. Assume following port addresses.

80 port A
81 port B
82 port C
83 control Register

OR

6. a) Draw and explain the functional block diagram of IC 8254. **8**

b) Draw and explain the block diagram of 8259. **8**

7. a) Design an output port with address FFH to interface 0808 D/A converter that is calibrated for 0 to 10V range. **8**

b) Calculate the analog voltage corresponding to the LSB and the MSB for 12 bit A/D converter calibrated for a 0 to 5V range. **8**

OR

8. a) Calculate the resolution of a 12 bit D/A converter. **8**

b) Interface the national semiconductor ADC 0801 converter with the 8085 MPU using memory mapped input output and the interrupt RST 6.5. **8**

9. a) How does 8086 convert a logical address into physical address? Illustrate with an example. **8**

b) Explain in detail the programmers model of 8086. **8**

OR

10. a) Draw and explain functional block diagram of 8086 microprocessor. **8**

b) What is memory segmentation? How it is applied in microprocessor 8086? Give advantage of segmentation. **8**

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