This question paper contains 4 printed pages.]

1800 *Your Roll No. .....*

B.Sc. (Hons.) Computer Sc. / V Sem. A

Paper – 503 : MICROPROCESSORS

(Admissions of 2001 and onwards)

Time : 3 Hours *Maximum Marks : 75*

(Write your Roll No. on the top immediately on receipt of this question paper.)

*Attempt **all** questions.*

Parts of questions should be attempted together.

1. (a) Differentiate between Trap (T) and Interrupt flag (I) of EFLAG register. 2

(b) Find the memory address of the next instruction executed by the microprocessor, when operated in the real mode, for the following CS : IP combinations : 2

(i) CS = 2300 H and IP = 1A00H

(ii) CS = 3456 H and IP = AB CDH

(c) What value is placed in the page table to redirect linear address 20000000 H - 30000000 H ? 2

(d) What are microprocessor control registers in memory paging ? 2

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2. (a) Explain the difference between MOV DX, VALUE and MOV DX, OFFSET VALUE instruction. 2

(b) The MOV instruction is placed in what field of a statement ? 2

(c) Suppose a jump table that stores addresses of various procedures is given below : 2

```
TABLE    DD    Proc 0
               Proc 1
               Proc 2
               Proc 3
```

Which procedure is selected after using instruction

```
.....
MOV BX, 8
JMP TABLE [BX]
```

(d) What does PUSHA and POP BX instructions accomplish ? 2

(e) Show which JMP instruction assembles (short, near, far) if the instruction 'JMP there' is stored at memory address 1000DH and the address of 'there' is

(i) 10020H

(ii) OFFFEH 2

3. (a) What is the difference between fixed port addressing and variable port addressing ? 2

(b) Describe how the LDS BX, NUMB instruction operates ? 2

(c) Develop a sequence of instruction that copy 12 bytes of data from an area of memory addressed by SOURCE into the area of memory by DEST. 3

(d) How will you exchange the contents of EDX wih ESI ? 2

4. (a) What is nesting relating to LOOP's ? 1

(b) Differentiate between : 2

(i) Conditional and unconditional jump

(ii) Near jump and far jump

(c) A DOS program that displays 'YES' using DISP procedure. 3

(d) What is vector table ? What are these three instruction do ?

(i) IRET D (ii) INT 3 (iii) INTO 3

5. (a) When does the ALE pin float to its high impedance state ? Which bus connections on the 8088 microprocessor are typically de-multiplexed ? 2

(b) How NMI and INTR different ? 2

(c) What are the main differences between 8086 and 8088 microprocessors ? 2

(d) Briefly describe the purpose of T states in 8086/ 8088 Read write bus cycle ? 3

6. (a) Differentiate between SRAM and DRAM. 2

(b) Differentiate between EPROM and EEPROM ? 2

(c) List the number of data items stored in each memory device for the following memory devices and the number of bits in each datum :

(i) $4\,K \times 8$

(ii) $64\,K \times 4$ 2

7. (a) Why $\overline{BLE}$ and $\overline{BHE}$ have no function while selecting 16 bit wide I/0 devices ? 2

(b) How 82C55 programmed using command registers ? 2

8. (a) Give an example of DOS interrupt ? 2

(b) What is the physical significance of Interrupt vector ? 2

(c) Explain how 8259A is programmed ? 4

9. (a) What are the control signals used in DMA ? 2

(b) Explain DMA read and write operation ? 3

(c) Describe the purpose of command register (CR) in 8237 DMA controller ? 2

10. (a) Describe the superscalar Architecture of pentium processor. 3

(b) How the time required for a branch caused by internal delays adjusted in pentium microprocessor compared to 8086/88 ? 2