This question paper contains 4 printed pages.

3351 *Your Roll No.* .....

B. Tech. (EC) / IV

J

Paper— MICROPROCESSOR APPLICATIONS

(EEC–403)

Time : 3 hours *Maximum Marks* : 70

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

Question No. 1 is compulsory. Attempt any four questions from the rest.

1. (*a*) Explain why the PTR attribute operator is sometimes necessary. 2

(*b*) Explain EQU directive with proper example. 2

(*c*) What is the function of Trap Flag in 8086? 2

(*d*) Determine the memory address accessed by following instructions assuming:

DS= 2450H, BX=673DH, DISP= C237H and SI= 0210H

(*i*) ADD AX, [BX] [SI]

(*ii*) ROL [SI], CL

(*iii*) MOV DISP [SI], AX

(*iv*) OR AX, [BX]

P. T. O.

Also identify the addressing modes used in each instruction. 4

(*e*) What is the difference between hardware and software interrupts? 2

(*f*) Explain following pins of 8086:

(*i*) $\overline{\text{Test}}$

(*ii*) Ready. 2

2. (*a*) Explain the internal architecture of 8086 in detail with the help of neat block diagram. 10

(*b*) Explain following Instructions of 8086/8087:

(*i*) LAHF

(*ii*) SAR

(*iii*) FSQRT

(*iv*) FSTST 4

3. (*a*) Explain the interrupt structure of 8086. 8

(*b*) Write an 8086 assembly language program to add 10 BCD data items stored in DATA segment. The result should also be in BCD format. 6

4. (*a*) Design a micro computer system consisting of:

(*i*) 8086 microprocessor working at 5 MHz

(*ii*) 64 KB of EPROM using 16 KB devices

(*iii*) 128 KB of SRAM using 64 KB devices.

Choose a memory map of your choice and explain the design. 10

(*b*) Explain the difference between intrasegment and intersegment calls with the help of appropriate examples. 4

5. (*a*) Explain the use of 8288 in 8086 based system. 5

(*b*) What do you mean by multiprocessor system? Name different multiprocessor configurations supported by 8086. Explain any *one* of them. 9

6. (*a*) Explain the architecture of 8087 numeric co-processor. 8

(*b*) Write an 8086/8087 procedure to calculate the area of a circle, assume that the integer radius is passed in register AH, and return the area rounded to nearest integer in BX : AX. 6

7. (*a*) Explain the descriptor table of 80286 along with the access right byte of the descriptor table. 10

(*b*) Write a piece of assembly language program to put the vector address of interrupt type INT2 in vector table. 4

8. (*a*) The following pins belong to different Intel processors. Identify to which processor a particular pin belongs. What is this signal meant for?

(*i*) BOFF