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MANIPAL INSTITUTE OF TECHNOLOGY
(Constituent Institute of MAHE- Deemed University)
 MANIPAL-576104



FOURTH SEMESTER B.E. (CSE) DEGREE END SEMESTER
EXAMINATION – MAY 2006
P.C. SYSTEMS (CSE 208)
(REVISED CREDIT SYSTEM)
15-05-2006

TIME : 3 HOURS

MAX.MARKS : 50

Instructions to Candidates

- Answer **any five** full questions.
- Missing data can be suitably assumed.

1.A. Give the sum and the status of CF,ZF and PF after hexadecimaly adding 62A0H to the following numbers individually.

i. 9D60H

ii. 4321H

--4 marks

1.B. Given that

(IP) = 2BC0H

(CS)=0200H

Displacement = ~~5719H~~ 5119H

(BX) = 1200H

(DS) = 212AH

(224A0H) = 0600H.

(275B9H) = 098AH.

Find the branch address for a branch instruction that uses

- a) Intrasegment direct addressing
- b) Intrasegment indirect addressing which uses BX register and register addressing.
- c) Intrasegment indirect addressing which uses the BX register and register relative addressing.

--3 marks

1.C. Write an Assembly Language Program to add a byte no. from a memory location to a byte from the next memory location, put the sum in the third memory location and save the state of the CF in the least significant bit of 4th memory location. Mask the upper 7 bits of the memory location where the carry is saved.

--3 marks

2.A, Explain the following addressing modes of 8086 with one example for each.

- i. Register Relative
- ii. Based Indexed
- iii. Relative Based Indexed
- iv. Intersegment Indirect.

--6 marks

2.B. List out the instructions available for unpacked BCD operation and explain each instruction giving the syntax and working.

--4 marks

3.A. Use the 8086 string instructions to write a program which scans a string of 80 characters looking for a carriage return (ODH). If a carriage return is found put the length of the string upto the carriage return in AL. If no carriage return is found put 50H in AL.

--3 marks

3.B. List out the different methods of passing parameters to procedures.

--2 marks

3.C. Consider the following sequence of calls.

- i. MAIN calls NEAR procedure PROC-A -return offset is 0400H.
- ii. PROC-A calls NEAR procedure PROC-B
-return offset is 0A00H
- iii. PROC-B calls FAR procedure PROC-C
-return offset is 0100H and return segment address is B200H.
- iv. Return from PROC-C to PROC-B
- v. PROC-B calls NEAR procedure PROC-D
-return offset is 0C00H.
- vi. Return from PROC-D to PROC-B
- vii. Return from PROC-B to PROC-A
- viii. Return from PROC-A to MAIN.

Assuming that the only stack activity is due to the calls and returns, and SS=5000H and SP=0064H, draw a series of stack diagrams for the above activities showing the contents and address of each location of stack

--5 marks

4.A. Explain minimum mode configuration of 8086. --6 marks

4.B. Explain any two DOS and any two BIOS interrupt request functions. --4 marks

5.A. How does 8086 respond to an interrupt signal at its INTR i/p. Explain. --5 marks

5.B. Write the control word formats of 8255A. If CWR address is 0300H Write a sequence of instructions to o/p 1 to bit 3 of port C using a Control Word. --5 marks

6.A. Explain architecture of 80286. --6 marks

6.B. Write an instruction sequence in 8086/8087 assembler language that would calculate the standard deviation of N samples x_1, x_2, \dots, x_n and store the result in memory.

Standard deviation :

$$\sqrt{\frac{\sum_{i=1}^N (X_i - \text{MEAN})^2}{N - 1}}$$

Where MEAN =

$$\frac{\sum_{i=1}^N X_i}{N}$$

Assume samples are in long real format. --4 marks

7.A. Explain the following instructions:

i. XLAT ii. DAA iii. FXTRACT iv. FPREM v. F2XM1
--5 marks

7.B. Explain the operation of 8253/8254 with its internal block diagram. --5 marks
