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FYBCA, SEM I, SPECIAL SUPPLEMENTARY EXAMINATION, MAY/JUNE 2015

COMPUTER ORGANIZATION AND ARCHITECTURE

Duration: 2 Hours

Total Marks: 50

- Instructions:** 1) All Questions are **Compulsory**.
 2) Figures to the right indicate Full Marks.
 3) Write your **Seat number** in the space provided on the top of this page.
 4) Start **Each New** question on a fresh page

Q.1 Answer the following

Marks (10)

a) Define the following:

(5)

- 1) X-OR gate
- 2) I/O controller
- 3) Instruction Decode phase
- 4) Programme counter Register
- 5) Direct addressing mode

b) State True or False

(5)

- 1) ' RCL des , count ' moves the MSB to carry flag and LSB
- 2) Shifting the bits of a byte or word to the left is equivalent to multiplication by two
- 3) Control signals are generated as a result of execution of a micro-programme
- 4) Cache memory is slow compared to registers
- 5) Intel 8086 is a 16 bit micro-processor

Q.2 Answer the following

Marks (10)

- a) Define principle of locality
- b) Explain any three Interrupts
- c) Solve the following:

(2)

(3)

(5)

- i) 2's complement of a number is $(1111\ 1111)_2$. Obtain its 1's Complement.
- ii) Add 45 , -18 using 2's complement in Binary .
- iii) Convert $(1001\ 1110)_2$ to octal number .
- iv) Convert $(ABC0)_{16}$ to octal number
- v) Convert $(77001)_8$ to decimal number

Q.3 Answer the following

Marks (10)

- a) State the functions of I/O module (2)
- b) What is an instruction addressing mode ? Give examples of immediate and register addressing mode . (3)
- c) With the help of neat diagram explain instruction cycle . (5)

Q.4 Answer the following

Marks (10)

- a) Write four differences between programme driven i/o and interrupt driven i/o (2)
- b) What are micro-operations ? With an appropriate example illustrate Register to Register type of micro-operation (3)
- c) With help of neat diagram explain the working of fixed point arithmetic unit (5)

Q.5 Answer the following

Marks (10)

- a) If $AX \leftarrow A8C2h$, on execution $SHL AX, 02$ what is the content of AX and CF . (2)
- b) Differentiate between hardwired control unit and micro-programmed control unit (3)
- c) Write an assembly language program to find the SUM of two values stored in memory locations named NUM-1 and NUM-2 and puts the result in the memory location SUM . (5)