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(3rd Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : BCA–305

(Computer Organisation and Architecture)

(PART : A—OBJECTIVE)

(*Marks* : 25)

The figures in the margin indicate full marks for the questions

SECTION—I

(*Marks* : 15)

I. Tick (✓) the correct answer in the brackets provided :

$1 \times 10 = 10$

1. In which transfer, the computer registers are indicated in capital letters for depicting its functions?

    (a) Memory transfer ( )

    (b) Register transfer ( )

    (c) Bus transfer ( )

    (d) Single transfer ( )

2. Which are the operations that a computer performs on data that put in register?

   (a) Register transfer ( )

   (b) Arithmetic ( )

   (c) Logical ( )

   (d) All of the above ( )

3. Operation(s) of memory transfer is/are

   (a) read ( )

   (b) write ( )

   (c) Both (a) and (b) ( )

   (d) recording ( )

4. In memory transfer, location address is supplied by _____ that puts this on address bus.

   (a) ALU ( )

   (b) CPU ( )

   (c) MAR ( )

   (d) MDR ( )

5. A group of bits that tells that the computer to perform a specific operation is known as

   (a) instruction code   ( )

   (b) microoperation   ( )

   (c) accumulator   ( )

   (d) register   ( )

6. Assembly language

   (a) uses alphabetical codes in place of binary numbers used in machine language   ( )

   (b) is the easiest language to write programs   ( )

   (c) need not be transferred into machine language   ( )

   (d) converts binary numbers to digital numbers   ( )

7. What is the content of stack pointer (SP)?

   (a) Address of current instruction   ( )

   (b) Address of next instruction   ( )

   (c) Address of top element of the stack   ( )

   (d) Size of the stack   ( )

(4)

8. The addressing mode used in an instruction of the form ADD X,Y is

    (a) absolute   ( )

    (b) indirect   ( )

    (c) index   ( )

    (d) scale   ( )

9. Which of the following is the lowest in memory hierarchy?

    (a) Cache memory   ( )

    (b) Secondary memory   ( )

    (c) Register   ( )

    (d) RAM   ( )

10. The performance of cache memory is frequently measured in terms of quantity, called

    (a) miss ratio   ( )

    (b) hit ratio   ( )

    (c) latency ratio   ( )

    (d) read ratio   ( )

(5)

II. Indicate *True (T)* or *False (F)* by a Tick (✓) mark :
1×5=5

1. The operation executed on data stored in a register is called microoperation.

(T / F)

2. MRI indicates Memory Register Instruction.

(T / F)

3. A stack-organized computer has one-address instruction.

(T / F)

4. The instruction ORG O is a pseudoinstruction.

(T / F)

5. The average time required to reach a storage location in memory and obtain its contents is called the access time.

(T / F)

(6)

SECTION—II

(*Marks* : 10)

III. Answer the following questions : 2×5=10

1. What is a digital system?

2. Distinguish between hardwired control and microprogrammed control organizations.

3. What is program interrupt?

4. Convert the following into reverse Polish notation :

$$A + B^*[C^*D + E^* (F + G)]$$

5. What is virtual memory?

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2016

(3rd Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : BCA–305

(Computer Organisation and Architecture)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 50)

The figures in the margin indicate full marks
for the questions

1. (a) List and explain different types of shift
microoperations.   6

(b) Explain the register transfer.   4

Or

(c) Explain the operation of three state bus
buffers and show its use in design of a
common bus.   5

(d) Explain 4-bit incrementer with a
necessary diagram.   5

2. (a) Explain how basic computer registers are connected to a common bus using a diagram.　　8

(b) What is an assembler?　　2

Or

(c) Explain the working principle of the control unit of basic computer with diagram.　　7

(d) Explain the basic computer instruction formats.　　3

3. (a) Write a note on different addressing modes.　　8

(b) List the categories of computer instructions.　　2

Or

(c) List out the major characteristics of CISC and RISC.　　6

(d) Explain the major components of CPU.　　4

4. (a) Explain DMA controller with a block diagram.　　8

(b) What do you mean by handshaking?　　2

Or

(c) Explain asynchronous data transfer using timing diagrams.　　5

(d) Explain CPU-IOP communication with diagram. 5

5. *(a)* Explain memory hierarchy in detail. 6

(b) What do you mean by address space and memory space in virtual memory? 4

Or

(c) How is main memory useful in computer system? Explain the memory address map of RAM and ROM. 6

(d) Write a short note on auxiliary memory. 4

★ ★ ★