

Professional Course Examination, Odd, 2021
(3rd Semester)
BACHELOR OF COMPUTER APPLICATION
Paper No. : BCA/3/CC/16
Subject : (Computer Organization and Architecture) (Revised)
Full Mark : 75
Time : 3 hours

(PART : A – OBJECTIVE)
(Marks : 25)

The figures in the margin indicate full marks for the questions

SECTION – I
(Marks : 15)

I. Choose the correct answer.

(1x10=10)

1. The arithmetic shift-right microoperation
 - (a) Multiplies a signed binary number by 2
 - (b) Divides a signed binary number by 2
 - (c) Adds a signed binary number by 2
 - (d) Subtracts a signed binary number by 2
2. Selective-set operation sets to
 - (a) 1 the bits in register A where there are corresponding 1's in register B
 - (b) 0 the bits in register A where there are corresponding 1's in register B
 - (c) 0 the bits in register A where there are corresponding 0's in register B
 - (d) 1 the bits in register A where there are corresponding 0's in register B
3. The instruction read from memory is placed in
 - (a) Accumulator (AC) register
 - (b) Program counter (PC) register
 - (c) Temporary register (TR)
 - (d) None of the above
4. Basic computer has _____ registers
 - (a) 7
 - (b) 8
 - (c) 9
 - (d) 12
5. Which of the following is the most common instruction?

- (a) Zero-address instruction
- (b) One-address instruction
- (c) Two-address instruction
- (d) Three-address instruction

6. In _____ the instruction specified a register in the CPU whose contents give the address of the operand in memory

- (a) Register indirect mode
- (b) Indexed addressing mode
- (c) Register mode
- (d) Base register addressing mode

7. A _____ causes the interface to respond by transferring data from the bus into one of its registers.

- (a) data output command
- (b) Control command
- (c) status command
- (d) data input command

8. Data transfer between the CPU and an I/O device is initiated by

- (a) the I/O devices
- (b) the CPU
- (c) the interrupt
- (d) the primary memory

9. A special very-high-speed memory used for increasing the speed of processing in a computer system is a _____

- (a) register
- (b) primary memory
- (c) cache
- (d) fast memory

10. An address in main memory is called

- (a) physical address
- (b) virtual address
- (c) memory space
- (d) address space

II. State whether the following statements are True(T) or False(F):

(1x5=5)

1. In hardwired control organization, the control information is stored in a control memory. (T/F)
2. A characteristic of CISC processors is their ability to execute one instruction per clock cycle. (T/F)
3. The transfer of information from memory word to the outside environment is called read operation. (T/F)
4. Data code and formats in peripherals are similar with the word format in the CPU and memory. (T/F)
5. The speed of main memory is slower than the speed of a cache. (T/F)

SECTION -B

(Marks: 10)

Answer the following questions:

(2x5=10)

1. (a) What are peripheral devices? Give examples.

OR

(b) Differentiate between vectored interrupt and nonvectored interrupt.

2. (a) What is an output register?

OR

(b) What do you mean by a computer program?

3. (a) What is logical shift microoperation?

OR

(b) Let the content of the registers of A and B are follows

A = 1010, B = 1110.

i) What is the value of A after selective-complement operation?

ii) What is the value of A after selective-clear operation?

4. (a) What is PUSH operation?

OR

(b) What is the main function of program counter (PC)?

5. (a) What do you mean by multiprogramming?

OR

(b) What is page fault?

PART : B – DESCRIPTIVE

(Marks : 50)

The figure in the margin indicates full marks for the questions

1. (a) With a neat block diagram and timing diagram, explain register transfer from R1 to R2. (5)
(b) What are the three states of a three-state bus buffers. Explain the construction of a bus system with three-state buffer. (2+3=5)

OR

- (c) Describe the 4-bit binary adder-subtractor with a proper circuit diagram. (5)
(d) What is microoperation? What are the four categories of microoperation? (1+4=5)
2. (a) Explain the difference between a direct and an indirect address instruction. (5)
(b) Describe a basic computer instruction format. (5)

OR

- (c) With a neat block diagram, explain the control unit of basic computer. (5)
(d) Explain an instruction cycle. (5)
3. (a) Describe a stack organization in a computer system. (5)
(b) What is an immediate addressing mode? Differentiate between direct address mode and indirect address mode. (1+4=5)

OR

- (c) Describe in brief the major categories of computer instructions. (5)
(d) What do you mean by program interrupt? Differentiate between external interrupts and internal interrupts. (1+4=5)
4. (a) Explain the differences between isolated I/O and memory-mapped I/O methods. (5)
(b) Explain in brief the asynchronous data transfer. (5)

OR

- (c) Explain the programmed I/O modes of data transfer. (5)
(d) With a neat block diagram, explain I/O processor. (5)

5. (a) What is main memory? Explain the differences between static RAM and dynamic RAM.

(1+4=5)

(b) Explain the construction and working principle of magnetic disks.

(5)

OR

(c) Explain associative memory page table.

(5)

(d) Explain the procedure of associative mapping of cache.

(5)

*****BCA/3/CC/16*****