Roll No. .....

Total No. of Questions : 9] [Total No. of Printed Pages : 4

(1109)

BCA UG (CBCS) RUSA IIIrd Semester Examination

3602

COMPUTER ORGANIZATION

BCA-0303

Time : 3 Hours] **[Maximum Marks : 70**

Note :– Attempt *five* questions in all, selecting *one* question each from Units I, II, III and IV. Q. No. **9** is compulsory.

Unit–I

1. (a) Convert the following :

   (i) $(147)_{10} = (\ )_8$

   (ii) $(3456.A7)_{16} = (\ )_8$

   (iii) $(5674.6)_8 = (\ )_2$

   (b) Perform the arithmetic operations (+42) + (–13) and (–42) – (–13) in binary using signed 2's complement representation for negative numbers. 5,5

2. (a) Explain the use of parity bit in error detection codes. How is it generated ?

   (b) Explain Hamming code with suitable example. 5,5

Unit–II

3. What are Arithmetic Microoperations ? Explain Binary Adder-Subtractor in full detail. 10

4. Write short notes on the following :

   (a) Arithmetic Logic Shift unit.

   (b) 4-bit Adder-Subtractor 5,5

Unit–III

5. What is the difference between a direct and indirect address instructions ? How many references to memory are needed for each type of instruction to bring an operand into a processor register ? 10

6. What do you mean by Instruction Cycle ? Explain some basic computer instruction formats. 10

Unit–IV

7. Write short notes on the following :

   (a) Addressing modes

   (b) Interrupts 5,5

8. Convert the following arithmetic expression from reverse polish notation to infix notation :

   (a) ABCDE+*-/

   (b) ABCDE*/-+

   (c) ABC*/D-EF/+ 10

Compulsory Question

9. (A) Attempt all parts.

Fill in the blanks :

(i) In the case of, zero-address instruction method the operands are stored in ..... .

(ii) The addressing mode, where you directly specify the operand value is ..... .

(iii) The decimal number (567.76) is equal to octal number $(\ldots\ldots)_8$.

(iv) The 2's complement of –68 is ..... .

State whether the statement is True *or* False :

(v) Program Counter (PC) holds the address of next instruction. (True/False)

(vi) A stack is a storage device that stores information in such a manner that the item stored first is the first item retrieved.

(True/False)

Select the correct option :

(vii) In Reverse Polish Notation, expression A*B+C*D is written as :

(a) AB*CD*+ (b) A*BCD*+

(c) AB*CD+* (d) A*B*CD+

(viii) The addressing mode, where you directly specify the operand value is :

(a) Immediate (b) Direct

(c) Definite (d) Relative

(ix) A sequence of control words corresponding to a control sequence is :

(a) Command word

(b) Control word

(c) Coordination word

(d) Generation word

(x) Floating point representation is used to store :

(a) Boolean Values

(b) Whole numbers

(c) Real integers

(d) Integers $1 \times 10 = 10$

(B) Explain the following **25** to **30** words :

(i) Hamming code

(ii) BCD arithmetic

(iii) Three-address instructions

(iv) 10s complement

(v) Full Adder $4 \times 5 = 20$

10000
2987
13

Roll No. .....

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(2111)

BCA (CBCS) RUSA IIIrd Semester Examination

4515

COMPUTER ORGANIZATION

BCA-0303

Time : 3 Hours] **[Maximum Marks : 70**

Note :– Attempt *five* questions in all, selecting *one* question each from Units–I, II, III and IV. Q. No. 1 (Part–A) is compulsory.

Part–A

(Compulsory Question)

1. (A) Attempt all questions :

Fill in the blank spaces :

(i) The floating point representation of a number has two parts ..... and 1,1

(ii) Complements of numbers are used in digital computers for logical manipulation and ..... operation. 1

(iii) Control word has ..... bits. 1

(iv) The Stack Pointer SP points at the ..... of the stack. 1

State whether the statement is True *or* False :

(v) Prefix notation is same as Polish Notation. (True/False) 1

(vi) A software interrupt is initiated by executing an instruction. (True/False) 1

Answer the following MCQs by selecting the most appropriate option :

(vii) Which logic circuit would you use for addressing memory ?

(a) Full Adder (b) Multiplexer

(c) Decoder (d) DMA circuit 1

(viii) Where the result of an arithmetic and logical operation are stored ?

(a) In Accumulator

(b) In Cache Memory

(c) In ROM

(d) In Instruction Registry 1

(ix) An exception condition in a computer system caused by an event external to the CPU is known as :

(a) Halt (b) Process

(c) Interrupt (d) None of these 1

(B) Answer the following in **25** to **50** words :

(i) How alphanumeric representation is done in a computer ?

(ii) Write a short note on logic micro-operations.

(iii) Explain the terms microinstruction and micro program.

(iv) Explain relative addressing mode.

(v) Explain the working of Half-Adder. 4×5=20

Part–B

Unit–I

2. (i) Convert the following numbers to the bases indicated below :

(a) $(7968)_{10} = (?)_8 = (?)_2 = (?)_{16}$

(b) $(478.5)_{10} = (?)_2 = (?)_8$ 3,2

(ii) Perform the subtraction with the following unsigned decimal numbers by taking 10's complement of the subtrahend.

(a) 5250-1321

(b) 1753-8640 5

3. (i) What do you mean by BCD arithmetic ? Give an example to explain it.

(ii) Discuss error detection code used in the parity bit. 5,5

Unit–II

4. (i) What do you mean by Register Transfer ? Discuss.

   (ii) Give the construction of Bus System with three-state buffers. 4,6

5. (i) Explain the working of 4-bit Binary Adder.

   (ii) Write a short note on Arithmetic Logic Shift Unit. 4,6

Unit–III

6. (i) What is an Instruction Code ? What are its Parts ?

   (ii) Explain the common Bus System which transfers information between registers and memory. 4,6

7. (i) What is an Instruction Cycle ? Discuss its phases.

   (ii) How Register-Reference instructions are recognized ? Explain. 5,5

Unit–IV

8. (i) Give the circuit diagram of CPU and also explain its working.

   (ii) What is a Control Word ? Name its fields. 7,3

9. (i) Discuss the Instruction Formats of a computer system.

   (ii) Differentiate between Implied and Immediate modes of addressing. 6,4