

TCS-401

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to estimate
least two

e value of

, compute
 $y = z = 1$.
8) using

$x - 7 = 0$
od of false

240

TCS-402/TIT-402

B. Tech. (CS/IT) (Fourth Semester) Mid Semester EXAMINATION, 2014

COMPUTER ORGANIZATION

Time : Two Hours]

[Maximum Marks : 60

Note : (i) This question paper contains two Sections :
Section A and Section B.

(ii) Answer all questions in Section A by choosing
the correct option from multiple choices. Each
question carries 2 marks.

(iii) Answer any four questions from Section B. Each
question carries 12 marks.

Section—A

2 each

1. Attempt all multiple choice questions, choosing the
correct option.

(i) Which register contains the information of the next
instruction to be fetched ?

- (a) Program counter
- (b) Instruction register
- (c) Memory address register
- (d) Memory buffer register

o sort the elements

1, 16, 18, 17, 9, 3,

search tree.

e.

whose information part

(ii) Using 2's complement, subtraction of $(1010)_2$ from $(0011)_2$ is :

- (a) $(0111)_2$
- (b) $(1001)_2$
- (c) $-(0111)_2$
- (d) $-(1001)_2$

(iii) The Second Generation of computers used

- (a) IC-chip
- (b) Transistors
- (c) Vacuum tubes
- (d) Microprocessor chip

(iv) A stack-organized computer uses instruction of

- (a) Indirect addressing
- (b) Two-addressing
- (c) Zero addressing
- (d) Index addressing

(v) $(F3A7C2)_{16} = (?)_8$:

- (a) $(74723702)_8$
- (b) $(74733702)_8$
- (c) $(75723702)_8$
- (d) $(75723802)_8$

(vi) If a register containing data $(11001100)_2$ is subjected to arithmetic shift left operation, then the content of the register after 'ashl' shall be :

- (a) $(11001100)_2$
- (b) $(1101100)_2$
- (c) $(10011001)_2$
- (d) $(10011000)_2$

Section—B

12 (6+6) each

Note: Attempt any *four* of the following questions.

2. (a) What is a Common Bus ? Why is it required and explain a bus system for four registers each of four bits with the help of suitable diagram.
- (b) Represent the following decimal numbers of Binary Floating Point Representation (i) 17 (ii) -0.125 and also perform the arithmetic operations $(+42) + (-13)$ and $(-42) - (-13)$ in binary signed 2's complement representation for negative numbers.
3. (a) Write Booth's algorithm for multiplication of signed -2's complement numbers. Also give an example for the same.
- (b) A computer uses a memory unit with 256 K words of 32 bits each. A binary instruction code is stored in one word of memory. The instruction has four parts : an indirect bit, an operation code, a register code part of specify one of the 64 registers, an operation code and an address part.
- How many bits are there in the operation code, the register code part and the address part ?
 - Draw the instruction format and indicate the number of bits in each part.
 - How many bits are there in data and address inputs of the memory ?
- (a) What is an Instruction ? Explain the various instruction formats for a basic computer.
- (b) Enumerate the various steps used to encode the binary word 1011 into even parity Hamming code.

5. (a) Enumerate the various ways for increasing the computer performance and how Reduced Instruction Computer Architecture (RISC) is different from Complex Instruction Set Computers (CISC).
- (b) With the help of suitable diagram explain the working of arithmetic logic Unit.
6. (a) What is an Instruction Cycle ? Explain the various phases of instruction cycle with the help of flowchart.
- (b) Explain the following instructions :
 - Branch Unconditionally (BUN)
 - Branch and Save Return Address (BSA)
7. (a) What is an Interrupt Cycle ? Explain it with the help of a flowchart.
- (b) What do you understand by Addressing Mode ? Explain the various addressing modes with the help of a suitable numerical example.