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TCS–404/TIT–404

B. TECH. (CS/IT)
(FOURTH SEMESTER)
MID SEMESTER EXAMINATION, 2018

COMPUTER ORGANIZATION

Time : 1 : 30 Hours

Maximum Marks : 50

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. State True/False : (1×5=5 Marks)

(a) An exception condition in a computer system caused by an event external to the CPU is called Interrupt.

(b) When the CPU detects an interrupt, it then saves its current state.

(c) A computer program that converts an entire program into machine language at one time is called interpreter.

(d) The unit which decodes and translates each instruction and generates the necessary enable signals for ALU and other units is called control unit.

(e) The I/O processor has a direct access to Main Memory and contains a number of independent data channels.

2. Attempt any *five* parts : (3×5=15 Marks)

(a) What is Bus ? Draw the single bus structure.

(b) Write down the operation of control unit.

(c) Explain fixed point representation with example.

(d) Why memory hierarchy is important in computer system ? Draw the hierarchy of memory.

(e) What is 2's complement ? Give its significance.

(f) What is Instruction Register (IR) ? Which information is stored by Program Counter (PC) ?

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)

(a) Explain the functional architecture of the computer system.

(b) Describe the connections between the processor and memory with a neat structure diagram.

(c) Perform the following operations on the 5-bit signed numbers using 2's complement representation system. Also indicate whether overflow has occurred or not :

(i) (– 10) + (+4)

(ii) (– 10) – (– 9)

(iii) (– 3) + (– 6)

(iv) (– 8) – (+ 7)

4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)

(a) What is instruction cycle ? Briefly explain with the help of state diagram.

(b) Explain the Memory Reference and Input-Output instructions. Give examples.

(c) Multiply two numbers (+ 15)*(– 13) using Booth's Multiplication Algorithm.

5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)

(a) Explain the various addressing modes (any *five*) with examples.

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(b) Differentiate between RISC and CISC architecture.

(c) Represent each of the following using the IEEE 8-bit floating-point standard format :

(i) 2.25

(ii) 639.6875