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FOURTH SEMESTER B.Tech. (COE)

MID SEMESTER EXAMINATION *MARCH-2019*

CO-206 COMPUTER ORGANIZATION AND ARCHITECTURE

Time: 1:30 Hours *Max. Marks: 25*

Note: Answer ALL questions. All questions carry equal marks. Assume suitable missing data, if any.

1 Explain the followings:-

[a] Full Adder.

[b] Bidirectional shift register.

2[a] Design a hardware circuit to implement logical shift, arithmetic shift and circular shift operations. State your design specifications.

[b] Draw the block diagram for the hardware that implements the following statements:

x+yz: AR← AR + BR

where AR and BR are two n-bit registers and x, y and z are control variables. Include the logic gates for the control function.

3[a] Describe the various phase of instruction cycle and explain all the memory reference instructions.

[b] The content of AC in the basic computer is hexadecimal A937 and the initial value of E is 1. Determine the contents of AC, E, PC, AR, and IR in hexadecimal after the execution of the CLA instruction. Repeat 11 more times, starting from each one of the register-reference instructions. The initial value of PC in hexadecimal 021.

4[a] Explain the process of fetching a word from memory using timing diagram of memory read operations, with an Example.

[b] Draw the flow chart of first pass assembler and second pass assembler. Explain its working mechanism.

5[a] Explain the working of micro-program sequencer. Draw the respective block diagram.

[b] Explain the difference between hardwired control and micro programmed control? Is it possible to have a hardwired control associated with a control memory?