

Assignment:

- ① Registers R_1 and R_2 of a computer contain the decimal values 1200 and 4600. What is the effective address of the memory operand in each of the following instructions —
- Load 20(R_1), R_5
 - Add $-(R_2)$, R_5
- ② Explain DMA Controller in a computer system with a neat diagram.
- ③ Explain the daisy chaining mechanism for bus arbitration. Analyse the three bus arbitration methods — daisy chaining, polling, independent requesting with respect to communication reliability in the event hardware failure.
- ④ What are hazards in pipelining? Explain its ~~time~~ type with examples.
- ⑤ A DMA Controller transfers 16-bit words to memory using cycle stealing. The words are assembled from a device that transmits characters at the rate of 2400 characters per second. The CPU is fetching and executing instructions at an average rate of 1 million instructions per second. By how much will ~~be~~ the CPU be slowed down because of the DMA transfer.