

1. (20%) Explain the terminology: (1) Codec (2) Emulator (3) DMA (4) Priority interrupt (5) Interrupt latency.
2. (20%) Design a digital monitoring system, the system must has the functions as following: Image sensor、sound recording、sound playing、temperature measurement、light control, etc. (Draw the block diagram of the system configuration and explain the function of each block in detail. List and explain the components that used.)
3. (10%) When an access to memory is performed for a **read** operation, how do some microprocessors know how much data the memory sends them? What happen during a **write** operation?
4. (10%) Regarding to the way of storing in memory the data bytes of operands, explain so-called big-endian and little-endian microprocessors.
5. (15%) For speeding DRAM access, in addition to the random access mode, describe three advanced modes that significantly decrease the access time: page, static column, and nibble modes.
6. (10%) To place the cache between the microprocessor and main memory, explain look-aside and look-through configurations.
7. (15%) List and explain five functions of MMU (memory management unit).