Arab Academy for Science, Technology & Maritime Transport
COLLEGE OF ENGINEERING & TECHNOLOGY
Department : Computer Engineering Department
Course : Computer Organization Course Code: CC 312
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Sheet #1

1) The following memory units are specified by the number of words times the number of bits per word. How many address lines and data lines are needed in each case?

- 2K × 16
- 16M × 32
- 4G × 64

2) It is required to design 16M × 16 memory, how many chips required when using:

- 1M × 16 RAM chips
- 4M × 16 RAM chips
- 8M × 8 RAM chips
- 512K × 16 RAM chips

3) A digital computer has a memory unit with 24 bits per word. The instruction set consists of 150 different operations. All instructions have an operation code part (opcode) and an address part (allowing for only one address). Each instruction is stored in **one** memory word.

a) How many bits are needed for the opcode?
b) How many bits are left for the address part of the instruction?
c) What is the maximum available memory size?

3) What are the main differences between:

a) Von Neumann and non-Von Neumann architecture
b) High level and Low level programming language.
c) Assembly language and Machine language.
d) Address bus and Data bus.
e) Memory and Registers
f) ALU and **CU.**