

Taibah University		College of Computers science and Engineering
Computer Organization and Architecture COE 224		Date: 19 Feb 2019
Quiz: 03 model ans		Total Marks: 10
Name:		ID:

1. A benchmark program is run on a 40 MHz processor. The executed program consists of 100,000 instruction executions, with the following instruction mix and clock cycle count:

Instruction Type	Instruction Count	Cycles per instruction
Integer arithmetic	45000	1
Data transfer	32000	2
Floating point	15000	2
Control transfer	8000	2

Determine the effective **CPI, MIPS rate, and execution time** for this program.

$$\text{Average CPI} = \frac{45 * 1 + 32 * 2 + 15 * 2 + 8 * 2}{100} = \frac{155}{100} = 1.55$$

$$T = I_c \times CPI \times \tau$$

$$T = 100,000 \times 1.55 \times \frac{1}{40 \times 10^6} = 3.875 \text{ ms}$$

$$\text{MIPS} = \frac{f}{CPI \times 10^6} = \frac{40 \times 10^6}{1.55 \times 10^6} = 25.8$$

2. Complete


