الاسم:	رقم التسجيل:	رقم الشعبة: 2

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<u>Instructions</u>: Time **10** minutes. Closed books and notes. No calculators. Please answer all problems in the space provided. **No questions are allowed**.

<Good Luck>

Q1. A given application is written in Java runs 10 seconds on a desktop processor. A new Java compiler is released that requires only 0.5 as many instructions as the old compiler. Unfortunately, it increases the CPI by 1.2. What is the percentage performance increase of this application using this new compiler?

Old Time $= IC_{old} * CPI_{old} * T_{old}$

$= 10$ seconds

New Time $= 0.5 * IC_{old} * 1.2 * CPI_{old} * T_{old}$

$= 0.5 * 1.2 * 10$

$= 6$ seconds   **(4 marks)**

Speedup $= 10 / 6 = 1.67$ **(3 marks)**

The new compiler is $(1.67-1)*100\% = \underline{67\%}$ faster than the old compiler   **(3 marks)**