Homework Week 04
Due Week 05

1. Fill in the blanks for the following (20%)
   A. Cams turn ____________ rotary motion into an upward and downward motion
   B. ________________ is difference between a cam’s minimum and maximum radii
   C. Eccentricity means to be __________
   D. Unlike cranks, cams have the ability to store __________
   E. Cams are the ____________ version of computer programs
   F. A ____________ crank converts up-down motion to side-to-side motion
   G. A 3-bar (linkage) is for ____________ motion
   H. A slider-crank with a ____________ increases lever sway
   I. Levers move in a ____________ arc
   J. A ____________ can be used to keep the lever against the cam so it follows the profile
   K. Springs in cam-followers increase _________, so tensioners are used

2. Answer the following (10%)
   A. List, sketch and give examples of the 4 types of springs
   B. Explain how cams examples of memory and storage

3. Define (1 to 2 sentences), describe (1 to 3 paragraphs) and provide sketches to support you definitions and descriptions for the following (10%)
   A. Lobe Cams
   B. Dwell (or Pause)
   C. 3-bar linkages

4. Sketch and describe the 4 cycles of a 3-bar linkage. In your sketch show where the straight line motion is and in your description, explain how the straight motion arises (10%)

5. An example of the common car windshield wiper (2 blades) is shown. Before searching, think and sketch how you think the wiper works; what is the input and output? Next, do a web search to study how wipers work. Construct a Lego-based version using an NXT motor and NxC program. Create Build Instructions as a 4-step build plan (one a single slide). Capture a 10-second WMV video of your wiper in action (25%)

6. Use MLCAD to create build instructions for the Lego-based folding chair assembly. Recall, you constructed this assembly for Week03 Homework. Bring a hardcopy of the build instructions to next week’s class (Week 05). Grading will depend on how easily your classmate can recreate your assembly using only the build instructions (25%)