**Design of Pneumatic/Hydraulic System or Devices for Toys**

**Design Project** **scenario:**

You are a designer at a toy company and your team specializes in designing the pneumatic and hydraulic components for toys. The list below indicates toys that need to be fitted with a hydraulic or a pneumatic system. Each toy has a part that requires movement, a load to be lifted, and/or a switch to be opened or closed.

Be prepared to present your design, test data and prototype (function, aesthetics, cost and efficiency , and environmental considerations) to the toy company’s board of directors (the class).

**Possible toys:**

• jack-in-the-box

• elevator in garage

• dump truck

• hairdresser’s chair

• fire-engine ladder

**Design a pneumatic/hydraulic device that (choose one):**

* causes the doll to pop up. The toy can have a seasonal theme—a ghost pops up for Halloween, a chick pops out of an egg for Easter
* lifts up a toy car from the ground floor to the second floor of a garage or car parkade. (Extension: Have the elevator platform tilt to send the car down a ramp and back down to the first floor.)
* tilts the box to dump the load
* lifts a salon chair that can hold a plastic doll
* causes an extension ladder to lengthen

**Assessment**

1. **Design Report: (25 marks)**

/5 Problem & Criteria

/10 Planning

/5 Testing

/5 Evaluating & Improving

1. **Presentation Criteria: Presentation includes information on the following:**

**/5 Function** (how did you build it, why did you choose the materials you chose, how

does it work)

**/2 Aesthetics** (is it obvious what it is, does it look appealing)

**/3 Environmental Considerations** (did you use recycled materials, what impact will

ithave (when it is built / used) on the environment, safety considerations)

**/2 Cost / Efficiency** (is it expensive, how often will the parts need to be replaced)