**1. Explain, in your own words, the difference between perception and cognition, using the concept of a “smart” mechanism [1]? Begin with a basic description of how the planimeter works [1]. Include an example of a discovered smart mechanism [1] .**

*[1] The planimeter acts as a transducer between intention (wanting to know the area of a irregular shape) and a physically “complex” variable (the area) without direct knowledge of the underlying mathematical principles of its construction.*

*[1] No calculations are explicitly made, rather the mechanics of the device produces the desired output via correct use of the instrument. In a similar way, our brains can access complex variables of the physical environment (e.g. color, sound, temperature) without us needing to calculate anything. This is perception as Runeson describes it.*

*[1] Tennis player watching a ball need only “know” the rate of image expansion to calculate time-to-collision, rather than compute all the myriad physical variables. P.176 Runeson Paper - Lee 1974. Allow other good examples of smart mechanisms.*

**2. Name two properties that Runeson identifies as definitive for smart mechanisms [2]?**

*Any 2 from below:*

* *Stable*
* *Continuous*
* *Efficient / Simplicity*
* *Not influenced by Cognitive effects (mood, fatigue, drugs, etc.)*

**3. What is the “principle of equal simplicity” [2]?**

*The principle of simplicity enables us to reach conclusions about the operation of a system [1] by comparing variables which quantify that function [1] (e.g. speed, simplicity, variance) p.175 Runeson Paper - Sensory Psychophysics*

**4. Name 2 areas of psychology (apart from perception) in which smart mechanisms can be applied [2]:**

*Any 2 from below:*

* *Developmental psychology*
* *Learning*
* *Attention*
* *Mastery*

**5. Invent a smart mechanism that could improve on our everyday perception [1].**

*Anything that follows the vague concept of a planimeter whilst improving our perceptual abilities e.g.:*

* *In-built statistical evaluator, allowing for better decision making when presented with large or misleading information*
* *Taste buds that give a breakdown of nutritional content of food, so we can choose healthier options.*