Worksheet 2 Questions – Materials used in Photovoltaics

1. Some materials used to construct solar cells are
(a) silicon
(b) Germanium
(c) Cadmium telluride
(d) Copper indium gallium diselenide
(e) Gallium arsenide.

Compare and contrast the strengths and weaknesses of these materials for use in PV cells.

2. Describe the differences between crystalline silicon PV cells and thin film PV cells.

3. Identify 3 different types of thin film technology & describe them briefly

4. Identify the advantages and disadvantages of the different thin film technologies

5. Describe with 2 or 3 small diagrams, how texturing and anti-reflection coating (ARC) techniques reduce reflection of light arriving at the top surface of a solar cell

6. Identify different types of metal contacts used in typical solar cell (what materials?)

7. Briefly identify the differences between the following types of silicon:

- single crystal
- multi-crystalline
- polycrystalline

- ribbon silicon

Outline one advantage and one disadvantage of each

8. Name & describe a growth technique used to grow mono-crystalline silicon ingots, and one to grow multi-crystalline ingots.