

## Chemical Engineering Test for Chapters 1 and 2

**Time allowed 20 minutes**

1. Working on the large scale involves taking notice of factors which are of little importance when working in the laboratory. One of these is storage, for which it is necessary to take into account the value of the material being stored, amongst other things.
  - (a) Mention **two** other such factors, in each case giving **one** reason for your choice. (4)
  - (b) The chemical industry has a number of traditional divisions. Mention **two** such divisions. (2)
2. The separate steps in the manufacture of an industrial chemical can be classified under three main headings. 'Energy transfer' is one of these. Name the other **two**. (2)
3. Energy conservation is important in the manufacture of chemicals for economic reasons.
  - (a) What name is given to a piece of equipment for heating or cooling streams of reactants or products? (1)
  - (b) Equipment for heating or cooling process streams are known by various specific names according to the particular uses to which they are put. For example, a 'pre-heater' raises the temperature of a process stream to the level required by the next stage of the process. Give **two** other such specific names and briefly describe what each is designed to do. (4)
  - (c) Give **one** way in which process streams are raised to higher temperatures. (2)
4. What name is given to a pump designed to pump gases? (1)

**Total 15 marks**

## Chemical Engineering Test for Chapters 1 and 2 Answers

1. (a) Any two of the following (2) with appropriate comment in each case (2)
  - Transport of materials
  - Mixing
  - Heat transfer
  - Separation
  - Disposal of waste
  - Process control
  
- (b) Any two of the following (2)
  - Heavy inorganic chemicals
  - Heavy organic chemicals
  - Industrial polymers
  - Agricultural chemicals
  - Pharmaceuticals
  - Explosives
  - Building products
  - Petroleum
  - Synthetic fibres
  - Detergents
  
2. Transport of materials (1)
  - Separation (1)
  
3. (a) Heat exchanger (1)
  
- (b) 2 from the following (2), each with explanation (2)
  - vaporiser – turns liquid in process stream into vapour
  - condenser – turns vapour into liquid
  - accept others from Chapter 4 such as re-boiler, economiser
  
- (c) using steam /using a hot process stream from another part of the plant (1)
  
4. compressor (1)

**Total 15 marks**