2. COMPARISON

***Comparison** is one of the ways of relating ideas and objects to each other. The comparison can either be one of **difference** or one of **similarity**. Of course, comparison is frequently expressed by means of grammatical forms such as the comparative and the superlative. However, there is also a large store of lexical items which express similar meanings. For example:*

- *"**to accelerate**" means "to go faster",*
- *"the two samples are **similar**" means that they have been compared.*

Self evaluation – entry test

▮ *Fill in the blanks, using comparatives, superlatives or other lexical forms.*
Example:
*Before building the prototype, **fu** ..... research will be necessary.* (more)
→ *Before building the prototype, **further** research will be necessary.*

1. In the early 1970s, **bo** ..... the American and Russian space agencies began exploring the possibility of long-term habitation in space. *(the two of them)*
2. The upper salinity limit for irrigation is **le** ..... than 15% of the salt content of seawater. *(≠ more)*
3. Fever has a useful medical function; it not only increases the metabolic rate, but the **ho** ..... environment facilitates the destruction of pathogens. *(higher temperature)*
4. **Un** ..... true organisms, viruses are unable to synthesise proteins because they lack ribosome. *(as opposed to)*
5. Many of the drugs prescribed for human therapy are the **sa** ..... those used for farm animals. *(identical – 2 words)*
6. Chemicals can be added to vary the properties of the glass. For example, the addition of lead oxide **en** ..... the refractive index. *(makes better)*
7. Fleming noticed that a penicillin solution prevented the **sp** ..... of bacteria. *(growth, proliferation)*
8. The smallest blood cells (averaging 2-4 micrometers in diameter) grow **ha** .....-..... filaments from their membranes. *(similar to hair)*
9. **Im** ..... production techniques have enabled industrialists to reduce the risk of fire. *(better)*
10. Wegener was able to demonstrate the movement of tectonic plates by **ma** ..... the shapes of the five continents. *(comparing, fitting together)*

■ *Fill in the gaps with appropriate comparative and superlative forms or with synonyms.*

MNEMOSCIENCE, a German company specialising in polymer technology, has announced its intention to market "shape-memory polymers" (SMPs) in the near future. Dr Andreas Lendlein, of the *"German Wool Research Institute"* at Aachen, in collaboration with Prof. R. Langer of *MIT*, are currently developing a new family of **en** ..... *(improved)* SMPs providing ..... *(+ good)* performance and ..... *(+ versatility)*. The new process is based on polymers containing *oligo (e-caprolactone) dimethacrylate* which provides a "switching" segment, determining the temporary and the permanent shape of the polymer. The material is programmed by forming it into the required parent shape and then **ra** ..... *(increasing)* the temperature so that crystallisation of the "switching" segment occurs and cross links are formed. The material can then be bent into any other configuration and will switch back to the former parent form at the transient temperature.

Shape-memory substances are, in fact, not new. The ..... *(≠ worst)* known is "Nitinol", a nickel-titanium alloy that has been widely used for actuators in robotic applications and medical devices for a considerable time. However, SMPs have a considerable number of advantages over shape-memory alloys (SMAs) and offer a far wider range of applications. Their **fo** ..... *(main)* advantage is that they are much ..... *(+ easy)* to make and consequently ..... *(– expensive)*. This is because, **un** ..... *(in contrast to)* alloys, the programming of polymers can be carried out rapidly and at ..... *(+ low)* temperatures, about 70°C instead of several hundred degrees. Other advantages include:

- The reaction time after the transient temperature has been reached is much faster.
- By varying the proportions of the two monomers, the specification of deformations can be adjusted with ..... *(+ accuracy)*. This means that SMPs with predetermined mechanical strength and transient temperatures can be designed to **su** ..... (*match, correspond to*) specific functions.
- The deformation capability is ..... *(20 x > great)* SMAs.

- Finally, there are considerably ..... *(≠ more)* problems in producing biocompatible and bio-degradable SMBs. This **wi** ..... *(extends, enlarges)* the potential range of uses and has considerable importance for medical applications. It will be possible, for example, to insert bio-degradable implants which do not require ..... *(+ far)* intervention in order to be removed and thus **le** ..... *(reduce)* the need for invasive follow-up surgery.

▮ *You can use suffixes to form nouns or verbs: -(at)ion • -sion • -ise*[G. Notes 1]*.*
Examples: to vary → variation; to divide → division; character → to characterise.

Verbs	***Nouns***
1. It is cheaper to **regulate** the temperature automatically.	Automatic temperature ..... is more economical.
2. If gases ..... very rapidly, cryogenic temperatures are attained.	Rapid **expansion** of the gases produces temperatures of below 120 Kelvin.
3. The committee was set up to **standardise** civil aviation procedures.	His job involves the ..... of aviation safety procedures.
4. People get old because the body ..... genetic damage.	Ageing is a result of the **accumulation** of genetic damage.
5. The first atomic bomb **exploded** on August 6, 1945.	80,000 people were killed in the Hiroshima ..... .
6. The astronauts are provided with a 14-day supply of **pressurised** oxygen.	The oxygen supply is stored under ..... .
7. Solar energy is ..... from hydrogen.	The **generation** of solar energy involves the conversion of hydrogen.
8. Heat losses can be ..... by thermal protection.	Efficient insulation reduces heat losses to a **minimum**.
9. It was necessary to **extend** the research facilities.	Because of the increase in staff, an ..... had to be built.

Self evaluation – exit test

▮ *Supply the missing words.*

1. As a result of the dust cloud raised by the impact of a large asteroid **ne** ..... heat ..... light would penetrate the Earth's atmosphere. *(not one, not the other)*
2. Optical fibres will produce **en** ..... performances for computers. *(better)*
3. The government would like to **bo** ..... imports. *(help to improve)*
4. The two colours do not **ma** ..... . *(go together)*
5. The disease is **sp** ..... rapidly. *(advancing)*
6. The constant stress and vibration **we** ..... the metal. *(≠ make stronger)*
7. Chameleons, **un** ..... human beings, can survive a drop of 46% of the body fluid. *(in contrast to)*
8. The reason why NASA is interested in nuclear propulsion is that space travel would be ..... fast. *(x 2)*
9. ..... .
   (+ people poor / – they eat)
10. If you drive up the hill too fast, the engine will **ov** ..... . *(get too hot)*