

**Q.2 Write a précis of 169 words of the following passage. Give it a suitable title.**

**(20)**

Hydroponics, an unconventional growing technique, is the cultivation of plants in water. Revolutionary as it may sound, plants do not need soil as such – they need only the nutrients and moisture contained in the soil, and these can be supplied through gravel that contains water, as well as through soil.

Hydroponics is not a new process. As long ago as the 1690's, an English physician tried growing plants in a laboratory experiment, and in the 1880's German researchers used the method to develop many of the formulas for plant nutrient still in use today.

About a generation ago, hydroponics moved out of the research labs into commercial use. A California physiologist, W.F.Gericke, published guidelines for hydroponics agriculture in 1936. Use was made of hydroponics in some military operations during World War II. Since then research projects and commercial ventures in hydroponics have gone forward in a number of countries, including areas where water is in short supply and temperatures are too extreme for ordinary agriculture.

One of the leading companies in the field of hydroponics, in Arizona, which operates over 200 greenhouses on a 48 hectare section of land. Hydroculture produces more than 2.7 million kilograms of vegetables and fruit each year – mostly tomatoes, but also cucumbers, lettuce and melons. Crop yields are excellent. Each mature tomato plant produces an average of 12.1 kilos of fruit in a year of two growing cycles. This compares with about 9 kilos for two crops of the average soil grown plant.

Hydroculture's greenhouses measure 8 by 39 meters and consist of steel frames covered with reinforced plastic film that is resistant to weather and lets in a maximum amount of light. The plants are fed by inorganic nutrients dissolved in water which is supplied by a plastic pipeline. The feeding and watering system is automated. Electric sensing devices (sensors) determine when the plants are hungry or thirsty. The sensors send impulse messages that automatically activate the water and nutrient delivery system. When the sensors 'know' that the plants have had enough, they automatically shut off the system.

Temperature, humidity and air circulation are carefully controlled. Air conditioning and heating keep the temperature at 29 Celsius by day and 18 by night. No entry is given to wind, hail, frost, drought, weeds or insects.

Despite the development, soilless agriculture still remains only a minor competitor to the traditional open-field way of growing crops. Hydroponics accounts for only a small fraction of world output of food and fibre, and its potential is primarily in arid – region agriculture where water is in short supply, or in the production of high priced specialty crops which reward costly investment and intensive care.

**Q.3 Explain the meaning of any five of the following**

**(5)**

## Precis

### Hydroponics: A Revolutionary Agriculture Technique

#### Hydroponics

~~It~~ is a revolutionary technique of growing plants in water. Plants are more dependent on water and nutrients ~~rather~~ than soil. It is an old technique as it had been used in the past. It was used in laboratory experiments and making new formulas of nutrients for plants. Thereafter, it was used for commercial purposes. Several ~~research~~ <sup>researches</sup> were conducted on it.

Several companies have used hydroponics for producing a large amount of fruits and vegetables. It is

performed in green houses which consist of steel frames to control sunlight.

The method of providing food and water is automated by sensors. Sensors indicate



when to provide water and inorganic <sup>essential</sup> nutrients. Other essential conditions for plant growth are also regulated by sensors. Greenhouses protect plants from harsh environmental conditions. Despite its huge potential for cultivation, it contributes less to the global output of food and fibre. It is best for the areas where water is scarce. Moreover, it can be <sup>scarce</sup> used for cultivating crops which require huge investment

Precis words:  
169

Idea is ok. Spelling errors found.