Answer Key 14.5

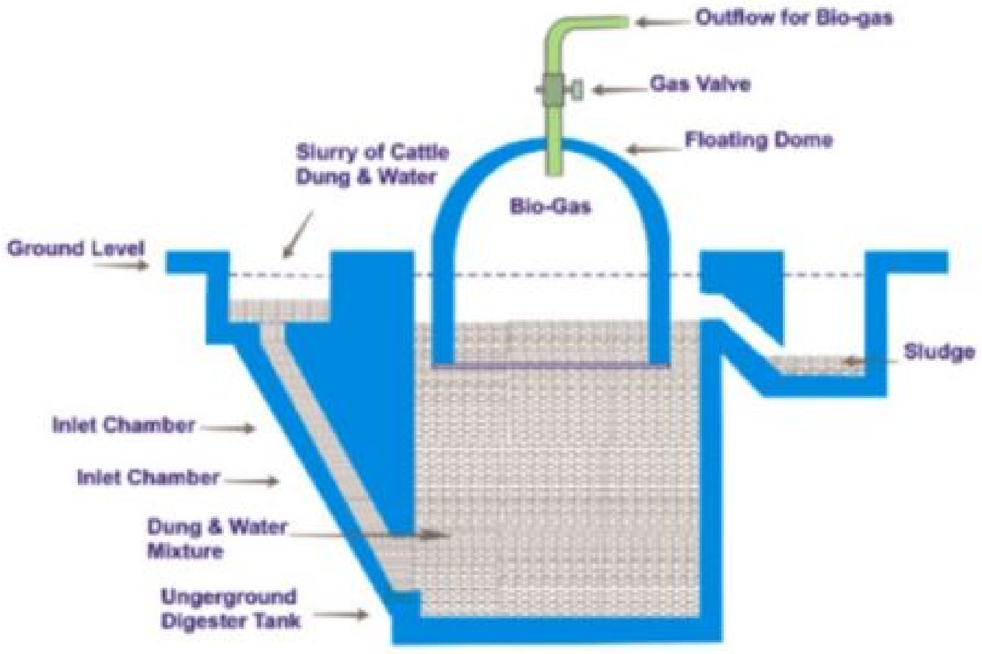
Marks - 25

Case study based questions

10th Science

Sources Of Energy

Passage - 1 **5 Marks**



The decomposition which takes place in the absence of oxygen is called anaerobic degradation. Anaerobic degradation is carried out by the micro-organisms called anaerobic bacteria. Biogas is a mixture of methane, carbon dioxide, hydrogen and hydrogen sulphide. The major constituent of biogas is methane.

Q1. (1) Anaerobic degradation

Q2. (2) Methane

Q3. (2) FALSE

Q4. (3) Hydrogen

Q5. (1) Anaerobic bacteria

Answer Key 14.5

Marks - 25

Passage - 2

5 Marks

Cow-dung and water are mixed in equal proportions in the mixing tank M to prepare the slurry. It takes about 50 to 60 days for the new gas-plant to become operative (start functioning). The spent dung-slurry, left after the extraction of biogas, is rich in nitrogen and phosphorus compounds and hence forms a good manure.

Q1. (1) TRUE

Q2. (2) Slurry

Q3. (3) 50-60

Q4. (1) Nitrogen and phosphorus

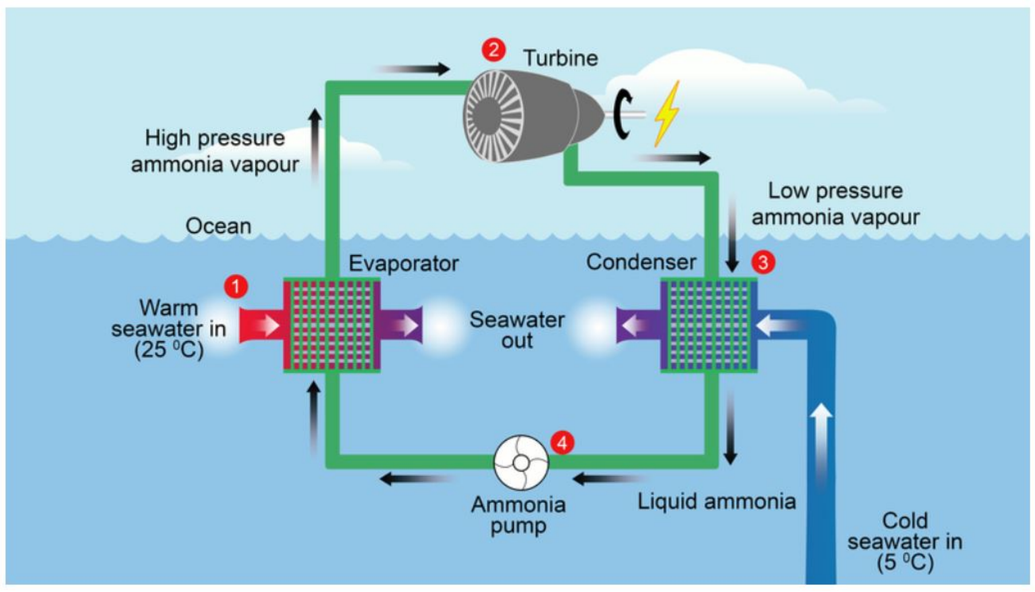
Q5. (2) Cow dung

Passage - 3

5 Marks

Answer Key 14.5

Marks - 25



A very large area of sea is called an ocean. The water at the surface of an ocean gets heated by the heat of the sun and attains a higher temperature than the colder water at deeper levels in the ocean. The energy available due to the difference in the temperature of water at the surface of the ocean and at deeper levels is called ocean thermal energy (OTE). The devices used to harness ocean thermal energy are called Ocean Thermal Energy Conversion power plants (or OTEC power plants).

Q1. (1) Ocean

Q2. (1) TRUE

Q3. (2) Ocean Thermal Energy

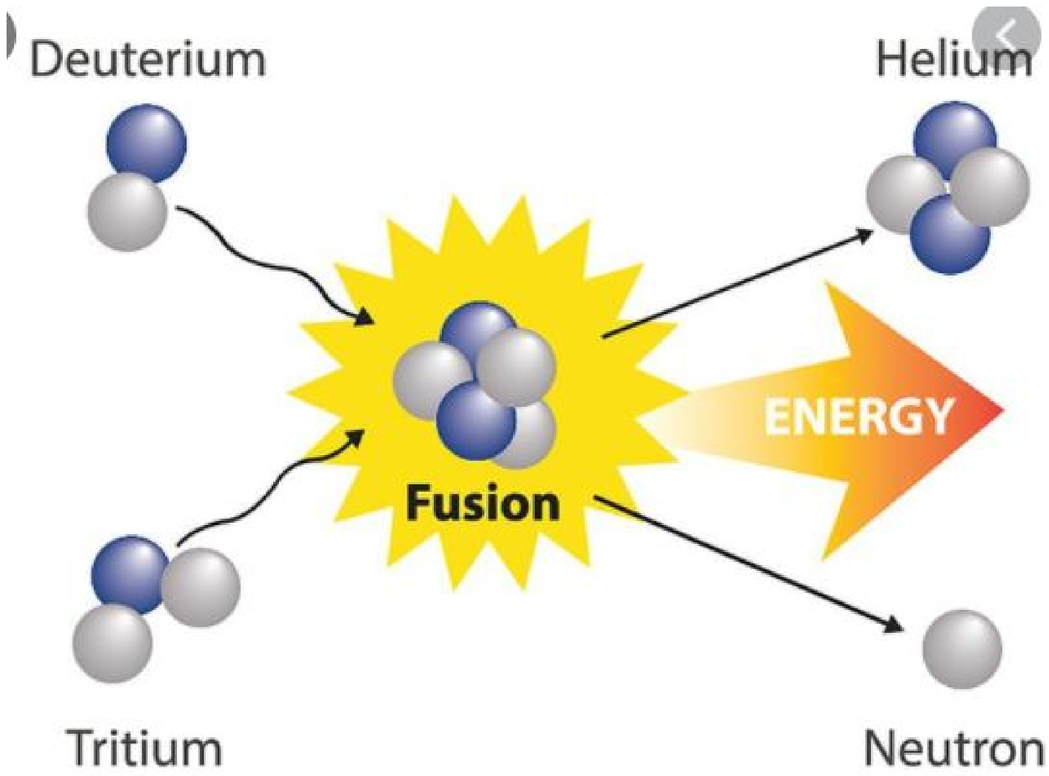
Q4. (3) Ocean Thermal Energy Conversion

Q5. (2) FALSE

Passage - 4 **5 Marks**

Answer Key 14.5

Marks - 25



The process in which two nuclei of light elements (like that of hydrogen) combine to form a heavy nucleus (like that of helium), is called nuclear fusion. The conditions needed for carrying out nuclear fusion process are 'millions of degrees of temperature' and 'millions of pascals of pressure'.

Q1. (2) Nuclear fusion

Q2. (3) Both of these

Q3. (1) Helium , neutron

Q4. (1) TRUE

Q5. (2) Thermonuclear

Passage - 5 **5 Marks**

Answer Key 14.5

Marks - 25

Thermonuclear reactions (fusion reactions which occur at very high temperatures) are used for producing a weapon of mass destruction called hydrogen bomb. The hydrogen bomb consists of heavy isotopes of hydrogen called deuterium and tritium along with an element lithium-6.

Q1. (1) Hydrogen bomb

Q2. (2) Deuterium , tritium

Q3. (3) Lithium-6

Q4. (2) Tritium

Q5. (1) Very high temperature

Answer Key 14.6

Marks - 25

Case study based questions

10th Science

Sources Of Energy

Passage - 1 **5 Marks**

The sun which gives us heat and light, derives its energy from the fusion of hydrogen nuclei into helium nuclei, which is going on inside it, all the time. The main nuclear fusion reaction taking place in the sun which releases a tremendous amount of energy is the fusion of 4 hydrogen atom nuclei to form a bigger nucleus of helium atom. The total energy produced by the fusion of hydrogen into helium is tremendous. All this energy is released in the form of heat and light. It is this energy which makes the sun shine and give us heat and light.

Q1. (1) Hydrogen , helium

Q2. (2) 4

Answer Key 14.6

Marks - 25

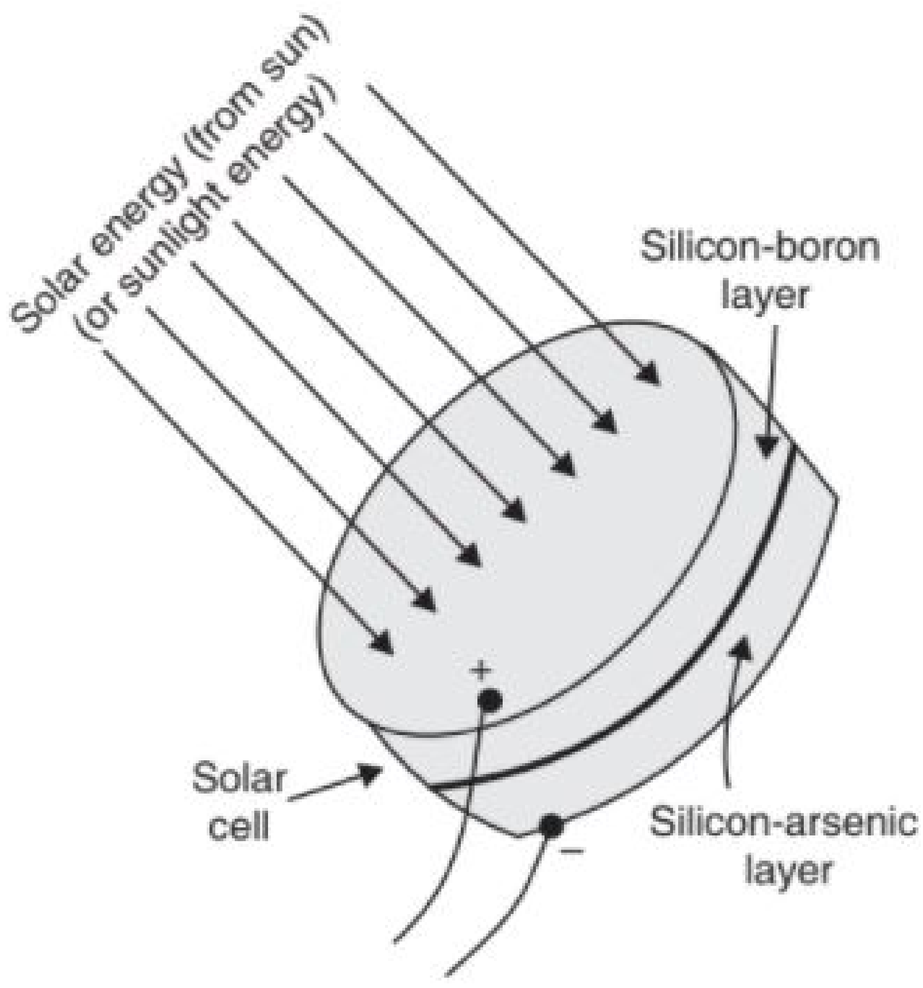
Q3. (3) Nuclear fusion , hydogen

Q4. (2) FALSE

Q5. (1) TRUE

Passage - 2

5 Marks



Solar cells use the energy in sunlight to produce electricity. Thus, solar cell is a device which converts solar energy (or sun's energy) directly into electricity. Since solar energy is also called sunlight energy, so we can also say that a solar cell converts sunlight energy into electrical energy.

Q1. (1) Solar cells

Q2. (2) Electrical

Q3. (3) Silicon

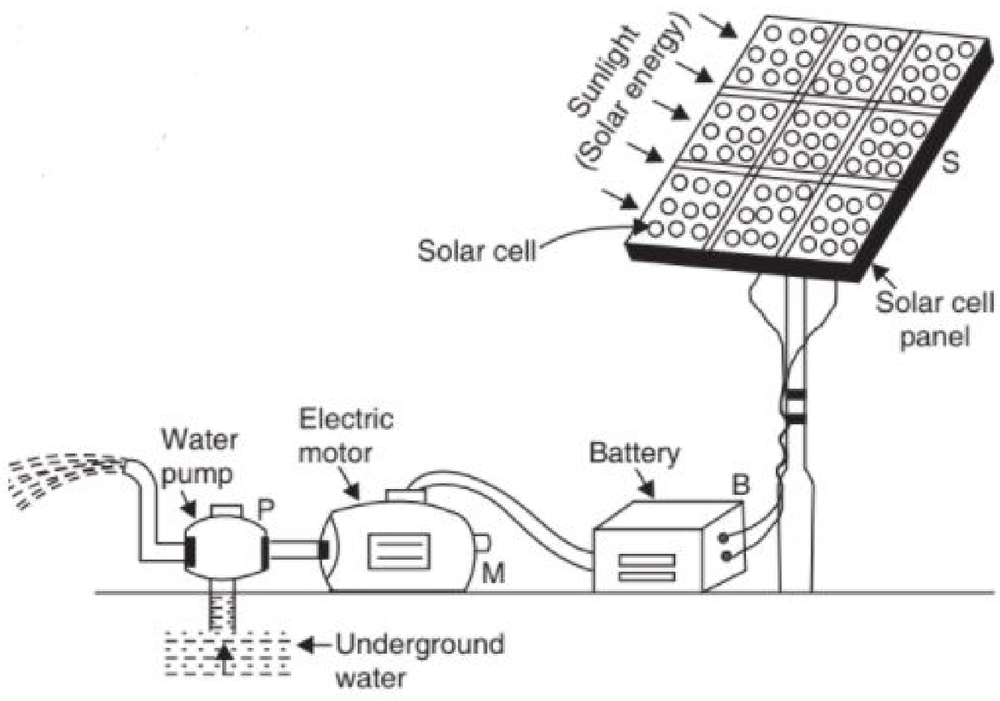
Answer Key 14.6

Marks - 25

Q4. (1) TRUE

Q5. (2) Glass

Passage - 3 **5 Marks**



A single solar cell can produce only a small amount of electricity. In those cases where more electrical power is needed, a large number of solar cells are joined together in series. This group of solar cells is called a 'solar cell panel'. Thus, a solar cell panel consists of a large number of solar cells joined together in a definite pattern.

Q1. (1) 0.5 V

Q2. (2) 25

Q3. (1) TRUE

Q4. (3) Silver

Answer Key 14.6

Marks - 25

Q5. (1) TRUE

Passage - 4 **5 Marks**

It is the kinetic energy of wind which is utilised for doing work. Solar energy (or sun's energy) is responsible for the blowing of wind. The electricity generated by a single wind turbine is quite small (because a single wind turbine can run only a small generator). So, in order to generate a large amount of electricity, a large number of wind turbines are erected over a big area of land.

Q1. (1) Kinetic

Q2. (1) TRUE

Q3. (2) Wind generator

Q4. (3) Wind energy farm

Q5. (4) 15 km/hr

Passage - 5 **5 Marks**

Answer Key 14.6

Marks - 25

If India's wind energy is fully harnessed, then 45,000 megawatt of electrical power can be generated. At present we are generating more than 1025 MW of electricity from wind energy. This is going to increase soon when some more wind energy farms start working.

Q1. (2) FALSE

Q2. (1) 1025 MW

Q3. (3) Tamil Nadu

Q4. (4) Germany

Q5. (1) Denmark