HyTrEc
Hydrogen Transport Economy for the North Sea Region

The Interreg IVB North Sea Region Programme
Investing in the future by working together for a sustainable and competitive region

European Union The European Regional Development Fund

Unit 3 – Hydrogen Manufacture and Safety

TEST PAPER

Name :- ……

Date :- ……

Instructions: -

- **Try to answer all questions**
- **Read each question carefully and choose the correct answer: A,B,C or D**
- **Make sure you only mark one answer for each question**

Unit 3 – Hydrogen Manufacture and Safety

TEST

1) Hydrogen can be manufactured from various substance and gasses, which one can it not be produced by?

A ☐ Natural gas

B ☐ Coal

C ☐ Biomass

D ☐ Oxygen

(1.1)

2) What is the electrolysis?

A ☐ The process by which ionic substances are broken down into complex substances using electricity. During electrolysis, metals and gases may form at the electrodes.

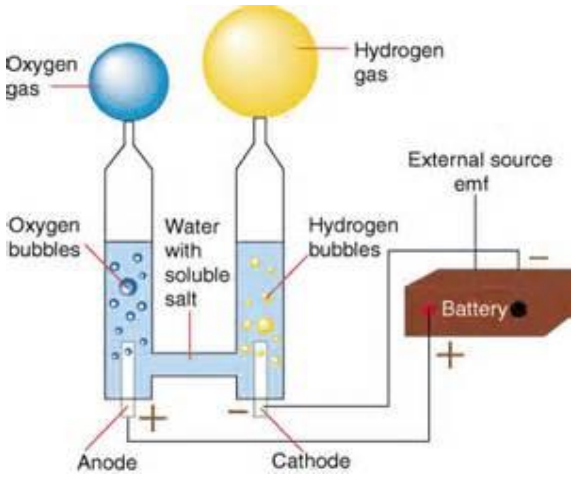
B ☐ The process by which ionic substances are joined into complex substances using electricity. During electrolysis, metals and gases may form at the electrodes.

C ☐ The process by which ionic substances are broken down into complex substances using hydrogen. During electrolysis, metals and gases may form at the electrodes.

D ☐ The process by which ionic substances are joined into simpler substances using hydrogen. During electrolysis, metals and gases may form at the electrodes.

(2.1)

3) What is water electrolysis?



A ☐ It is the decomposition of water (H_2O) into oxygen (O_2) and hydrogen gas (H_2) due to an electric current being switched off as it conducts through the water

B ☐ It is the decomposition of water (H_2O) into oxygen (O_2) and hydrogen gas (H_2) due to an electric current being passed through the water

C ☐ It is the decomposition of water (H_2O) into oxygen (O_2) and hydrogen gas (H_2) due to the water freezing

D ☐ It is the decomposition of water (H_2O) into oxygen (O_2) and hydrogen gas (H_2) due to the water evaporating

(2.1)

4) Explain what you understand by steam reforming of hydrogen?

A ☐ Bulk hydrogen generation is usually produced by the steam reforming of methane or natural gas.

At high temperatures (200–300 °C), steam (H_2O) reacts with the natural gas (CH_4) in an enthalpy reaction to yield syngas.

B ☐ Bulk hydrogen generation is usually produced by the steam reforming of methane or natural gas.

At high temperatures (700–1100 °C), steam (H_2O) reacts with the natural gas (CH_4) in an enthalpy reaction to yield syngas.

C ☐ Bulk hydrogen generation is usually produced by the steam reforming of methane or natural gas.

At high temperatures (200–300 °C), steam (H_2O) reacts with the natural gas (CH_4) in an endothermic reaction to yield syngas.

D ☐ Bulk hydrogen generation is usually produced by the steam reforming of methane or natural gas.

At high temperatures (700–1100 °C), steam (H_2O) reacts with the natural gas (CH_4) in an endothermic reaction to yield syngas.

(2.1)

5) On arriving at the scene of a major fire incident involving a hydrogen tank where a motor vehicle is involved how far back should you isolate the area?

A ☐ 1600 metres (1 mile) in all directions

B ☐ 3200 metres (2 miles) in all directions

C ☐ 1600 metres (1 mile) in a downwind direction

D ☐ 3200 metres (2 miles) in a downwind direction

(3.1)

6) A first responder should react to a major hydrogen incident by:-

A ☐ Cooling the container with large quantities of foam until the fire is out

B ☐ Cooling the container with large quantities of carbon dioxide until the fire is out

C ☐ Cooling the container with large quantities of sand until the fire is out

D ☐ Cooling the container with large quantities of water until the fire is out

(3.1)

7) When a hydrogen leak is detected you should?

A ☐ Evacuate all personnel from the building and the surrounding 10000 metres

B ☐ Shut off the hydrogen source and close all windows and doors

C ☐ Evacuate all personnel from the building

D ☐ Shut off the hydrogen source immediately and vent all hydrogen to a safe outside location

(3.1)

8) In an emergency procedure such as a worker coming into contact with liquid or cold gaseous hydrogen he/she should be transported to a medical centre for treatment. If transportation is not available the affected area should be:-

A ☐ Treated with antiseptic cream and bandaged

B ☐ Treated with antiseptic cream and left to heal itself

C ☐ Thawed with tepid water, the area should not be rubbed

D ☐ Thawed with hot water, the area should not be rubbed

(3.2)

9) What personal protection controls would you not find in a hydrogen production area?

A ☐ Protective gloves

B ☐ Eye protection

C ☐ Protective equipment

D ☐ Hair net

(3.3)

10) What type of fire extinguisher would you use to tackle a hydrogen fire?

A ☐ Water spray

B ☐ Foam

C ☐ Powder

D ☐ Wet chemical

(4.1)