IT'S ALL ABOUT ENERGY!

The module titled "It's All About Energy" has taught you about energy scenarios, drilling for petroleum and the connection between the climate and CO_2.
This test comprises 20 questions worth a total 51 points. The number of points that may be earned is indicated alongside every question.

Good luck!

5 points **1** We are facing three great challenges where the future of energy is concerned. List these three developments and explain how they are interconnected.

3 points **2** The module introduced you to the terms TANIA and TINA. Explain what these abbreviations mean in your own words and how relevant they are to the energy debate.

3 points **3** Chapter 1 of It's All About Energy presented two perspectives of the future of energy: the 'Every man for him self' scenario and the 'Together we stand stronger' scenario.
Which of these scenarios is more likely to come true? Explain your answer in no more than 5 sentences. Provide arguments to support your position. Use the term 'sustainability', and give an explanation of that term.

2 points **4** What two types of atoms make up fossil fuels?

2 points **5** Give two reasons why oil is not found in some parts of the earth.

2 points **6** Is there a connection between the level of porosity of a type of rock and the permeability of that rock?

3 points **7** Explain in three steps how petroleum is found.

4 points **8** Sketch the cross-section of a well with several casings after cementing.

3 points **9** Given that the density of the mud is 1.234 kg/m^3. You reach an oil field at a pressure of 400 bar (4,000,000 kg/m^2) at a depth of 2.7 km. Is the mud density high enough to prevent a blow-out? Assume that the average diameter of the well is 0.10 m^2.

2 points **10** The depth at which oil has been drilled for on the sea floor currently stands at a record 3051 metres. Explain what equipment was used for this. Provide two reasons.

2 points **11** Production is possible from urban areas by means of snake wells. Provide two other situations in which snake wells might be used.

2 points **12** Provide a definition of the supercritical phase.

2 points **13** Give two advantages for using the supercritical phase for underground CO_2 storage.

5 points **14** Draw a diagram of how CO_2 is stored underground. Use arrows to identify and indicate the various elements.

3 points **15** Which three steps make up pre-combustion? Explain the terms used to identify these three steps.

2 points **16** What does viscosity mean? Think of an example in which you explain what exactly viscosity is or what it does.

1 point **17** What is the most important condition an empty gas field must fulfil, in terms of safety, before it can be used for the storage of CO_2?

3 points **18** Indicate the three factors for the safe storage of CO_2.

1 point **19** Why did the plan to store CO_2 in Barendrecht fail?

1 point **20** Looking at this from a broader perspective, why is it important to store CO_2 underground?