

## 1- READING

*Read the following article.*

### Offshore wind energy

1 Offshore wind is one of the most promising and climate-friendly energy-producing technology in the world. It is definitely the least-expensive energy source in many or even most regions now.

2 Offshore wind power refers to the construction of wind farms in water areas such as lakes, fjords and sheltered coastal areas **to generate** electricity from wind, utilizing traditional fixed-bottom wind turbine technologies, as well as deep-water areas **utilizing** floating wind turbines.

3 A range of spatial and temporal scales and external conditions limit the **potential** location of offshore wind plants. These data include water depth, currents, seabed migration and wave action. There are also further factors such as marine growth, **salinity**, icing and definitely geotechnical characteristics of the sea or lake bed. Corrosion is also a serious problem and requires detailed design considerations.

4 Strong wind speeds are available offshore compared to on land, so offshore wind power's **contribution** in terms of electricity supplied is higher. Offshore wind is steadier, more **consistent** and not blocked by mountains, trees, buildings, etc. Additionally, offshore wind farms can actually be built closer to most population centres than onshore wind ones. New systems allow to install turbines in deep waters, lift heavier weights, cope with bigger **swells** and carry more machines out to wind-farm sides.

5 The next **leap** is the technology of solar-wind hybrid power plants that are seemingly twice as efficient. This energy system uses two **renewable energy** sources used together to **provide** increased system efficiency as well as greater balance in energy supply. One of the strongest benefits is that the constructions of solar photovoltaic systems and wind turbines installed together do not require grid expansion since the plants generate solar and wind power at different intervals and during complementary seasons.

## 6 Some facts about offshore wind energy:

- ✓ The first US offshore wind turbine was launched in May 2013.
- ✓ The EU installed more than 1 offshore wind turbine per working day in 2012.
- ✓ Europe will install about 10.4 gig watts offshore wind turbines, it will be more than 70% of the global total.
- ✓ £35b offshore wind contribution by 2050.
- ✓ \$232 – a megawatt per hour is power-generation production.

## READING COMPREHENSION

*1- Answer the following questions according to the text.*

1. Which water bodies are commonly used for wind plants?
2. What are the types of turbines?
3. What are the factors which determine the location and the construction of offshore wind plants?
4. What is the efficiency of solar-wind hybrid power plants?
5. What are the main benefits of solar-wind hybrid power plants?

Make your own sentences using the words given in the text in bold.

*2-Explain the meaning of these words from the text then use them in sentences from your own.*

to generate (paragraph 2).....

utilizing (paragraph 2).....

potential (paragraph 3).....

consideration (paragraph 3).....

to cope with (paragraph 4) .....

grid (paragraph 5).....

complementary (paragraph 5).....

to launch (paragraph 6).....

## 2- VOCABULARY

### *1- Choose the suitable expression for each sentence.*

1. People are becoming more concerned .....environmental matters.

- a) in                                      b) to                                      c) on                                      d) about

2. Many species of wildlife could become ..... (i.e. no longer existing) if left unprotected.

- a) indangered                              b) in danger                              c) extinct                              d) dangerous

3. Offshore wind power refers .....the construction of wind farms.

- a)on                                      b) of                                      c) to                                      d) from

4. ....-exploitation of fossil fuels such as coal and oil will lead to an energy crisis.

- a) Re                                      b) Over                                      c)Non                                      d) Un

5. Factories often dispose ..... waste products in rivers and the sea.

- a) on                                      b) -                                      c) of                                      d) off

6. The indiscriminate use of chemical fertilizers, pesticides and other chemicals has ..... sources of groundwater.

- a) destroyed                              b) devastated                              c) vanished                              d) abolished

7. Water pollution occurs when pollutants are directly or indirectly discharged ..... water bodies e.g. lakes, rivers, aquifers and groundwater.

- a) with                                      b) in                                      c) into                                      d) out of

8. Cities with sanitary sewer overflows or combined sewer overflows employ one or more engineering approaches ..... reduce discharges of untreated sewage.

- a) to                                      b) for                                      c) from                                      d) at

9. Sampling of water for physical or chemical testing can be done by several methods, depending ..... the accuracy needed and the characteristics of the contaminant.

- a) in                                      b) on                                      c) with                                      d) to

10. Retention basins tend to be less effective ..... reducing temperature, as the water may be heated by the sun before being discharged to a receiving stream.

- a) at                                      b) in                                      c) with                                      d) for

### **3- READING 2**

*1 Read the following text and fill in it with appropriate forms of words given in brackets.*

#### **Facts about drinking water**

Drinking water is such a vital and .....(fundament) part of our lives that we have a tendency to take for granted that our water is safe to drink. last 50 years. A child born in the developed world consumes 30 to 50 times the water resources of one in the ..... (develop) world. unsustainable rate. Over the next 20 years, the average supply of water worldwide per person is expected to drop by a third. patterns continue, at least 3.5 billion people, i.e. nearly half the world's projected ..... (populate), will live in water-stressed rivers basins in just 20 years. dwindling freshwater resources are under .....(increase) pressure due to pollution and population .....(grow).

manufacturing..... (agriculture), accidental and consumer pollution. Some common sources of water pollution include :

- surface runoff from farms, businesses and paved surfaces
- excess of nutrients pumped into waters
- discharge of used water into waters
- acid rain
- underground storage tank..... (leak)
- discharge of used chemicals into waters
- discharge of industry by-products into waters
- toxic..... (contaminate) from underground storage tanks
- bacteria, viruses and parasites
- wasteful use of water.

## VOCABULARY

*1 Create adjectives from the following words.* (See the lesson about word formation)

save - .....

accident - .....

environment - .....

pollute - .....

filter - .....

grow - .....

provide - .....

responsibility - .....

purify - .....

nature - .....

*2 Create nouns from the following verbs.*

purify - .....

consume - .....

produce - .....

develop - .....

expect - .....

grow - .....

contaminate - .....

monitor - .....

pollute - .....

contribute - .....

### 3- Match the words with their definitions.

- |                |   |
|----------------|---|
| 1) crude oil   | a) a saturated hydrocarbon; it consists of hydrogen and carbon atoms  |
| 2) reservoir   | b) a gas without colour or smell that burns easily and used as a fuel |
| 3) natural gas | c) a large amount of something that is available to be used           |
| 4) methane     | d) oil in its natural state before it has been treated with chemicals |
| 5) alkane      | e) the simplest alkane and main component of natural gas              |

1..., 2..., 3..., 4..., 5...

### WRITING

Make sentences by putting the expressions in the correct order.

1. wells / crude oil / into the underground / Extracting / normally / reservoir / starts with drilling

.....  
.....

2. to the surface / is created by / a long hole / The oil well / drilling / which pumps / into the earth / with an oil rig / the oil

.....  
.....

3. a byproduct / can be / almost / on the other hand / Natural gas / always / is / of production oil / natural gas / unwanted / a disposal problem /

.....  
.....

4. consisting / commonly / Natural gas / mixture / higher alkanes / a hydrocarbon gas / primarily / carbon dioxide / includes / of methane / hydrogen sulphide / and / nitrogen / and / is

.....  
.....  
5. also / of the drill pipe / Drilling fluid / mud / and / at the drill bit / called / is pumped /  
down the inside / exits /  
.....  
.....

6. chemicals / is / solids / a complex mixture of / Drilling mud / fluids / and  
.....  
.....

7. of the reservoir / for oil and gas / In many wells / to flow / enough / the natural gas /  
is / to the surface / pressure / high  
.....  
.....

8. are used / the reservoir pressure / water flooding / To increase / or / CO2 flooding /  
enhanced recovery methods / steam flooding / such as  
.....  
.....