**Week 10 – Key – Carbon Nanotubes**

## A. LISTENING[1].

**2.** versatile, widespread element, constituent of natural materials, essential fo living processes (photosynthesis), variety of forms – diamond, graphite, fullerene, nanotubes

**3.**
**a)** development and optimalisation of CNT
b) gas+liquid compound of carbon and hydrogen – hydrocarbons
c) more than 1000 degrees Centigrade
d) parameters of the production process

**4.** - hydrochloric acid bath, special filters, centrifugation, drying
- 1/10 of the material
- ultrasound
- transmission electron microscope

**5.** electron source for flat screens
in hydrogen-driven car
microelectonic industry

## B. READING[2]

**1. Read the text and decide whether the sentences are true or false.**

a) Bare carbon nanotubes are non-toxic. Par.3 T/**F**

b) It is necessary to coat nanotubes to make them harmless. Par.1 **T**/F

c) Nanotube polymer coating damages living cells. Par.4 T/**F**

d) Nanotubes conduct electricity poorly. Par.5 T/**F**

**2. Ask about the underlined expressions:**

a) How wide are the nanotubes?

b) Who created the rod-shaped polymers that mimic molecules found naturally on the outer surface of the body´s cells? Who carried out the research?

c) What is the name of the physicist on the research team?

**4. Answer the question in your own words:**

a) synthetic polymers that mimic molecules found naturally on the outer surface of the body´s cells (Par.3)

b) rod (Par. 3)

c) stiff, strong molecules, good conductors (Par.5)

d) molecular electronic circuits;
ultrastrong, lightweight materials;
delivering drug molecules to cells +sensors (Par.6)

**5. Read the rest of the text. Use the word given in capitals to form a word that fits in the space. There is an example in 0.**

| | |
|---|---|
| But and expert on the (0) **toxicity** of nanotubes says he wonders | TOXIC |
| whether (1) **using** nanotubes for medicinal | USE |
| (2) **application** makes sense, even with such a coating. | APPLY |
| „Even after (3) **modification** they have to be sure they will | MODIFY |
| be (4) **eventually** eliminated from the body, „ the expert | EVENTUAL |
| points out. Bare nanotubes do not (5) **biodegrade** naturally, | BIODEGRADATION |
| and the liver and kidneys can´t (6) **remove** them. So if | REMOVAL |
| this new (7) **coating** wore off while the nanotubes | COAT |
| were still inside a person´s body, they would (8) **linger** | LINGERING |
| inside the body´s tissues and become toxic. Zettl (9) **opposes** | OPPOSITION |
| that the coating they (10) **tested** adhered to the nanotubes for several | TEST |
| months. | |