NANOTECHNOLOGY

Based on the provided text, here are 10 multiple-choice questions.

1. What is the primary goal of developing nanomedicines in the fight against cancer?
a) To completely replace all existing cancer treatments.
b) To create new polymer materials for general medical use.
c) To develop innovative drug-delivery methods.
d) To make cancer cells more resistant to traditional drugs.

2. According to the text, why are traditional therapies like chemotherapy considered harsh?
a) They are too expensive for most patients to afford.
b) They are toxic to both cancer cells and healthy cells.
c) They only work on a limited number of cancer types.
d) They require a very long recovery time after treatment.

3. What is highlighted as the most promising factor of nanomedicines?
a) Their ability to be easily cleared from the body.
b) Their low cost compared to traditional drugs.
c) Their ability to limit toxicity by delivering drugs directly to tumors.
d) Their use of gold nanoparticles in every formulation.

4. The text compares nanomedicines to a "homing beacon" because they:
a) are very bright and easy to see under a microscope.
b) use light to activate the drug release.
c) are designed to target and find tumors in the body.
d) can be easily cleared from the body.

5. Why can nanomedicines easily pass through the walls of tumor cells?
a) Tumor cells have a special PEG coating.
b) The nanomedicines are sensitive to temperature.
c) Tumor cells have "leaky" walls due to their structure.
d) The nanomedicines are pushed by the vascular system.

6. What happens to the nanomedicines after they have been inside the tumor for a few days?
a) They are quickly cleared from the body by the liver.
b) They start to disintegrate and release the medicine.
c) They change their shape to become star-shaped.
d) They become resistant to the cancer cells.

7. What is a "smart" nanomaterial?
a) A material that can think and make decisions on its own.
b) A material that is only sensitive to a magnetic field.
c) A material that releases its drug when triggered by an external stimulus.
d) A material that is always spherical in shape.

8. Which of the following is NOT mentioned as a stimulus that can activate "smart" nanomedicines?
a) Light
b) Sound waves
c) Temperature
d) A magnetic field

9. What is the function of the polyethylene glycol (PEG) coating on a liposome?
a) It helps the liposome to disintegrate faster.
b) It acts as a shield or protection for the nanomedicine.
c) It is the part that contains the cancer-fighting drug.
d) It makes the liposome sensitive to light.

10. What is one of the main concerns about nanomedicines that are still in the research and development stages?
a) They are too effective and may cause over-treatment.
b) They are too difficult to manufacture in large quantities.
c) They may get caught in other parts of the body, like the liver or spleen.
d) They are not approved by the FDA for any type of cancer.