

Biomaterials & Smart Materials

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

A nitinol stent can be compressed for insertion into an artery and then recover its working shape at body temperature. That sounds almost futuristic, but it is really a chemistry-and-materials story about how composition and structure can be chosen so that a material interacts productively with a living system or responds to a stimulus in a useful way.

- The definitions of biomaterials and smart materials
- Why biocompatibility and response to stimuli matter in design

2. Success Criteria

By the end, you should be able to:

- The definitions of biomaterials and smart materials
- The named biomaterial and smart-material examples in the course
- The key stimuli that can trigger smart-material behaviour

3. Key Terms

biomaterial

a material designed to

PGA

useful where a device or scaffold should gradually disappear after serving its purpose

but it

really a chemistry-and-materials story about how composition and structure can be chosen so that a material interacts pr

Why

it not enough for the material to simply be "strong"?

Strength alone

not enough because

Evaluate why specific materials

suitable for medical or sensing uses

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "The definitions of biomaterials and smart materials". Use one specific example from the lesson.

BAND 3 **2 MARKS**

2. Apply this idea to a new example: "The named biomaterial and smart-material examples in the course". Show your reasoning clearly.

BAND 4 **3 MARKS**

3. Analyse why this idea matters for understanding Biomaterials & Smart Materials: "The key stimuli that can trigger smart-material behaviour".

BAND 5 **4 MARKS**

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Biomaterials & Smart Materials but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Biomaterials & Smart Materials?

- A. Identify the key concept being tested
- B. Write every fact from memory
- C. Ignore the command word
- D. Skip examples and evidence

2. Which answer would show stronger understanding of Biomaterials & Smart Materials?

- A. An answer with accurate terms and reasoning
- B. A copied definition only
- C. A single-word response
- D. An answer with no example

3. What should you do if a question asks you to explain?

- A. Link the idea to a reason or cause
- B. List unrelated facts
- C. Only draw a diagram
- D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: The definitions of biomaterials and smart materials

BAND 3 **2 MARKS**

SUCCESS CRITERION 2

Prove that you can: The named biomaterial and smart-material examples in the course

BAND 4 **3 MARKS**

SUCCESS CRITERION 3

Prove that you can: The key stimuli that can trigger smart-material behaviour

BAND 5 **4 MARKS**

One thing I still need help with:
