Exam 29th of November 2017
BMT-73106 Bioceramics and Their Clinical Applications
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Question 1(6pts)

The most used form of carbon, in the biomedical field, is Pyrolytic carbon. What is the difference (structure wise) between pyrolytic Carbon, amorphous carbon and graphite. Where are these materials more used? What is the main property of carbon materials!

Question 2(6pts)

Bioactive glasses are known to promote bone growth. Describe the main stage that bioactive glass undergoes when it is immersed in a biological media. How does the bioactivity change when the glass is crystallized?

Question 3(6pts)

Define what a biomaterial is and give a brief explanation of the potential host/implant response that can occur?

Question 4(6pts)

What are the main requirements for a scaffold? Introduce at least one technique to produce scaffolds

Question 5(6pts)

The Figure below presents a ceramic survival probability as a function of load at physiological frequency. Explain how to read the figure and what information you can extract from it. What is the main reason for ceramic failure (What dictates the failure of a sintered ceramic?) ?How can you improve 1) the mechanical properties of a ceramic and 2) its bioactivity?