

15.06.2021

YILDIZ TECHNICAL UNIVERSITY

FACULTY OF ELECTRICAL-ELECTRONICS ENGINEERING

DEPARTMENT OF BIOMEDICAL ENGINEERING

BIOMATERIALS - FINAL EXAM

1. **(10 points)** Define the composite material and explain why they are needed in biomedical applications.
2. **(15 points)** Give an example for the application of smart/intelligent hydrogels and explain briefly.
3. **(20 points)** If you were asked to modify the surface of a titanium implant material to get better osteointegration properties, which surface modification technique you would apply? Discuss briefly, why you would choose this technique and how your preferred technique would lead to an increased osteointegration.
4. **(10 points)** Which cell sources are used to determine cell-biomaterial interaction *in vitro*. Explain.
5. **(10 points)** What is the sequence of host reactions following implementation of a biomaterial?
6. **(20 points)** Discuss how you may decide if a material is suitable for a specific application in medicine.
7. **(15 points)** Give three examples for the medical applications of biomaterials and explain briefly.