

Question Paper

Exam Date & Time: 04-May-2019 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
IV SEMESTER B.Sc, (Applied Sciences) - End Semester Theory Examination - April / May 2019
BIOMATERIALS [IBM 243]

Marks: 100

Duration: 180 mins.

A

Answer 5 out of 8 questions.

- 1) Discuss in detail about the structure and properties of alginate and chitosan. (10)
A)
B) Explain in detail about the crystallinity in polymer materials. (10)
- 2) Describe in detail about the properties of NITINOL. (10)
A)
B) Elaborate on the different properties of Zirconia (10)
- 3) Explain in detail the principle, types and applications of Differential Scanning Calorimetry (DSC). (10)
A)
B) Describe in detail the importance of contact angle measurement. (10)
- 4) Elaborate different crystal structures found in ceramic materials. (10)
A)
B) Explain in detail the three types of principal metal alloys used in orthopedics. (10)
- 5) Discuss in detail about the classification of degradable medical implants. (10)
A)
B) Discuss the interaction between polymeric surface and the tissue. (10)
- 6) What is hydrogel? Elaborate on the synthesis of hydrogels. (10)
A)
B) Explain in detail nominal stress, true stress, shear stress, and shear strain. (10)
- 7) Discuss general properties and corneal requirements for contact lens materials. (10)
A)
B) Elaborate on silicones and silicon elastomer- filler composites. (10)
- 8) What is bioglass? Explain in detail the formation of biologically active hydroxy carbonate apatite (HCA) layer on bioglass (10)
A)
B) Explain in detail the working principle and applications of Secondary Ion Mass Spectrometry (SIMS). (10)

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