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Total Number of Pages: 02

B.Tech

PEMT5405

7th Semester Regular / Back Examination 2016-17

BIOMATERIALS

BRANCH: METTA,MME

Time: 3 Hours

Max Marks: 70

Q.CODE: Y224

Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

Q1 Answer the following questions:

(2 x 10)

- a) Define biocompatibility.
- b) Write down the structure and chemical formula of hydroxyapatite.
- c) What is the function of bioinert material?
- d) What is protein and its chemical formula?
- e) What is the function of stent?
- f) What do mean by implant. Give an example.
- g) What is carcinogenicity? Give reasons.
- h) What is UHMWPE? Give its uses.
- i) Write down the mechanical properties of bone.
- j) State artificial organs.

Q2 Define biomaterial. Explain the general characteristics of biomaterials.

(2+8)

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Q3 a) Discuss the different types of ceramic biomaterials based on their tissue response. **(5)**

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b) Describe the characteristics of Ti and their alloys used as biomaterial. **(5)**

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Q4 a) Explain the advantages and disadvantages of polymer used as biomaterial. **(5)**

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b) Briefly describe the different application of polymeric implant materials. **(5)**

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Q5 a) Explain the structure -property relationships of bone with neat sketch. **(5)**

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b) Write down the sequence of interface problems of orthopedic and dental implant. **(5)**

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Q6 a) Explain the types of tissue response to the implant and their effects. **(5)**

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b) Explain briefly the types of joint replacement and their limitation. **(5)**

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Q7 What is hard tissue replacement? Describe briefly the materials used for hard tissue replacement. **(10)**

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Q8 Write short notes on any TWO: (5 x 2)

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a) Metallic implants

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b) Wound healing process

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c) Intramedullary device

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d) Composite as biomaterial.