Subject : Bio Materials

Examination : M-Mat-Engg, Material Engineering, 2nd Semester, 2018

Metallurgical & Material Engineering Department

Ref No. : EX/PG/Mat E/T/127A/2018

PART - I

Answer Question No 1 & any 'Two' from the rest

			Marks
1	a)	Define Bio Materials & highlight their key properties	4
	b)	Briefly describe the broad classification of bio materials along with their specific area of uses with example	6
2	a)	Define Corrosion. Why it is important in biomedical application?	2+3
	b)	Write short note on Microbial Corrosion and Stress Corrosion Cracking	4+4
	c)	Explain different modes of corrosion prevention.	7
3	a)	Discuss why austanitic stainless steel is used in biomedical application.	4
	b)	Which type of stainless steel is used for surgical equipment & why?	4
	c)	What are the different types of Co-Cr alloys? State the probable problems of utilising these alloys.	3+4
	d)	Discuss briefly about the possible uses of Tantalum and Platinum group Metals as biomaterials.	5
4	a)	Write about the mechanical suitability of using different types of Titanium alloys as biomaterials along with the role of Titanium Hydroxyapatite composite	10
	b)	Write short note on Stress Shielding	4
	c)	Briefly discuss about Dental Implant System	6

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PART - II

		Answer Question No 1 & any 'Two' from the rest	Marks
1		Write short notes on the following (any four)	5 X 4
	a)	Is Alumina truly bio-inert	
	b)	Cemented Implants	
	c)	Intramedullary Devices	
	d)	LTI and ULTI	
	e)	Utility of the Suture materials	
	f)	Giant Cell	
2	a)	What do you understand by Total Knee Replacement?	5
	b)	Discuss about various materials used in construction of Total Knee Replacement	5
	c)	Give a neat diagram of Knee Prosthesis	5
3	a)	What are Stents?	5
	b)	Discuss about different types of Stents.	5
	c)	Give examples of first, second & third generation stents.	5
4	a)	What is Biocompatibility?	5
	b)	Describe what happens on placing a foreign material into the body.	5
	c)	How to check Biocompatibility?	5
5	a)	Differntiate between Bio Ceramics, Bio Metal and Bio Polymers	9
	a)	Write short note on Hydroxyapatite	6