Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
300 level 2nd Semester Examination – Dec/Jan 2018
SCT 323-2 Biomaterials & Process Engineering

Uva Wellassa University

Instructions to candidates
Duration: Two (02) hours
Number of questions: Four (04)
Mark allocation: 100
Answer all questions

1. a. Define "Composite Biomaterials". (04 Marks)
   b. Explain how Composite Biomaterials are classified? (05 Marks)
   c. What are the important properties to be considered before manufacture of Composite Biomaterials. (04 Marks)
   d. Why preservation techniques are required for biomaterials? (04 Marks)
   e. Compare and discuss the difference between freeze drying and vitrification preservation techniques of biomaterials. (08 Marks)

2. a. Briefly explain the main synthesis method of biomaterials. (05 Marks)
   b. Explain briefly the Solvent-casting/particulate-leaching scaffolds composite manufacturing process. (07 Marks)
   c. Describe the main difference between Solvent-casting/particulate-leaching scaffolds composite manufacturing process and gas-casting/particulate-leaching scaffolds composite manufacturing process. (05 Marks)
   d. What is the most suitable method for manufacture of composite biomaterials scaffold from **part c** ? Discuss your answer. (08 Marks)

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3.

a. Materials used in the fabrication of dental implants should be able to withstand drastic temperature and pH changes in the oral cavity. Explain this statement.

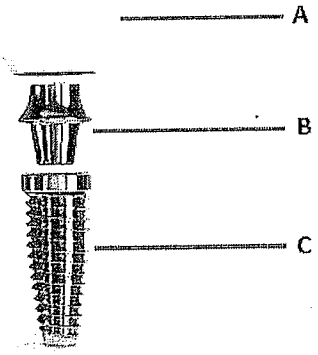
(06 Marks)

b. State the posible health risks of using Amalgam as a tooth filling. Explain your answer in terms of the composition of Amalgam. (05 marks)

c. Discuss the merits and demerits of resin as a thooth filling. (05 marks)

d. Identify the individual parts of the total dental implant shown in the figure below.

(03 marks)



e. Suggest suitable biomaterials to fabricate the individual components A, B and C.

(06 marks)

4. Write short notes on the following:

a. Natural collagen as a biomaterial in biomedical applications. (12.5 marks)

b. Advantages of "Biodegradable" implants. (12.5 marks)