

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2018 - 19 Examination

Semester: 5
Subject Code: 03111330
Subject Name: Biomaterials and Implants

Date: 21/05/2019
Time: 10:30 am to 01:00 pm
Total Marks: 60

Instructions:

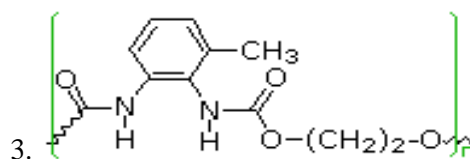
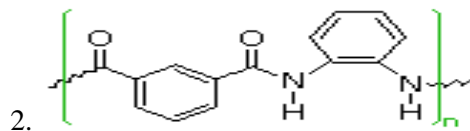
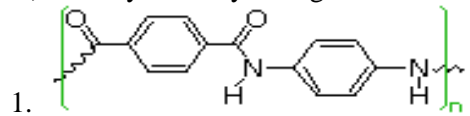
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Each of one mark)**(15)**

1. Explain Polymerization.
2. What do you understand by the term Corrosion?
3. Explain Bioceramics.
4. Define the term Fatigue?
5. What are the units of Stress?
6. What is Vascular Graft?
7. Which of the following metal alloy have a shape memory effect:
 - a) Platinum b) Nitinol
 - c) Tantalum d) Titanium
8. Biocompatible material means :
 - a) No immunogenic response b) Degrade or dissolve in the body
 - c) Material with greater mechanical stability d) None of above
9. Which polymer is used to fix prosthesis in place and also be used as void fillers:
 - a) UHMWPE b) PMMA
 - c) PGA d) PLA
10. Cyanoacrylate tissue glues have been used in the management of:
 - a) Corneal perforations b) Hernia repairs.
 - c) Anal fistulae d) Nerve anastomoses
11. Hip replacement is also known as _____
12. Common Conditions that lead to TKR are _____
13. _____ refers to bone which is harvested from one individual and transplanted into another within same species
14. _____ is known as father of implant dentistry.
15. _____ are used after cataract extraction to replace the opaque crystalline lens of the eye.

Q.2 Answer the following questions. (Attempt any three)**(15)**

A) Identify the Polymers given below and comment on condensation polymerization.



- B) What is sterilization and what are its type.
- C) Why titanium is preferred over other materials? What are the common problems related to steel biomaterials in terms of biocompatibility?
- D) Write a note on desirable properties required in polymers for contact lenses?

Q.3 A) Classify dental implants and explain in detail about dental implant based on the surface of implant and type of the material. (07)

B) Write a note on Total Hip replacement along with complications associated. (08)

OR

B) Enlist the various types of artificial Heart valve. Explain the mechanical heart valve with the help of diagram along with advantages and disadvantages (08)

Q.4 A) What is Elastic and Plastic Deformation? Discuss Tensile-Compression Properties and shear properties along with their expression. (07)

OR

A) Comment on Hard lens and soft lens. Explain with example. (07)

B) What are the common implant materials used in orthopedics? Explain along examples and advantages and disadvantages? (08)