TXL773 Major Exam Time 50 minutes Full Marks 30

1. (a) Which factors govern level of compression force generated by a bandage? 2

(b) Write down Laplace's law for measuring sub-bandage pressure. 1

(c ) Why this law can not accurately predict sub-bandage pressure? 2

2. (a) Alginate-based wound dressings are typically produced by ionic cross-linking of an alginate solution with calcium ions to form a gel, followed by processing to form freeze-dried porous foam, and fibrous non-woven dressings. Mention advantage and weakness of alginate dressings compared to cotton gauze. 2

(b) Define bacteriostatic and bacteriocidal agents. 1

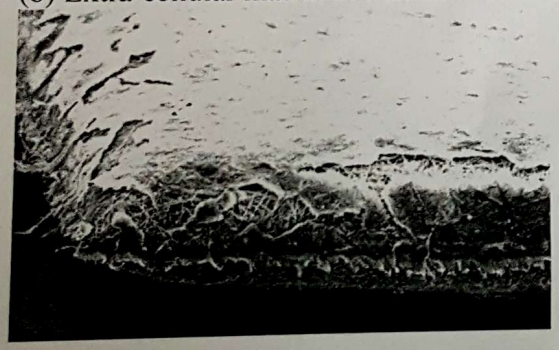
(c) Chitosan offers anti-microbial activity by two different mode of action. Elaborate those two mechanisms. 2

3. (a) What is full form of RGD? How it helps in improving cell adhesion. 3

(b) What is Fibroin and Fibrin? 2

4 (a) Prominent banding pattern could be visible perpendicular to the long axis of the collagen fibril. How these bands form? 3

(b) Extra-cellular matrix of human tissues are nano-fibrous in nature. Scientists prepared nano-fibrous matrix by Electrospinning. What are the disadvantages on electrospun scaffolds for tissue engineering? 2



5 (a) How degradable sutures are degraded within human body?

(b) Scientists have developed sutures from bovine serum albumin (BSA), a plasma protein which is one of the most abundant proteins in the human body. How suture filaments are prepared from BSA solution? 3+2

6 (a) Tissue engineering field started 30 years ago with an attempt to develop cartilage like tissue. Still today there is no solution for arthritis. What are the challenges in cartilage tissue engineering? 4

(b) How 3D woven scaffold may help in cartilage tissue development ? 1