**Assessment of your knowledge**

(a) Answer the following questions to assess your command on terminology, facts, concepts, and

theories learned in this chapter:

1. What is meant by the term “therapeutic window”?

A. The time over which a drug is released.

B. The concentration range between the effective drug concentration and a toxic drug

concentration.

C. The spatial region around a depot in which drug is present at an effective concentration.

2. What is meant by the term “solid solution”?

A. A drug distributed in a material depot as solid particles.

B. A drug distributed in a material homogeneously mixed with the material.

C. A drug that is soluble in water, distributed in a material before release.

3. By what mechanism would a material like a collagen sponge degrade in vivo?

A. By bulk enzymatic hydrolysis.

B. By surface-mediated hydrolysis.

C. By cell-mediated enzymatic hydrolysis.

4. By what mechanism would a material like poly(ε-caprolactone) degrade in vivo?

A. By bulk hydrolysis.

B. By bulk enzymatic hydrolysis.

C. By surface-mediated hydrolysis.

5. In order to obtain a material that degrades by surface erosion, what physicochemical

characteristics should the material have?

A. The material should be hydrophobic.

B. The material should be hydrophilic.

C. The material should be soluble in water.

6. When a material degrades by enzymatic action, what determines whether erosion is

surface-mediated or bulk?

A. The source of the enzyme, namely present in body fluids or associated to the cell.

B. The diffusion coefficient of the enzyme in the material.

C. Both A and B.

7. What kinds of molecules are most morphogenetic compounds?

A. Peptides and proteins.

B. DNA

C. Both A and B.

8. What is meant by protein denaturation?

A. When a protein partially unfolds and loses its activity.

B. When a protein is too dilute to be active.

C. When a protein adsorbs to a material surface.

9. Some classes of morphogenetic molecules must be immobilized to be bioactive. What

class(es) are these?

A. Growth factors.

B. Adhesion factors.

C. Both A and B.

10. Would release of a protein morphogen like BMP-2 from a proteinaceous material like a

fibrin gel be expected to be linear?

A. Yes.

B. No.

C. It depends on cellular activity within the gel.

(b) Answer the following questions to assess your ability to apply the concepts and theories learned

in this chapter in real life, clinical, and scientific situations.

1. In your own words, explain the importance of controlling the release of biological factors from matrices.

2. Briefly describe the advantages and disadvantages of physical entrapment versus covalent immobilization of biological factors within matrices.

3. Briefly describe the advantages and disadvantages of specific versus nonspecific affinity interactions to control the release of biological factors within matrices.

4. Explain two roles fibronectin can play in hydrogels for wound healing.

5. Explain the importance of proteolytic degradable linkers in matrices for wound healing.