**Assessment of your knowledge**

(a) Answer the following questions to assess your command on terminology, facts, concepts, and theories learned in this chapter:

1. List current strategies to overcome organ agenesis and malfunction. What are the pros and cons of these strategies?

2. What are the different types of biomaterials used for the construction of artificial organs? List their advantages and disadvantages.

3. Name the cell sources currently being used in organ reconstruction. Are they adequate? What is missing?

4. Describe the bladder augmentation surgery outlined in this chapter, what were the results of the study? Did the bladder augmentation work?

5. What are acellular grafts? When was the first time they were used and are they successful?

6. Describe two tissue engineering strategies designed to repair kidney malfunction. What are the challenges associated with these strategies that are preventing these strategies to become available to patients?

7. Is germ cell renewal in ovaries restricted to fetal life? Consult current literature and discuss the current debate.

8. What is bioink? How is it being used in engineering of organs?

9. Summarize the functions of insulin-producing β cells; list the criteria an in vitro engineered β cell should obey to be able to regulate glucose metabolism in the body.

10. What is SLATE printing? How has it been used in tissue engineering?

11. What are gene editing techniques? How can they be used to overcome some of these challenges associated with generation of artificial organs?

(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. After reading this chapter and in your opinion, what is the biggest challenge currently facing tissue engineers in engineering an artificial organ? Is it complexity of cell types, vascularization, tissue maturation, or something else?

2. Discuss the commonalities and differences in techniques and concepts in organ tissue engineering.

3. What are the limiting factors for successful in vivo implantation of in vitro engineered organs?