Week 2 assessment

The following questions are intended to address key concepts and applications in Biomedical Polymers and Sustained Drug Delivery.

Each question is worth 1 point.

1. You have a new FDA-approved drug for cancer treatment. What are three key factors to consider before scaling up production?

   - The drug has been tested in preclinical studies, indicating promise.
   - The drug's side effects are well understood.
   - The drug is stable under various storage conditions.

   Accepted Answer: FDA approval is based on preclinical studies, understanding of side effects, and stability under storage conditions.

2. In a study to evaluate the effectiveness of a new drug, the following outcomes were observed:

   - Outcome A: Improved survival rate
   - Outcome B: Reduced side effects

   Which outcome is more significant in a clinical trial setting? Justify your answer.

   Accepted Answer: Improved survival rate is more significant, as it directly impacts patient longevity and quality of life.

3. A drug delivery system is designed to release its drug slowly over several days. What is the primary advantage of such a system?

   - Provides sustained release.
   - Reduces the need for frequent dosing.
   - Improves patient compliance.

   Accepted Answer: Provides sustained release, minimizing the need for frequent dosing and improving patient compliance.

4. What are the advantages of using hydrogels in drug delivery systems?

   - Controlled drug release.
   - Enhanced drug solubility.
   - Improved tissue integration.

   Accepted Answer: Controlled drug release, enhanced drug solubility, and improved tissue integration.

5. A drug is administered in a single dose and is found to have a half-life of 24 hours. What is the primary advantage of such a dosing strategy?

   - Reduced side effects.
   - Simplified dosing regimen.
   - Enhanced drug efficacy.

   Accepted Answer: Reduced side effects, as the drug's concentration decreases gradually over time, minimizing toxicity.

6. In a study comparing two drug delivery systems, System A and System B, the following results were obtained:

   - System A: 80% drug retention at 24 hours.
   - System B: 60% drug retention at 24 hours.

   Which system is more effective, and why?

   Accepted Answer: System A is more effective due to its higher drug retention rate, ensuring sustained release.

7. A drug delivery system is designed to release its drug slowly over several days. What is the primary advantage of such a system?

   - Provides sustained release.
   - Reduces the need for frequent dosing.
   - Improves patient compliance.

   Accepted Answer: Provides sustained release, minimizing the need for frequent dosing and improving patient compliance.

8. A new drug is under development. What are the primary factors to consider when selecting a drug delivery system?

   - Drug stability.
   - Drug solubility.
   - Biocompatibility.

   Accepted Answer: Drug stability, drug solubility, and biocompatibility.

9. In a study comparing two drug delivery systems, System A and System B, the following results were obtained:

   - System A: 80% drug retention at 24 hours.
   - System B: 60% drug retention at 24 hours.

   Which system is more effective, and why?

   Accepted Answer: System A is more effective due to its higher drug retention rate, ensuring sustained release.

10. A drug is administered in a single dose and is found to have a half-life of 24 hours. What is the primary advantage of such a dosing strategy?

    - Reduced side effects.
    - Simplified dosing regimen.
    - Enhanced drug efficacy.

    Accepted Answer: Reduced side effects, as the drug's concentration decreases gradually over time, minimizing toxicity.

11. In a study comparing two drug delivery systems, System A and System B, the following results were obtained:

    - System A: 80% drug retention at 24 hours.
    - System B: 60% drug retention at 24 hours.

    Which system is more effective, and why?

    Accepted Answer: System A is more effective due to its higher drug retention rate, ensuring sustained release.

12. A new drug is under development. What are the primary factors to consider when selecting a drug delivery system?

    - Drug stability.
    - Drug solubility.
    - Biocompatibility.

    Accepted Answer: Drug stability, drug solubility, and biocompatibility.

13. In a study comparing two drug delivery systems, System A and System B, the following results were obtained:

    - System A: 80% drug retention at 24 hours.
    - System B: 60% drug retention at 24 hours.

    Which system is more effective, and why?

    Accepted Answer: System A is more effective due to its higher drug retention rate, ensuring sustained release.

14. A new drug is under development. What are the primary factors to consider when selecting a drug delivery system?

    - Drug stability.
    - Drug solubility.
    - Biocompatibility.

    Accepted Answer: Drug stability, drug solubility, and biocompatibility.

15. In a study comparing two drug delivery systems, System A and System B, the following results were obtained:

    - System A: 80% drug retention at 24 hours.
    - System B: 60% drug retention at 24 hours.

    Which system is more effective, and why?

    Accepted Answer: System A is more effective due to its higher drug retention rate, ensuring sustained release.

16. A new drug is under development. What are the primary factors to consider when selecting a drug delivery system?

    - Drug stability.
    - Drug solubility.
    - Biocompatibility.

    Accepted Answer: Drug stability, drug solubility, and biocompatibility.