

Drug Delivery Worksheet **Answer Key**

1. Name five methods of drug administration. Also indicate which method encompasses three types of drug administration and what they are.
 1. Oral
 2. Injection: intravenous, intramuscular and subcutaneous
 3. Topical
 4. Inhalation
 5. Suppository
2. Which type of drug administration has the highest percentage of the drug that proceeds to the circulatory system?
Injection (intravenous)
3. What are five design considerations that engineers take into account when designing pharmaceuticals?
 1. Toxicity
 2. Efficacy
 3. Drug size
 4. Solubility/bioavailability
 5. Duration of drug release
4. How does different pH in the body affect drug delivery?
As pH varies, the solubility of drug varies. For a drug to be effective, it needs to be soluble.
5. What is a benefit of using polymers for drug delivery?
It enables high molecular weight drugs to be delivered to their intended targets with receptors.
6. What is a potential hazard of using polymers in drug delivery?
Can have rapid drug release if certain areas of the polymer degrade more quickly than others. The rapid drug release can be toxic.
7. What is a cocrystal and why are they important in pharmaceuticals?
A cocrystal is a crystal composed of two or more different ions, molecules or atoms in specific stoichiometric ratio. They are used to improve drug properties, such as solubility, while still maintaining its efficacy.
8. Name the methods by which each of the following drugs is administered.
Insulin: injection (subcutaneous)
Laxative: oral, suppository
Ibuprofen: oral
Propofol: injection (intravenous)
Eye drops: topical
Birth control: oral, injection (subcutaneous), topical
Anti-allergies: oral, injection (subcutaneous), inhalation
Rabies vaccine: injection (intramuscular)