

# Pharmaceutics Lab – Difficult MCQ Questions and Calculations

Prepared for: Malek Yaseen

**1. Which of the following dosage forms is classified as semisolid?**

- A. Gargle
- B. Suspension
- C. Ointment
- D. Tablet

**2. The primary purpose of inactive ingredients (excipients) is to:**

- A. Provide therapeutic action
- B. Replace active ingredients
- C. Improve formulation stability or preparation
- D. Increase drug potency

**3. A compounded preparation should be packaged in a container that:**

- A. Enhances evaporation
- B. Reacts slightly with formulation
- C. Protects against humidity and microorganisms
- D. Allows ingredient loss

**4. According to storage conditions, controlled room temperature is:**

- A. 8–15°C
- B. 20–25°C
- C. 2–8°C
- D. 30–40°C

**5. Which temperature range corresponds to cool storage?**

- A. 2–8°C
- B. 8–15°C
- C. 20–25°C
- D. 30–40°C

**6. The term stability refers to:**

- A. Drug potency only
- B. Shelf appearance only
- C. Ability to retain properties during shelf life
- D. Drug toxicity level

**7. Beyond-use dates for compounded preparations are usually expressed in:**

- A. Years
- B. Months or days
- C. Decades
- D. Weeks only

**8. If the active ingredient source is a manufactured product, the BUD should not exceed:**

- A. 12 months
- B. 25% of remaining expiration time
- C. 50% of remaining expiration time
- D. Expiration date of container

**9. Water-containing formulations prepared from solid ingredients should have a BUD of:**

- A. 7 days refrigerated
- B. 14 days refrigerated
- C. 30 days refrigerated
- D. 6 months refrigerated

**10. A sign of instability in solutions is:**

- A. Sedimentation
- B. Phase separation
- C. Crystal formation
- D. Cracking

**11. Which instability sign is associated with emulsions?**

- A. Sedimentation
- B. Phase separation
- C. Crystallization
- D. Hardening

**12. Increased sedimentation indicates instability in:**

- A. Solutions
- B. Suspensions
- C. Tablets
- D. Capsules

**13. Which equipment is primarily used for triturating powders?**

- A. Spatula
- B. Mortar and pestle
- C. Ointment slab
- D. Hotplate

**14. The main function of medicine labeling is to:**

- A. Increase drug potency
- B. Identify patient and provide instructions
- C. Reduce drug stability
- D. Change dosage form

**15. Which information must appear on the main label?**

- A. Drug interactions
- B. Patient full name
- C. Auxiliary warnings
- D. Food restrictions

**16. The auxiliary label 'Shake well before use' is typically used for:**

- A. Tablets
- B. Solutions
- C. Suspensions and emulsions
- D. Capsules

**17. The expression % w/v represents:**

- A. grams in 100 g
- B. mL in 100 g
- C. grams in 100 mL
- D. mL in 100 mL

**18. The expression % v/v indicates:**

- A. mL solute in 100 mL solution
- B. g solute in 100 g solution
- C. g solute in 100 mL solution
- D. mL solute in 100 g solution

**19. Which pharmacopeia reference is commonly used for drug standards?**

- A. FDA manual
- B. BP
- C. WHO index
- D. CDC guide

**20. The master formula is primarily used to:**

- A. Identify drug toxicity
- B. Scale preparation quantities
- C. Determine expiration dates
- D. Replace active ingredients

**21. The number of moles of a substance equals:**

- A. Molecular weight  $\div$  mass
- B. Mass  $\div$  molecular weight
- C. Mass  $\times$  molecular weight
- D. Molecular weight  $\times$  density

**22. A 1 in 10 dilution means:**

- A. 1 part solute in 10 parts solvent
- B. 1 part solute in 10 parts final solution
- C. 1 part solvent in 10 parts solute
- D. 10 parts solute in final mixture

**23. A 1:10 dilution means:**

- A. 1 part solute to 10 parts solvent
- B. 1 part solute in 10 parts final solution
- C. 10 parts solute to 1 part solvent
- D. Equal solute and solvent

**24. If a label says 'For rectal use only', it is classified as:**

- A. Main label
- B. Auxiliary label
- C. Storage label
- D. Strength label

**25. "Freshly prepared" in BP means preparation made:**

- A. within 12 hours
- B. within 24 hours
- C. within 1 week
- D. within 1 month

**26. How much NaCl (MW=58.5) is required to prepare 200 mL of a solution containing 2 mmol/mL?**

- A. 11.7 g
- B. 23.4 g
- C. 5.85 g
- D. 17.55 g

**27. How much solute is needed to prepare 3 L of a 0.8% w/v solution?**

- A. 18 g
- B. 24 g
- C. 30 g
- D. 36 g

**28. What volume of 30% w/v stock solution is required to prepare 400 mL of 0.3% w/v solution?**

- A. 0.4 mL
- B. 4 mL
- C. 0.04 mL
- D. 40 mL

**29. A master formula produces 1000 mL containing 500 g glycerin. How much glycerin is needed for 250 mL?**

- A. 125 g
- B. 250 g
- C. 100 g
- D. 50 g

30. Prepare 1 L of a 1 in 500 solution. How much solute is required?

- A. 1 g
- B. 2 g
- C. 5 g
- D. 10 g

## Answer Key

- 1: C
- 2: C
- 3: C
- 4: B
- 5: B
- 6: C
- 7: B
- 8: B
- 9: B
- 10: C
- 11: B
- 12: B
- 13: B
- 14: B
- 15: B
- 16: C
- 17: C
- 18: A
- 19: B
- 20: B
- 21: B
- 22: B
- 23: A
- 24: B
- 25: B
- 26: B
- 27: B
- 28: B
- 29: A
- 30: B

## Detailed Explanations for Questions 26–30

Q26: Total mmol =  $200 \text{ mL} \times 2 \text{ mmol/mL} = 400 \text{ mmol} = 0.4 \text{ mol}$ . Mass = moles  $\times$  MW =  $0.4 \times 58.5 = 23.4 \text{ g}$ .

Q27:  $0.8\% \text{ w/v} = 0.8 \text{ g per } 100 \text{ mL}$ .  $3 \text{ L} = 3000 \text{ mL}$ . Amount =  $0.8 \times (3000/100) = 24 \text{ g}$ .

Q28: Final solution contains  $0.3 \text{ g per } 100 \text{ mL}$ . In  $400 \text{ mL} \rightarrow 1.2 \text{ g}$  needed.  $30\% \text{ w/v} = 30 \text{ g/100 mL} = 0.3 \text{ g/mL}$ . Volume needed =  $1.2 \div 0.3 = 4 \text{ mL}$ .

Q29: Scale factor =  $250/1000 = 0.25$ . Required glycerin =  $500 \times 0.25 = 125 \text{ g}$ .

Q30: 1 in 500 means  $1 \text{ g in } 500 \text{ mL}$ . For  $1000 \text{ mL} \rightarrow 2 \text{ g}$  solute required.