Al-Azhar University-Gaza
Faculty of Pharmacy
Department of Pharmaceutics
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Pharmaceutics I
Final Exam

Time: 120 min.
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Q_1	Q_2	Q_3	Q_4	Q_5	Total Mark

PART I:

Q1. Put True(T) or false (F) with correction:

1- ( ) The high bioavailability of rectal suppository is due to the direct transport of absorbed drug by upper and middle haemorroidal veins into the systemic circulation.

2- ( ) Suspensions are inherently pharmaceutically unstable.

3- ( ) Calcium soap is emulsifier used for o/w emulsion preparation.

4- ( ) Regarding the pharmaceutical suspensions, the rate of sedimentation is increased as the viscosity of the continuous phase is increased.

5- ( ) Pastes are preferred over than ointment for acute lesions that have a tendency towared oozing.

6- ( ) They are no sedimentation of solid particles in suppository that prepared by compression method.

7- ( ) Concerning the emulsions, the rate of creaming is increased as the diameter of the internal phase is increased.

8- ( ) Regarding pharmaceutical suspension is affected by the concentration of buffer salt used.

9- ( ) Hydrophilic polymers type I exhibit reversibility between gel and solution state because their chains are formed by hydrogen bonds.

10- ( ) Water in oil emulsions are commonly administered orally.

11- ( ) If the internal phase is heavier than external phase, the globules of internal phase will sediment in the bottom of the container.

12- ( ) Increasing the amount of propellant in aerosol lead to reduction the particle size of the emitted spray.

13- ( ) Oil in water emulsions are promoted by the presence of surfactants with HLB values > 9.

14- ( ) The volume of propellant released upon actuation is controlled by a metering valve.

15- ( ) Glycerin USP suppositories are used to evacuate the lower bowel.

16- ( ) Suppositories have been used to deliver drugs to systemic circulation in one step to patient.

17- ( ) Rectal and vaginal are the only types of suppositories.

18- ( ) The rapid chilling of suppository is responsible of forming brittle suppository.

( ) Glass containers require protective coating to prevent corrosion in the preparation of pharmaceutical aerosol.

- ( ) The type of emulsion formed is primarily determined by only the emulsifying agent used.

- ( ) Suspension is liquid dosage form consist from finely divided soluble particles dispersed through liquid phase.

- ( ) Degree of flocculation parameter is the ratio of sediment volume of deflocculated suspension to the sediment volume of flocculated suspension.

( ) Synersis process increased as gelling agent concentration decreased.

- ( ) The density factor is very important only for solid excipient and active ingredient in the suppository preparations.

- ( ) Pharmaceutical gels are frequently formulated using long-chain hydrocarbons.

- ( ) Foam aerosol considers two phase system.

- ( ) Metered-dose inhalers are usually formulated to ensure that the drug is soluble within the propellant system.

- ( ) Lipophilic drugs release more readily from w/o cream than o/w cream.

- ( ) The weight of suppository prepared by polyethylene glycols is higher than those prepared by cocoa butter.

- ( ) W/O/W emulsion consists of very small droplets of oil dispersed in the water globules of a water-in-oil emulsion.

Q2. Choose the correct answer to complete the following statements:

1- Which of the following is not used as a emulsifying agent?

a) Surfactant.
b) Hydrophilic colloids.
c) Electrolytes.
d) Finely divided solids.

2- Liposoluble drugs are readily release from suppository prepared by:

a) Cocoa butter bases.
b) Witepsol base.
c) Glycero-gelatin base.
d) b & c.

3- A metered-dose inhaler has the following components, except:

a) Actuator.
b) Mouth piece.
c) Metering valve.
d) Continuous spray valve.

4- An example for short chain hydrocarbon:

a) Solid paraffin.
b) Vaseline.
c) Mineral oil.
d) White petrolatum.

5- Benzalkonium chloride is categorized as:

a) Acidic preservative.
b) Neutral preservative.
c) Mercurial preservative.
d) Quaternary ammonium compounds.

6- The process refers to change in gel structure due to break of non-covalent bonds and forming denser network of gelling agent:

a) Aging.
b) Synersis.
c) Swelling.
d) None of the above.

7- All the following ingredients used to controlled flocculation of dispersed particles except:

a) Surfactant.
b) Polymer.
c) Electrolyte.
d) Solvent.

8- The advantages of microemulsion:
a) Enhancement drug solubility.
b) Enhancement bioavailability of drug.
c) Enhancement emulsion stability.
d) All of the above.

9- To minimize irritation effect of glycero-gelatin suppositories:
a) Addition of water to the formula.
b) Usage of sodium citrate instead of gelatin to prepare the suppository.
c) Moistening the suppository with water prior insertion
d) a & c.

10- For preparation of cold creams, which types of bases are used generally?
a) Absorption bases.
b) Water removable bases
c) Hydrocarbon bases.
d) Water soluble bases.

11- All the following are advantages of metered-dose inhalers except:
a) Administration of high doses of therapeutic agent.
b) Convenience for the patient.
c) Greater efficiency than nebulisers.
d) b & c.

12- Complete irreversible separation of emulsion refers to:
a) Creaming.
b) Breaking.
c) Flocculation.
d) Phase inversion.

13- According to stock's law, the rate of sedimentation of suspension:
a) Increased by increasing the viscosity of external phase.
b) Decreased by increasing the diameter of dispersed drug particles.
c) Decreased by decreasing the density difference between the internal and external phases.
d) All of the above.

14- Which of the following statement are true about emulsion?
a) Microemulsion is less stable than emulsion.
b) W/O are commonly administered orally.
c) W/O emulsion conducts electrical current.
d) Hydrosoluble drug are frequently formulated as o/w emulsion.

15- Regarding dermatological preparation, the factors affecting on drug permeation through skin:
a) Molecular weight.
b) The area and the site of application.
c) Viscosity of the pharmaceutical vehicle.
d) All of the above.

16- Which one of the following phenomena is undesirable in pharmaceutical suspens

a) Slow settling of particles.
b) Particles agglomerate to dense cake.
c) Particles readily redisperse upon agitation.
d) Suspension pours readily.

17- Silica gel belongs to:

a) Xerogel.
b) Hydrogel.
c) Organogel.
d) Megama.

18- The part of the valve assembly responsible for bring formulation from the containe the valve is:

a) Stem.
b) Gasket.
c) Mounting cup.
d) Dip tube.

19- Liquid paraffin is a suitable lubricant for suppository prepared by:

a) Suppocire base.
b) Cocoa butter base.
c) Polyethylene glycols base.
d) Glycero-gelatin base.

20- Regarding cocoa butter:

a) The major component of cocoa butter is glycerin.
b) Cocoa butter exists in two known crystalline forms.
c) Alpha crystalline form of cocoa butter is more stable than beta form
d) Beta crystalline form of cocoa butter has the highest melting point.

PART II :
ANSWER ONLY THREE (3) FROM FOLLOWING QUESTIONS:

Q3.

a- Define multiple emulsion and creaming? And mention the main pharmaceutical applications of multiple emulsion?

b- You have the following formula:

R_x

1- Stearyl alcohol	**8 %**
2- Cetyl alcohol	**1 %**
3- Lanolin anhydrous	**1 %**
4- Emulsifier	**4 %**
5- Water ad	**100%**

Note: *the table of HLB values for selected emulsiefiers is available in the last exam page.*

1- Calculate the required HLB value of the oil phase? (RHLB for stearyl alcohol = 1
RHLB for cetyl alcohol = **15**, and lanolin anhydrous = **10**)

2- How many grams of emulsifiers required to stabilize this emulsion?

b- You are required to make 20 paracetamol suppositories using 2 gram mold, each suppository containing 120 mg of paracetamol. Assuming that paracetamol has displacement value 1.2. How many grams of base required to prepare 20 suppositories?

c- Discribe the factors affecting rectal absorption of drug?

- Explain **(in table)** the preparation of emulsion by both English and intercontinental methods?

Q4.

a-Define suppository and displacement factor? And discus the pharmaceutical quality control tests for suppository?

Q5.

a- Compare (in table) between flocculated and deflocculated suspension?

b- Define structured vehicle? And explain how it enhances the stability of emulsion?

c- You have the following formula:

Active ingredients	Master formula
Chalk	100 mg
Tragacanth	10 mg
Syrup	0.5 ml
Concentrated cinnamon water	0.02 ml
Double strength chloroform water	2.5 ml
water	to 5 ml

1- What is the main use for this formula? And mention the function for each ingredient

2- Prepare and package about 250 ml from this suspension formula?

)6.

a- What are the advantages of pharmaceutical aerosol?

b- Give the types of propellant and mention the main role of the propellant in t
formulation of pharmaceutical aerosol?

c- Explain the filling process of pharmaceutical aerosol by aerosol filling apparat

Good Luck
Dr. Riad El-Qidra
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Table. 7–2. Examples of HLB Values for Selected Emulsifiers

Agent	*HLB*
Ethylene glycol distearate	1.5
Sorbitan tristearate (Span 65*)	2.1
Propylene glycol monostearate	3.4
Triton X-15†	3.6
Sorbitan monooleate (Span 80*)	4.3
Sorbitan monostearate (Span 60*)	4.7
Diethylene glycol monolaurate	6.1
Sorbitan monopalmitate (Span 40*)	6.7
Sucrose dioleate	7.1
Acacia	8.0
Amercol L-101‡	8.0
Polyoxyethylene lauryl ether (Brij 30*)	9.7
Gelatin	9.8
Triton X-45†	10.4
Methylcellulose	10.5
Polyoxyethylene monostearate (Myrj 45*)	11.1
Triethanolamine oleate	12.0
Tragacanth	13.2
Triton X-100†	13.5
Polyoxyethylene sorbitan monostearate (Tween 60*)	14.9
Polyoxyethylene sorbitan monooleate (Tween 80*)	15.0
Polyoxyethylene sorbitan monolaurate (Tween 20*)	16.7
Pluronic F 68§	17.0
Sodium oleate	18.0
Potassium oleate	20.0
Sodium lauryl sulfate	40.0