

UNIVERSITY SOLVED QUESTION WITH ANSWER

Year : 2019-2020

Subject : Pharmaceutics

Subject Code : BP-103T

Subject In-Charge : Adyasha Senapati & Monali Padhi



Registration No:

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Total Number of Pages : 01

B.Pharm
BP103T

1st Semester Regular/Back Examination 2019-20
PHARMACEUTICS-I
BRANCH : B.Pharma
Max Marks: 75
Time : 3 Hours
Q.CODE : HRB707

Answer Question No.1 (Part-A) and 02 (Part-B) which are compulsory and any TWO from Part-C.

The figures in the right hand margin indicate marks.

Part-A

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- How you can calculate child dose according to dilling's formula?
- Why clicking sound is found in emulsion preparation?
- Name the two reasons responsible for physical incompatibility.
- Write down the composition of flexible collodions.
- Convert 50% alcoholic preparation to proof spirit.
- Name the emulsion identification tests.
- What is tablet triturate?
- Why tetracycline is not taken with milk for therapeutic use?
- Give two examples of preservatives mostly used in suspension.
- What is compound tragacanth?

Part-B

Q2 Only Focused-Short Answer Type Questions- (Answer Any SEVEN out of NINE) (7 x 5)

- Explain the various solubility enhancement techniques
- Discuss the stability problems of emulsion
- Illustrate the evaluation of Ointment.
- Differentiate between suspension and emulsion
- Draw a typical format of prescription and mention the importance of its each part
- Calculate the quantity of 40% v/v and 70% v/v alcohol are required to make 200 ml of 50% v/v alcohol.
- Differentiate between Ointment and Cream
- Discuss the formulation procedure of the elixir
- 15 kg weighing child of 5 years age is to be treated with paracetamol whose adult dose is 500mg, then what will be the child dose? Compare the results obtained from two different formulae.

Part-C

Q3 Only Long Answer Type Questions (Answer Any TWO out of FOUR)

- Q3** What is posology? Mention various factors affecting dose calculation. **(10)**
- Q4** Classify 'Incompatibility'? Discuss different types of 'chemical Incompatibility' with remedy. **(10)**
- Q5** What are semisolid dosage forms? Write in detail about Suppositories. **(10)**
- Q6** Define powder, classify it and briefly discuss it. **(10)**

2 marks - 2019-20

1) How you can calculate child dose according to Dirings formula?

A) According to Dirings formula Dose of the child.
Formula - $\frac{\text{Age in yrs}}{20} \times \text{Adult dose}$

EX: The child age is 12 years adult dose 500mg
then the dose of the child.

$$\frac{12}{20} \times 500 = 300 \text{ mg}$$

2) Why clicking sound is found in emulsion preparation?

A) When a clicking sound is formed in the emulsion preparation it forms a hard and thick cream, so clicking sound found in emulsion.

3) Name two reasons responsible for physical incompatibility?

A) Physical incompatibility in pharmaceutical can arise from various factors but two common reasons are:

1. phase separation - This occurs when two or more components of a formulation separate into phases.

EX: An emulsion the oil and water phases may separate due to improper emulsification or incompatibility between the components. Phase separation can lead to uneven distribution of the drug that affects efficacy.

2. Crystallization :- incompatibility can also result from the crystallization of one or more components in a formulation. This can occur when two substances interact to form insoluble crystal when a single component crystallizes out of solution crystallization can alter the appearance stability and bio availability of the drug / product.

d) write down the composition of Freixie Colloids?

e) Convert 50% alcoholic preparation to proof spirit?

A) Proof strength = % strength of alcohol $\times 1.753 - 100$

$$= 50\% \times 1.753 - 100$$

$$= 87.65 - 100$$

$$= 12.35^\circ \text{OP}$$

f) Name the emulsion identification test?

A) The emulsions identification test is called Shake test

as the identification tests are

• Dilution test

• Conductivity test

• Dye test

• Fluorescence test

g) What is tablet triturate?

A) Tablet triturate refers to a method of preparing tablets by grinding or crushing the active ingredient into a fine powder and then mixing with them with a suitable base to form a tablet.

- This method is commonly used when active ingredients are not easily compressible into a solid tablet form.

h) Why tetracycline is not taken with milk for therapeutic use?

A) Tetracycline is **not** taken with milk for therapeutic use because it can interfere with absorption in the body. Calcium rich foods, such as milk can form insoluble complexes with tetracycline in the stomach reducing its absorption into the blood stream and decreasing its effectiveness. It is usual advised to take tetracycline on empty stomach.

i) Give two examples of preservatives mostly used on ~~pres~~ suspension.

1) The most common preservatives used in suspension is sodium benzoate and sorbic acid or potassium sorbate.

j) What is compound tragacanth?

1) Compound tragacanth is also known as tragacanth gum, is a natural gum obtained by the dried sap of several species of middle eastern legumes in the genus astragalus.

- 1) Discuss the Stability - problems of Emulsion;
- 2) The following changes usually occurs which affect the stability of emulsion.

- 1) Cracking
- 2) Creaming
- 3) phase conversion
- 4) Coalescences

Cracking

- Cracking means the separation of two layers / phases of the emulsion (dispersed phase and continuous phase). Cracking may be occur due to

- 1) Addition of wrong emulsifying agent.
- 2) growth of microorganism.
- 3) Change in temperature.

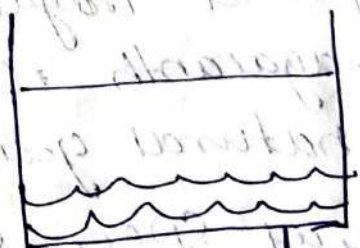
Creaming

Creaming can be defined as upward movement or downward movement of dispersed phase (dispersed globules) to form a thick layer.

- o/w emulsion - upward Creaming
- w/o emulsion - downward Creaming



upward Creaming
o/w



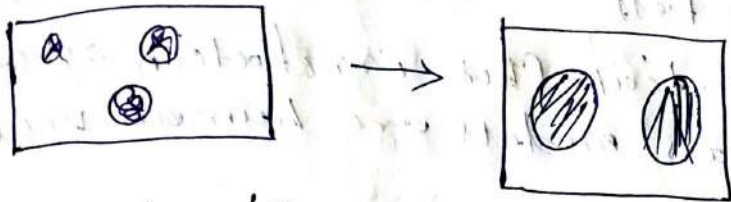
Downward Creaming
w/o emulsion

Phase Inversion

Phase inversion simply defined as Conversion of O/W into W/O emulsion or vice versa (W/O emulsion)

Coalescence

Coalescence is the process in which two or more droplets merge together to form a single large droplet.



1) illustrate the evaluation of ointment

1) Physico Chemical properties

A) appearance - observe the colour, texture and homogeneity of the ointment.

B) pH measurement - Determine the pH level to ensure it is within the acceptable range for topical application.

2) Stability testing -

A) Accelerated Stability testing -

store the ointment at elevated temperatures and humidity levels to stimulate long term storage conditions.

B) Shelf life testing - Assess the stability over a period of time under the normal storage conditions.

3) Drug release and Penetration

In vitro release Studies

Use a diffusion cell apparatus to measure the rate at which the active ingredient is released from the ointment.

4) Safety testing

Dermal irritation test

Evaluate any potential skin irritation or sensitization using animal models and human volunteers.

d) Difference between Suspension and Emulsion?

Suspension

- It is a heterogeneous mixture of two immiscible liquids.
- Dispersed particle don't settle on standing.
- Dispersed particle size 1 to 1000 μm .
- particles are not visible through the naked eye.
- It cannot be separated by filtration.
- Dispersed in liquid and solid or gas.
- Emulsifying agents are required.

Emulsion

- It is a heterogeneous mixture.
- Dispersed particle settle on standing.
- Dispersed particle size more than 1000 nm.
- particles are visible through the naked eye.
- It can be separated by filtration.
- Dispersed in liquid.
- Suspending agent are required.

Q6) Define prescription with the help of a clear example
Describe the important parts of prescription

A) Prescription is a written order from the physician or medical practitioner to a pharmacist to compound and dispense the medicine to the patient.

- ~~Ex~~ Example of prescription -
- NHS prescription
 - private prescription
 - hospital inpatient prescription
 - hospital out prescription

Parts of prescription

Date :- It is very important part of a prescription it helps a pharmacist to find out the date of prescribing and date of prescription. In case of narcotic and habit forming drug, the date prevent the misuse of drug by patient.

Name, age, sex Address of the patient :-

Name and address of the patient helps in identification of patient while age and sex helps to decide the dose for that particular patient.

Superscription :-

It is represented by 'Rx' symbol. It means you taken.

In older days, the symbol was considered to be originated from the sign of Jupiter the god of healing. It is used for the first recovery of the patient.

inscription

- It is the main part of the prescription containing name and quantities of prescribed medicament.
- The name of each ingredient is written on a separate line along with its quantity.

subscription

- In this part prescriber gives direction to the pharmacist regarding to dosage form and number of dosage to be dispensed.

signature ÷

In this part prescriber gives direction to the patient regarding the administration of drugs it contains

- quantity/Amount to be taken
- frequency/timing of administration
- special instruction such as duration

Renewal instruction

In this part prescriber indicates whether the prescription may be renewed or not and if so then how many times

It is very important specially on the prescription containing narcotic and habit forming drug to avoid its misuse.

Signature, Address, Registration no of the prescriber

It is very important and much needed part of prescription verify that the prescription is official and issued by doctor

calculate the quantity of 40% w/v and 70% v/v alcohol are required to make 200 ml of 50% v/v alcohol



$$\frac{\text{Volume required} \times \text{part}}{\text{total part}}$$

$$= \frac{200 \times 20}{30} = \frac{400}{3} = 133.33$$

9) Difference between ointment and cream.

Cream	Ointment
- Water based, semisolid preparation.	- Oil based semisolid preparation.
- contains 50% oil and 50% water.	- contain 80% oil and 20% water.
- Non greasy, rich and heavy.	- greasy, smooth and softer.
- Thick liquid preparation.	- soft semisolid prep.
- Thick consistency.	- less spreadable.
- Easily spreadable.	- thinner consistency.
- Rapidly absorbed.	- Not easily warmed off.
- Rapid onset action.	
- Easily warmed off.	

i) A) weight of the child - 15 kg
given adult dose - 500 mg

According to Clark's formulae - $\frac{\text{wt in kg}}{70} \times \text{Adult dose}$

$$= \frac{15}{70} \times 500$$

$$= 107 \text{ mg}$$

other wise

Age of the child = 5 year

Adult dose - 500 mg

Dose of the child - $\frac{\text{Age in year}}{20} \times \text{Adult dose}$

$$= \frac{5}{20} \times 500 = 125 \text{ mg}$$

According to Clark's formula result of the

Child dose is 107 mg. Acc to Dillwyn's formula

result of the child dose is 125 mg due to depend

of the weight of child.

- because more weight contains more power of dose

Q Define powder? and classify it briefly?
 → A pharmaceutical powder is in solid form of medication which one means for it is used for internal or external use.

Classification of powder

- Based on particle size
- Based on use
- Based on physical form dispensing

Classification based on particle size

On the basis of particle size powders are classified into 5 categories.

- 1) Very coarse powder
- 2) Coarse powder
- 3) moderate coarse powder
- 4) fine powder
- 5) very fine powder

Very coarse powder	_____	All particles pass through sieve no 8
Coarse powder	_____	11 20
moderate coarse powder	_____	11 40
fine powder	_____	11 60
very fine powder	_____	11 80

Based on uses

on the basis of use of powders are classified into

2 categories

- 1) powders for internal use
- 2) powders for external use

powders for internal use

- It consists the drug form of powder.
- powder for internal use can be taken orally
- Administered through nose or orally.

It is divided into 2 types

1. simple powder
2. compound powder

powders for external use

powders for external use are pharmaceutical preparation consisting of solid, loose dry particles of varying degree of fineness

- They are usually applied outer body area.
 - They basically include
 - dusting powder
 - surgical powder
 - Dentifrices

Classification based on physical form

on the basis of physical form it is divided into 2 types

Bulk powder

- Bulk powder refers to a mixture or material packed into properly designed bulk container such as tight wide mouth glass / plastic bottles

Divided powders

- Divided powder are single dose of powder.
- In divided powder each are separately packed.

Ex: ENO, ORS

Define factor affecting posology?
Posology is the branch of medical science which deals with the dose or quantity of the drug which can be administered to a patient to get desired pharmacological action.

Posos means - How much } Greek word
logos - science

Factor affecting posology

Age -> Dose of the drug is given according to age of patient.

- children require less dose as compare to adult

Sex: It is also affect the dose calculation because male and female have different criteria for dose and in ~~for~~ Female at ~~the~~ the time of pregnancy and menstruation, lactation doses will be given carefully.

Body size: It influences the conc of drug in the body. Heavy weight person want high dose compare to person having low weight.

Route of administration: In case of IV injection less dose is required and in case of oral administration large dose is given.

Presence of disease: If the patient have many disease in the body affect the dose of the drug.

Times of administration: In empty stomach drug response quickly than filled stomach.

Absorption of drug is delayed by the presence of food stomach.

(7) Synergism: When the effect of the drug which increased by the combination of two or more drugs it is called synergism. Ex: Ephedrine + Adrenaline.

(8) Antagonism: When the action of one drug is decreased by another drug then it is known as antagonism. Ex: Histamine + Adrenaline.

(9) Idiosyncrasy: Some person may produce abnormal reaction of drug after taking standard dose.

(10) Tolerance: Some time higher dose of a drug is required to produce a normal pharmacological action.

and if not
What do you mean by incompatibility? Clarity of
describe about therapeutical incompatibility with
+s remedy?
When two or more ingredients are mixed together
to prepare a medicine and undesired change
takes place which affect the physical, chemical
and therapeutic properties of medicament. then the
phenomenon is called incompatibility.

Incompatibilities are usually unintentional.
Incompatibilities may occur during

- compounding
- Formulation
- manufacturing
- packaging
- dispensing
- storage
- administration

Incompatibility can affect

- safety of medicament
- Efficacy of product
- Appearance of medicine
- Purpose of medicament



Types of pharmaceutical incompatibilities

- ① Physical incompatibilities
- ② Chemical incompatibility
- ③ Therapeutic incompatibility

Therapeutic incompatibility

Therapeutic incompatibility may be the result of prescribing certain drugs to the patient with the intention to produce a specific degree of action but the nature or intensity of the action produced is different from that intended by prescriber.

Causes of therapeutic incompatibilities

- It may occur due to
 - overdose / improper dose of a single drug.
 - improper dosage form
 - contraindicated drug
 - synergistic drug or antagonistic drug

Example of overdose

Codeine phosphate - - - 0.5 gm
Direction for Pharmacist

- make powders
- send such 10 powders
- 1 dose to be taken at bed time

In the above prescription, physician write 0.5 gm (0.5 gm) instead of 5 mg of codeine phosphate

- A) Semisolid dosage forms are topical preparation used for therapeutic, protectives or cosmetic function.
- They are generally applied over the skin but can also be applied nasal, vaginal and rectally.
 - Pharmaceutical semisolid dosage forms generally include ointments, pastes, cream and gels.
 - They contain one or more active pharmaceutical ingredients dissolved or uniformly dispersed in a suitable place.

Advantage

- It is used externally hence probability of side effect is very less.
- First pass the metabolism is avoided.
- Suitable for unconscious patient.
- Suitable dosage form for bitter drugs.
- more stable than liquid dosage form.

mg
~~ton~~
etc

h) Suppositories ?

1) Suppositories is the semisolid dosage form. It is the medicament used for insert to the body cavity like rectum, vaginal, urethral tract nasal cavity or ear cone.

- It is designed to melt disintegrate or dissolve at body temperature. After that it release the medicaments and it give show local systemic or mechanical action.

Types of Suppositories

- Rectal suppositories
- vaginal suppositories
- urethral suppositories
- nasal suppositories
- ear suppositories

Rectal suppositories - It is inserted for placement into rectum for systemic effect.

- These are often prepared from theobroma oil (cocoa butter) - light yellow. It derives from cocoa beans.

- In case of adult the weight of suppositories weight 2 gm.

- In ^{case of} children 1 gm

- Cone or torpedo shaped.

Vaginal suppositories ÷ It is inserted into the vagina.

- Some time referred as pessaries.

- They are bigger than rectal suppositories.

- In case of adult and children the avg weight 3-5 gm.

- conical or rod shaped.

- use treatment of vaginal infection.

Urethral suppositories

- inserted into the urethra.

- pencil like structure.

- It is also known as urethral bougies.

- In male wt 4 gm length 100-150 mm.

- In ~~female~~ female weight 2 gm length

60-75 mm

Nasal suppositories

- inserted into the nasal cavity.

- sometime called nasal bougies.

- produced with glyco gelatin base.
- Avg wt male and female 1gm and length 9-10cm.
- It is thin and cylindrical shape.

Ear suppositories

- Inserted into the ear.
- Also known as Auricularies.
- weight 1gm.
- It is cylindrical in shape.

Advantage of suppositories

- utilized with unconscious patient.
- compact dose form
- lower risk of side effect.
- Treat people who have severe Nausea and vomiting.
- used to prevent rectal, vaginal, infections

Disadvantages of suppositories

- Patient acceptance issue include suppositories not being appropriate for people with Diarrhoea.
- In rare case administration of a large dose of a medicine cause irritation or exceed the capacity of suppositories.
- They must be stored at low temperature otherwise they will get melt.