SUMMER– 15 EXAMINATION

Subject Code: **0805** **Model Answer** Page No: 01/ 31

Important Instructions to examiners:

1. The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
2. The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
3. The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills.
4. While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
5. Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
6. In case of some questions credit may be given by judgment on part of examiner of relevant answer based on candidate's understanding.
7. For programming language papers, credit may be given to any other program based on equivalent concept.

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Q.1. Attempt any FIVE of the following.

a. Translate Latin terms to English.(0.5 X 4 = 2 Marks)

i. Jentaculum : Breakfast

ii Tussi Urgenti = When cough is troublesome.

iii. Unguementum = An ointment

iv. Infricandus = to be rubbed in

b) Differentiate between mouthwash and gargle. (0.5 x 4 = 2 marks.).

mouthwash	gargle
1. Mouth washes are aqueous solutions with pleasant taste and smell for refreshing effect.	1. Gargles are aqueous solutions to prevent & treat throat infections
2. Used to cleanse & deodorize buccal cavity	2.Used to relieve soreness in mild throat infections.
3.These are used for rinsing mouth cavity	3.These are gargled to bring into intimate contact with mucous membrane of throat
4. More used for cosmetic purpose	4. used for medicated purpose.
5.It contains antibacterial agent,Coloring & flavoring agent.	5.It contains antibacterial agent -Phenol, thymol and Astringent-Potassium chlorate
6 Example : compound sodium chloride mouth wash	6. Example: phenol gargle, potassium chlorate gargle.

c) Convert following.

i) One ounce = 480 grains

ii) one grain = 64.8 mg/65mg/60mg

iii) one kg = 2.2 pound(Lb)

iv) One tablespoonful =15 ml

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d)Explain Tachyphylaxis.(2 marks)

Tachyphylaxis: When certain drugs are administered repeatedly at short intervals, the cell receptors get blocked up (depletion of NT takes place) & pharmacological response to that particular drug is decreased. The decreased response cannot be reversed by increasing the dose. This phenomenon is known as tachyphylaxis.

Eg.ephedrine in bronchial asthma.

e) Describe cobalt chloride test for identification of emulsion. (2 marks)

Anhydrous cobalt chloride paper is blue in colour, when it dipped in to an emulsion if it turns to pink, indicating that the emulsion is o/w type.

f) Give general requirements of Parenterals

General requirements of Parenterals: (0.5 X 4 = 2)

i)It should be free from foreign particles , fibers and filaments.

ii) It should be free from all type of microorganisms

iii)The preparation should be isotonic with blood plasma and body fluids.

iv)It should be free from pyrogens

v)It should be neutral

vi)It should be physically and chemically stable

vii)The specific gravity of preparation if it is meant for intra spinal route should be same as spinal fluid.

g) What is Geometric dilution? (1 for definition and 1 for example)

It is process of uniform mixing when **potent medicament** has to be mixed with large amount of diluents the volumes or weights of ingredients are varying in proportion (means quantities are different)

It includes the smallest quantity ingredient is taken first and same quantity of another ingredient is taken and mixed uniformly and later the same quantity of remaining ingredient is again taken and continued mixing until the whole quantity is completed.

Ex.

Rx.

(Drug) Codeine Phosphate …….. 100mg

(Diluent) Lactose ……. 900mg

Prepare a powder

Method of dispensing/mixing:

100mg Codeine Phosphate (Drug) + 100 mg Lactose (diluents) = 200 mg.

200 mg Mixture + 200 mg Lactose (diluents) = 400 mg

400 mg Mixture + 400 mg Lactose (diluents) = 800 mg

800 mg Mixture + rest of lactose (diluents) = 100 mg

h) Explain immiscibility type of physical incompatibility with example.

Immiscibility-Oils are immiscible with water , a problem can be overcome by emulsification . **Definition (1 mark)**

Example (1 mark)

Rx

Castor oil 15 ml

Purified water q.s. 40ml

Make an emulsion.

In this prescription castor oil is immiscible with water .To overcome this incompatibility an **emulsifying agent** is used to make stable emulsion.

i)What are disposable mould type of suppository?(2 marks)

The disposable moulds are made up of plastic material or tin foil. The suppository material is poured into the disposable mould and cooled. The excess of the mass is trimmed off with the help of sharp knife or blade and moulds are sealed. These are packed in cartons.

Advantage: the suppositories can be removed by patient when it required and suppository does not change its shape and size till its insertion.

j) Natural polysaccharides.(0.5x4= 2marks)

i) Gum acacia: ii) Tragacanth : iii) Starch : iv) Sodium alginate .

k)Give formula for eye ointment base. How it is sterilized?

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Formula for eye ointment base (1 mark)

Yellow soft paraffin	80 mg
Liquid paraffin	10 gm
Wool Fat	10 gm

- These are sterilized by any one method i) dry heat sterilization 160^0c for 2 hrs. or by **radiation (1 mark)**

Q.2 a) Posology: Posology is the branch of medical science which deals with dosage or quantity of drug. **(1 mark)**

Dose for child of 10 months-(2 marks)

Fried's Formula:-

Child dose = Age (Months) / 150 X adult dose

= 10Months / 150 X 500mg

=33.33mg (Aprox. 34 mg.)

b) Explain different parts of prescription with example of latin prescription. (Any four parts for 2mark,1 mark for example of latin prescription).

Parts of prescription:

1. **Date**: It is important to avoid misuse of prescription if it is presented by the patient, a number of time for dispensing.
2. **Name, age, sex & address of the patient :** The Name, age, sex & address of the patient is important for proper handling of prescription & also identification of patient .Age & sex is important especially for children to check prescribed dose of medication.
3. **Superscription:** Rx stands for Latin word recipe meaning 'you take'. It is the symbol in the name of god of healing called Jupiter to pray for quick recovery of patient.
4. **Inscription:** This is main part of prescription contains Base, Adjuvant and vehicle or name & quantities of the prescribed ingredients.
5. **Subscription:** Direction to the pharmacist for preparing dosage form as instructed with quantity. Ex. 'Mix',' Send tablets', or 'capsules' etc.
6. **Signature :** It consist of the direction to be given to the patient regarding administration of the drug.

7. **Renewal instructions :** The prescriber indicate on every prescription order whether it may be renewed & if so, how many times. It is important particularly in the prescription containing the narcotic & other habit forming drugs to prevent misuse.
8. **Signature, address & registration number of the prescriber:** The prescription bears signature, address & registration number of the prescriber. It is important particularly in the prescription containing the narcotic & other habit forming drugs to prevent misuse.

SIDHARTH NURSING HOME,

57, Gomati Apartment,Delhi,Tel.29982825

Name:For Mr. Brown Age:50 years Date:10.02.2014

Address:12,New Rajinder Nagar,Delhi

Rx **(Superscription)**

Potassii Bromidi ℥ ij **(Inscription)**

Syurpi Auranti ℥ j

Aquam Menthae piperitae ad vj

Fiat Mistura **(Subscription)**

Signetur- cochleare magnum ter in die ex aqua sumendum **(Signatura)**

Refill:--------

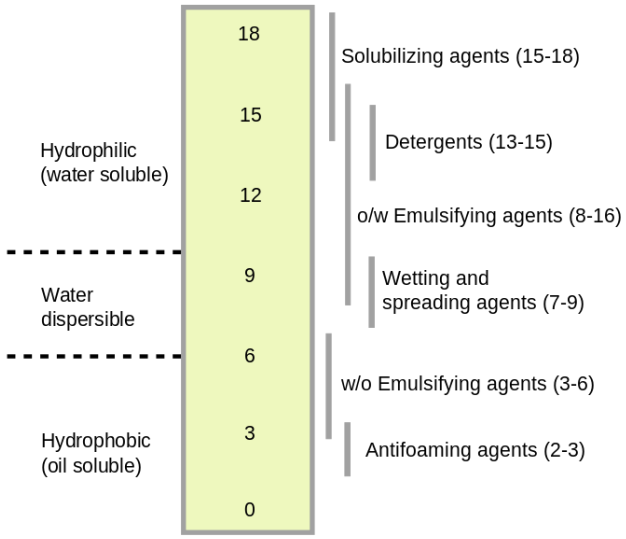
Signature of prescriber,

Regd No.

c) What is HLB. List the scale of HLB and explain the role of HLB in formulation of emulsion.

The HLB scale means (Hydrophilic – Lipophilic Balance) **(0.5 mark)**

System and has an arbitrary scale of 1-18 HLB numbers are experimentally determined for different emulsifiers in laboratory. **(1.5 mark)**



Role of HLB in formulation of Emulsion) (1 mark)

It is very difficult to **select proper emulsifying agent** from different emulsifying agent to prepare stable emulsion, therefore sometimes it is necessary to use two or more than two emulsifying agent. No single emulsifying agent possesses all the properties required for preparing stable emulsion .HLB scale is useful for calculating balanced mixture of emulsifying agent.

d) Explain following method of Hair removal

1) Epilation: (1 1/2 mark)

It is mechanical removal of hair by method like plucking, waxing, electrolysis.

It is painful & may cause skin damage.

Chances of skin secretion can be increased.Contains rosin, Beeswax along with vegetable oil, cooling agent, local anaesthetic & antibacterial agent.

2) Depilation :(1 1/2 mark)

It involves chemical breakdown of the hair without injury to skin.

They are alkaline reducing agents which cause the hair fiber to swell & produce a cleavage of disulphide or cystein bridges between adjacent polypeptide chains & degrade the hair.

Ingredients used

Sulphides of barium , calcium & strontium.

Calcium thioglycerol & calcium thioglycolate are also used.

calcium sulphide are popular depilating agent without serious effect.

Keratinase enzyme is also used.

Q.2 e) Dusting powder: (0.5M definition, 0.5 x 2 =1M classification, Usess 1 M, sterilization 0.5M = 3M)

Dusting powder are finely divided solid medicament meant for external application to the skin/wounds and should be in very fine state of subdivision

Dusting powder are classified & uses as

1) Medicated dusting powder 2)Surgical dusting powder

Uses dusting powder.

antipruritic, astringent, or antiperspirant.

Or

1) Medicated dusting powder used mainly for superficial skin conditions as antiseptic, antipruritic, astringent, or antiperspirant.

2) **Surgical dusting powder** are used in body cavities and major wounds, as result of burns and cutting of umbilical cords of infants.

Sterilization -These are sterilized by dry heat sterilization 160^0c for 2 hrs**.**

Q.**2 f) Write ideal properties of ointment base and explain hydrocarbon bases in detail**

Ideal properties of ointment Bases (0.5x2== 1 mark)

i) It should be inert, odourless and smooth.

ii) it should be physically and chemically stable.

iii) It should be compatible with the skin and with incorporated medicaments.

iv) It should be of such a consistency that it spreads and soften when applied to skin with stress.

v) It should not retard healing of wound.

vi) It should not produce irritation or sensitization of the skin.

Hydrocabon bases in detail(any two = 2 marks)

Oleaginous bases:- These bases consists of water insoluble, hydrocarbons, vegetable oils animal fats, & waxes.

Characteristic of oleaginous bases:-

1) They are greasy
2) They are sticky & difficult to remove both from skin & clothing
3) They retain body heat which may produce an uncomfortable feeling of warmth.
4) They do not help in the absorption of medicaments
5) They prevent drainage on oozing areas of also prevent evaporation of cutaneous secretions along with perspiration.

Soft Paraffin:

It is purified mixture of semisolid hydrocarbon obtained from petroleum.

Two types;White soft paraffin & yellow soft paraffin.Both have melting point 38^0 c – 56 c.

White soft paraffin is prepared by bleaching yellow soft paraffin.

White soft paraffin is used for colourless medicament. White soft paraffin is never used in ophthalmic ointments because white soft paraffin may contain small traces of bleaching agents that are left over after bleaching .white soft paraffin may cause irritation to the eye

Hard paraffin

It is a purified mixture of solid hydrocarbons obtained from petrolatum.

It is colourless or white translucent, odorless, tasteless wax like substance.

It is used to harden or soften the ointment base

Liquid paraffin-

It consists of a mixture of liquid hydrocarbons and obtained from petroleum by distillation.

It is used along with hard paraffin and soft paraffin to get a desired consistency of the ointment.

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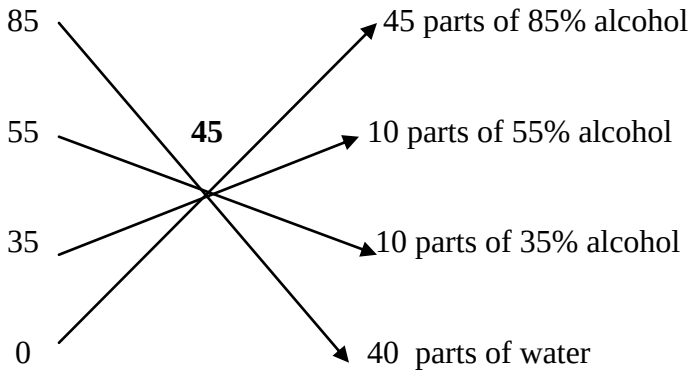
Q.3 a) Find the volume of 85%, 55%,35%, and water required to get 500 ml of 45%

By using the alligation method: (table 1 mark and calculation for volume 2M)



105 parts of water

Therefore, when 45 parts of 85% alcohol,10 parts of 55% alcohol,10 parts of 35% alcohol 40 parts of water are mixed together, the resulting solution will produce 45 % alcohol.

i) Volume of 85% alcohol required

= 105 parts **:** 500 ml **::** 45 parts **:** V

$$V = \frac{500 \times 45}{105} = \frac{22{,}500}{105} = 214.28$$

ii) Volume of 55% alcohol required

=105 parts **:** 500 ml **::** 10parts **:** V

$$V = \frac{500 \times 10}{105} = \frac{5000}{105} = 47.61$$

iii) Volume of 35% alcohol required

= 105 parts **:** 500 ml **::** 10 parts**:** V

$$V = \frac{500 \times 10}{105} = \frac{5000}{105} = 47.61$$

iv) Volume of water required = 500 – (214.28 + 47.61+ 47.61) = 190.5 ml

Q.3 b) Compare flocculated & non flocculated suspension. (each point carries 1/2 mark, any 6 points)

Flocculated suspension	**Non flocculated suspension**
1)Particle form loose aggregates & form network like structure.	1) Particle exist as separate entities
2) The rate of sedimentation is high	2)The rate of sedimentation is slow
3) Sediment is rapidly formed.	3) Sediment is slowly formed
4)Sediment is easy to redisperse	4)Sediment difficult to redisperse
5)Sediment is loosely packed & does not Form a hard cake.	5)Sediment is very closely packed & a hard cake Formed.
6)Supernatant liquid is clear.	6)Supernatant liquid is not clear
7)The floccules stick to the sides of bottle	7)The floccules do not stick to the sides of bottle.
8)Suspension is not pleasing in appearance.	8)Suspension is pleasing in appearance.

Q.3 c) Define Jellies and explain its types.

Definition of Jellies: (1 mark)

Jellies are transparent or translucent non greasy, semisolid preparations meant for external applications to the skin or mucous membrane.

Type of jellies: (2 marks)

1) Medicated jellies.

2) Lubricating jellies.

3)Miscellaneous jellies:

i)Patch testing.

ii) Electrocardiography.

1) **Medicated jellies**

These are used on mucous membrane and skin for their spermicidal, local anaesthetics and antiseptic properties. These jellies contain sufficient water ,after evaporation of water provide local cooling effect Examples- Ephedrine sulphate jelly is used as vasoconstrictor to arrest the bleeding of nose. Phenyl mercuric nitrate is used as spermicidal contraceptive.

2) **Lubricating jellies**

These are used for lubrication of diagnostic equipment such as, surgical gloves, cystoscopes, fingerstalls, catheters,rectal thermometers. These jellies should be thin, transperent and water soluble. These jellies should be sterile.

3)Miscellaneous jellies:

i) **Patch testing:**

These jellies are used as a vehicle for allergens which are applied on the skin to check the sensitivity. On drying the residual film is formed which helps to keep the patches separate and avoid confusing results.

ii) **Electrocardiography:**

The jelly is applied on the electrode to reduce the electrical resistance between the patient's skin and the electrode. The jelly contain sodium chloride, pumice powder & glycerine. Sodium chloride is good conductor of electricity where glycerine acts as humectant.

Q.3 d) Calculate the displacement value of zinc oxide from following data

i) Capacity of mould = 15 grain

ii) Wt. of unmedicated suppositories = 90 grain

iii) Wt. of six suppositories containing 40% zinc oxide = 132 grain.

Note: student may use grain value as 65 mg and may calculate by converting the grain value both are agreeable)

Weight of 6 unmedicated suppositories = 90 grain x 64.8 mg = 5.832 g

Weight of 6 suppositories containing 40% of zinc oxide = 132 grain = 132 x 64.8 mg = 8.553 gm

Amount of base present in 6 suppositories = 60/100 x 8.553 = 5.1318 g

Amount of medicament present in 6 suppositories = 40 /100 x 8.553 = 3.4212 g

Amount of base displaced by 3.4212 g of medicament = 5.832- 5.1318 = 0.7002 g

Displacement value = Amount of Medicament /Amount of base without drug – actual amount base

3.4212 / 0.7002 = 4.886 = Approx.5

Q.3 e) Define shampoo and write the formulation of shampoo.

Definition of Shampoo: (1mark)

Shampoos may be define as preparation containing surface active agents which are used to remove dirt grease and debris from the hair scalp and other part of body without affecting the natural gloss of hair.

Various additives used in formulation of shampoos (2 mks)

1) **Conditioning Agent:-** used to lubricate the hair & improve the texture of hair & it reduces the fluffiness & make the hair soft & shiny.
   e.g. Lotion & its derivatives, Glycerin, PG
2) **Thickening Agents:-** Use to increase the viscosity of shampoo & provide desired consistency.
   e.g. Polyvinyl alcohol, Methyl cellulose, Na Alginate
3) **Solubilizig Agent :-** Used to solubilize poorly soluble subs.
   e.g. ethyl alcohol, glycerol, PG.
4) **Opacifying Agents:-** used to make shampoo opaque.
   e.g. glycerol, glyceryl stearate, stearyl alcohol.
5) **Preservatives:-** used to preserve the shampoo against bacteria or mould.
   e.g. Methyl Paraben, Propyl Paraben.

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Q.3 f) Explain six factor affecting cracking of emulsion.((0.5 X 6 factors = 3 marks)

The following factors results in the cracking of emulsion.

i) Addition of emulsifying agent of opposite type:

ii) Decomposition of the emulsifying agent

iii) Addition of common solvent**:**

iv) Growth of microorganism

v) Change in temperature

vi) By creaming.

1. **Addition of emulsifying agent of opposite type:**

   Soaps of monovalent metal produces **o/w** emulsion,& Soaps of **divalent metal** produces **w/o** emulsion. But addition of monovalent soap to divalent soap emulsion & viceversa may leads to cracking

2. **Decomposition of emulsifying agent:**

   When acid is added to alkali soap emulsion it causes decomposition of emulsifying agent & thus leading to cracking of emulsion.

3. **Addition of common solvent:**

   Addition of common solvent in which both disperse & continuous phase are soluble forms one phase system & destroys the emulsion.

   Eg. Turpentine, soft soap & water are soluble in alcohol.

4. **Growth of microorganism:**

   Preservative should be present otherwise bacteria may destroy emulsifying agent & cause cracking.

5. **Change in Temperature:**

   Increase in temperature leads to reduction in viscosity; encourage creaming thus leads to cracking. Low temperature causes freezing of water content.

6. **By creaming:**

   A creamy emulsion is more liable to crack than a homogenous emulsion.

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Q.4 Attempt any FOUR of the following.

a) Find the concentration of sodium chloride required to make 50 ml isotonic solution containing 0.5% of chlorobutal. (formula=0.5 marks, calculation up to 100 ml qty 1.5 mark and for 50 ml 1 mark)

(Note : F.P. of 1% solution of chlorobutal = 0.138^0 c & F.P.of 1% solution of NaCl is 0.576^0c)

As the concentration of chlorobutol in the preparation is 0.5% w/v,

the depression in freezing point of chlorobutol = 0.138 x 0.5

$=0.069^0$c

$$\textbf{Percentage w/v of adjusting substance needed} = \frac{\textbf{0.52- a}}{\textbf{b}}$$

Where a = freezing point of the unadjusted solution

b = Freezing point of a 1% w/v solution of the adjusting substance.

$$\text{Percentage w/v of sodium chloride required} = \frac{0.52 - 0.069}{0.576}$$

$$= 0.451/ 0.576$$

$$= 0.782\%$$

Weight of sodium chloride required to make 100 ml of solution = 0.782 g

Weight of sodium chloride required to make 50 ml of solution = 0.391 g.

Q.4 b) Explain the following factor which play important role in selection of ointment base:

i) Absorption & Penetration (1 mark)

- Absorption indicates entry of medicament into the blood stream, systemic absorption. Penetration indicates passage of vehicle along with medicament through the skin, cutaneous absorption.

- Animal fat and fixed oils penetrate more readily through the skin in comparison to mineral oil.
- The **o/w emulsion base** release the medicament more readily than oleaginous base or w/o emulsion base.

ii) **Ease of application and removal: (1 mark)**

- Ointment bases used should be easily applicable and easy to remove from the skin.
- Stiff and sticky ointment bases are not suitable because they may cause damage to the newly formed tissues of the skin.
- Due to this reason the **emulsion bases** are preferable as they are softer and spread more readily over the area to which they are applied
- The emulsions particularly o/w types are easily removable with water.

iii) Consistency: (1 mark)

- It should be of suitable consistency. It should neither be too hard nor too soft.
- The consistency be such that it withstand wide variation in temperature conditions.
- The consistency of an ointment can be adjusted by using of high melting point substances like hard paraffin, beeswax in soft ointments and low melting point substances like liquid paraffin in hard ointments respectively.

Q.4 c) Define cachets, how they are prepared and give its advantages.

(Definition 1 mark, preparation 1 mark, advantages 1 mark)

Cachets are the solid unit dosage form moulded from rice paper.

Method of preparation:

These are moulded from rice paper which is made by pouring a mixture of rice flour & water between two hot, polished, revolving cylinders. The water evaporates & a sheet of wafer is formed.

Advantages: **(any two)**

1) It can be made easily made no complicated machines required
2) They disintegrate quickly in stomach
3) The drug can be easily dispense
4) Large doses of drug can be swallowed by using cachets

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Q.4 d) Define hair dyes, classify them & give its ideal qualities.

(Definition 1 mark, classification 1 mark, qualities 1 mark)

Definition:

Hair dyes are used to change the natural colour of the hair. The grey or white hair which has changed with age are converted into black colour with the help of hair dyes in order to restore a youthful appearance .Sometimes hair dyes are used to alter the colour of the hair temporarily for particular occasion.

Classification:

i) Vegetable dyes : e.g. henna & chamomile

ii) Metallic dyes : e.g. lead acetate with precipitated sulphur,bismuth citrate, silver nitrate, copper chloride, nickel nitrate, cobalt nitrate.

iii) Synthetic organic dyes : e.g. para toluylene -diamine ,paraaminodiphenylamine, sulpho-ortho-aminophenol, paraphenylenediamine.

Qualities: (any two)

i) It should possess no systemic toxic effect when applied to the hair or skin.

ii) It should be non irritating to the hair & skin.

iii) It should be non injurious to the hair shaft ,but should be able to colour the hair shaft.

iv) It should be stable and should not change its colour when exposed to air, sunlight, water, shampoo or hair conditioning agents etc.

Q.4 e) Explain types of chemical incompatibility with example.(1.5 mark for each type)

There are two types of chemical incompatibility:

(Note: student may write any example)

1. Tolerated

In this type of incompatibility, chemical reaction can be reduced by mixing the solutions in dilute forms or by changing the order of mixing but no alteration is made.

Example (any one example)

Rx

Sodium bicarbonate …… 1g

Borax …….. 1 g

Phenol ……. 0.5g

Glycerin …….. 20 ml

Water ……upto…….. 90 ml

Make a spray solution,

When sodium bicarbonate, borax and glycerin are mixed together in the presence of water, a reaction takes place with the evolution of carbon dioxide. If the mixture is dispensed as such, there are chances of bursting the bottle. Therefore, mix these ingredients in an open vessel until the evolution of carbon dioxide ceases add phenol and transfer the mixture to a bottle

2. Adjusted

In this type of incompatibility, change in the formulation is needed with a compound of equal therapeutic value e.g. in the mixture of caffeine citrate and sodium salicylate, caffeine citrate is replaced with caffeine.

Example (any one example)

Rx

Caffeine citrate …… 1g

Sodium salicylate ……. 3g

Water ……. 90ml

Caffeine citrate is a mixture of equal weights of caffeine and citric acid. the citric acid present in caffeine citrate reacts with sodium salicylate to liberate salicylic acid which get precipitated. If caffeine is used instead of caffeine citrate it forms a soluble complex with sodium salicylates. Hence substitute caffeine citrate with half as much caffeine as that of caffeine citrate to form a clear mixture.

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Q.4 f) Enlist the evaluation parameters of suspension and explain sedimentation method in detail

(Enlist for 0.5 x 4 =1 mark, and explain sedimentation method for 2 mark)

The following method are commonly used for evaluating the physical stability of suspension.

a) Sedimentation Method -

b) Micromeritic Method -

c)Rheological Method -

d) Electro kinetic Method

Sedimentation Method -

- Sedimentation volume is the most important parameter in the evaluation of the stability of suspension
- It is determined by keeping a measured volume of the suspension in a graduated cylinder in an undisturbed position for a definite period of time and noted the ultimate height (Hu) of the sediment and initial height of the total suspension.
- The sedimentation volume F is the ratio of the ultimate height and initial height .(Hu/Ho)
- The sedimentation volume plotted against time, the graph indicates the sedimentation pattern of suspension on storage.
- A stable suspension shows a horizontal or less steep curve.
- The evaluation of redispersibility can also be determined by shaking the suspension and again find out the sedimentation volume (Hu/Ho)

Q.5. Solve any FOUR of the following. **12**

a. Define elixir and explain the formulation of it. (definition 1Mark & formulation 0.5X4=2marks)

Elixir: Elixirs are clear, sweetened, aromatic, hydroalcoholic liquids preparation intended for oral use.

1. **Vehicles:**
    - Water, Alcohol, syrup, glycerin, sorbitol and propylene glycol
2. **Adjuncts:** Used to improve **Safety, efficacy and palatability.**

- **Chemical Stabilizer:**
  - Citric acid and disodium edatate in Neomycin Elixir.
- **Preservative:**
  - 20% alochol, syrup and methyl paraben and propyl paraben
- **Colouring Agent:**
  - Coal tar dyes.
- **Flavouring agent:**
  - black current syrup, raspberry syrup, lemon syrup and orange syrup etc.

b. Explain the incompatibility in given prescription and suggest the suitable method of correction. (explainatiuon-2 marks and 1 mark for correction)

Dil. sulphuric acid is added to dissolve the quinine sulphate, but potassium iodide present in formulation react with dil. sulphuric acid to form hydroiodic acid further it gets oxide to form free iodine, now free iodine, hydroiodic acid and quinine sulphate together form iodosulphide of quinine called "herapathite"
It form olive green scales after three days stay.

Correction:

1. Dispense it for three days.
2. Dispense in two different bottles one bottle containing dil sulphuric acid with quinine sulphate and in another bottle potassium iodide and water. Instruct the patient to mix them before the dose actually taken.

c. What is TPN, Why it is necessary, state the types and requirements.

TPN; Total parenteral nutrition (TPN), is the practice of feeding a person intravenously, bypassing the usual process of eating and digestion.**(0.5 Marks)**

Necessary: **(1Mark)**

It is necessary when the gastrointestinal tract is nonfunctional because of an interruption in its continuity or because it's absorptive capacity is impaired.

It has been used for comatose patients, although enteral feeding is usually preferable, and less prone to complications.

Types: **(0.5 X 2 = 1Mark)**

1. TPN fluid containing protein hydrolysate.
2. TPN fluid containing amino acid.

Or

1. CVTPN(central vain TPN).
2. TPN.
3. PPN (peripheral parental nutrition).

or

1) **Short-term TPN** may be used if a person's digestive system has shut down (for instance by Peritonitis), and they are at a low enough weight to cause concerns about nutrition during an extended hospital stay.
2) **Long-term TPN** is occasionally used to treat people suffering the extended consequences of an accident or surgery or digestive disorder.

Requirements:

- TPN requires water (30 to 40 mL/kg/day), **energy (30 to 60 kcal/kg/day, depending on energy expenditure)**, amino acids (1 to 2.0 g/kg/day, depending on the degree of catabolism), essential fatty acids, vitamins, and minerals

d. State the following terms; (1marks for each term)

1. Eye shadow:

- These are the preparations, meant to produce an attractive moist looking background of color to the eyes.
- The eye shadow is applied to the eye lids.
- Eye shadows are available in large number of shades but blue, green, grey, gold and silver shades are very common.

2. Eye brow pencil.

- Eyebrow pencils are hard crayons which are used for darkening the eyebrows.
- These are available in brown or black color and are generally manufactured by pencil manufacturers.
- The brown eyebrow pencil contains black iron oxide.
- The eyebrow pencils contain high proportion of waxes to make them hard, so that they can be moulded as a thin stick and sharpened to a point.

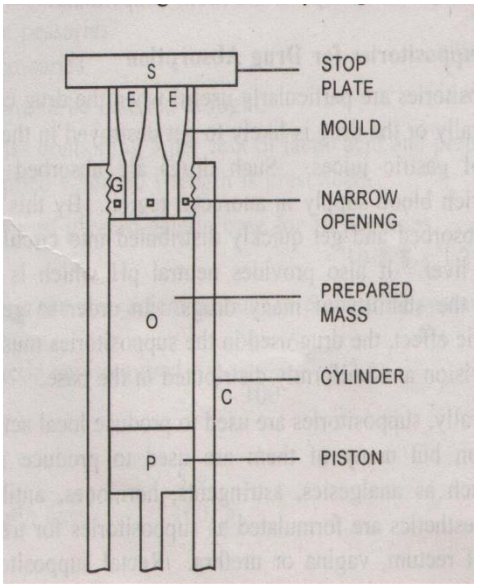
3. Mascara.

- Mascara is a black pigmented preparation for application to the eye lashes or eye brows to beautify the eyes.
- It is used to darken the eyelashes and to increase their apparent length.
- It is applied with a brush. Mascara is available in three forms in the market.
    - *Cake mascara:* It is prepared by mixing color e.g., lamp black with melted waxy material.
    - *Cream mascara:* It is prepared by mixing the pigment into a vanishing cream base.
    - *Liquid mascara:* It is a alcoholic solution of a resin in which carbon black is suspended.

e. Explain cold compression method of preparation of suppositories with neat labeled diagram.(1mark for diagram and 2 marks for explanation)

- Compression molding is a method of preparing suppositories from a mixed mass of grated suppository base and medicaments which is forced into a special compression mold using suppository making machines.
- The suppository base and the other ingredients are combined by thorough mixing.

- The friction of the process causing the base to soften into a past-like consistency.
- In the compression machine, the suppository mass is placed into a cylinder which is then closed.
- Pressure is applied from one end to release the mass from the other end into the suppository mold or die.
- When the die is filled with the mass, a movable end plate at the back of the die is removed and when additional pressure is applied to the mass in the cylinder, the formed suppositories are ejected.
- The end plate is returned, and the process is repeated until all of the suppository mass has been used.



f. Give any six comparative points of liniment and lotion.

Liniments	Lotion
1. They are used for counter irritant, rubefacient, soothing or stimulating purpose.	1. They are used for topical effect such as local cooling, soothing protective & emollient effect.
2.Applied with friction	2. Applied without friction.
3.Vehicle is mostly oily or alcoholic	3. Vehicle is mostly aqueous.
4. These are used for application to the unbroken skin.	4. Lotions can be applied on broken skin.
5.Applied directly	5. Applied with cotton gauze
6. alcohol is added to improve penetration power	6. Alcohol is added for cooling action.
7.These are semi-liquid preparations	7.These are liquid preparation
8.Turpentine liniment	8 .Sulphur lotion.

Q.6. Solve any FOUR of the following. **16**

a. Give reasons for the followings.(1marks for each)

i. Gargles are dispensed in concentrated form.

- The quantity of solution require for doing one time gargle is around 20 ml.
- Therefore if it is dispensed in dilute form it requires the large quantity which is practically impossible to dispense.
- Therefore they are dispensed in concentrated form.

ii. Glycerin is used as base in throat paint.

- Glycerin is viscous in nature and adheres to the throat
- Increases contact time and prolong the action
- It is also act as soothing agent.

iii. Oily vehicles are not used in the preparation of nasal drop.

- Because oily drop inhibits the movement of cilia in the nasal mucosa and if used for longer periods, may reach to lung and cause lipoid pneumonia.

iv. Linctuses should be taken in small doses.

- Linctuses should be taken in small doses, sipped and swallowed slowly without diluting it with water in order to have **the maximum and prolonged effect of medicament.**

b. Give calculation, primary emulsion formula, use and method of preparation of following prescription.

Rx

Calciferol solution …….. 0.15ml

Glycerin …… 0.3ml.

Water …… 5ml.

Prepare an emulsion, send 50ml.

Note; this is the example of emulsion containing small proportion of oily substance.
Emulsion containing oily proportion less than 20% and prepared with usual proportion of gum acacia, become unstable and readily cream. Therefore to prevent creaming, a bland of fixed oil should be added to raise the proportion of oil to 20%)

Calculation: (1Mark)

$$\text{Factor} = \frac{\text{Required quantity}}{\text{given quantity}}$$

$$5 = \frac{50}{10}$$

1. Calciferol solution = 0.15 X 10 = 1.5ml.
2. Glycerin = 0.3 X 10 = 3 ml.
3. Water = 5 x 10 50 ml (make upto)

(In the given prescription oil prescribed is fixed therefore O: W: G ration of primary emulsion will be 4:2:1)

Formula of primary emulsion: (1Mark)

Calciferol solution	= 1.5ml. (3%)
Arachis oil or any fixed oil	= 8.5 ml (17%)
Water	= 5ml
Gum	= 2.5ml

Use: (0.5mark)

Vitamin D supplement.

Method of preparation: (any one method 1.5 mark)

Dry gum method:

- Take the required quantity of calciferol solution and arachis oil in dry mortar.
- Add acacia powder and mix thoroughly.
- Add measured quantity of water, little at a time with continuous trituration, until white product having clicking sound is produced.
- Add glycerin with trituration.
- Add more quantity of water to produce the required volume.
- Transfer the emulsion to a bottle, label and dispense.

Wet gum method:

- Take the required quantity of water in dry mortar.
- Add acacia powder and mix thoroughly.
- Add measured quantity of calciferol solution and arachis oil, little at a time with continuous trituration, until white product having clicking sound is produced.
- Add glycerin with trituration.
- Add more quantity of water to produce the required volume.
- Transfer the emulsion to a bottle, label and dispense.

c. Write source, properties, chemical constituent's advantages and disadvantages of cocoa butter.

- **Source: (0.5Mark)**
  - Cocoa butter is fat obtained from the roasted seed of Theobroma cocoa.
- **Properties: (0.5Mark)**
  - At room temperature it is a yellowish, white solid having a faint, agreeable chocolate like odour.
  - It melts at 30 - 35^0C,

Chemical constituent: (0.5Marks)

- Chemically, it is a triglyceride (combination of glycerin and one or different fatty acids) primarily of oleopalmitostearin and oleodistearine.

- **Advantages: (any two point 0.5 X 2 =1Mark)**
  - Melting just below the body temperature.
  - Maintaining its solidity at usual room temperatures.
  - Readily liquefy on heating and solidify on cooling.
- **Disadvantages: (0.5 X 3=1.5Mark)**
  - Exhibits marked polymorphism.
  - Rancidity.
  - Stick to mould.
  - Leakage from body cavity.
  - Costly.
  - Immiscibility with body fluid.
  - Chloral hydrate or lactic acid liquefies it.

d. State the problem in the following powder and mention the method of dispensing. (1marks for each)

i. Volatile substance.

Certain vegetable powder contains volatile oils. To prevent **the loss of volatile oils**, these vegetable drugs must be powered lightly in a mortar. Similarly the

volatilization of substances like menthol, camphor and essential oils may takes place on incorporation in powder.

This can be prevented or minimized by the use of **double wrapping**. The inner wrapper should be of wax paper and outer wrapper should be any thick paper.

ii. Hygroscopic and deliquescent.

The powders which absorb the moisture from the atmosphere are called as hygroscopic. But certain powder absorbs moisture to such extent that they go into solution and are called as deliquescent powders. Ex. Ammonium chloride, iron& ammonium citrate, etc

Such substance should be **supplied in granular form** in order to expose less surface area to atmosphere. These powders should not be finely powdered. Such powder **should be double wrapped.**

iii. Eutectic powder.

- When two or more substances are mixed together they liquefy due to the formation of new compound which has a lower melting point than room temperature such substances are called as eutectic mixtures.

Method of Dispensing:

- The can be dispensed in separate set of powders with direction that one set of each kind shall be taken as a dose.
- Equal amount of any inert absorbent like Light Magnesium carbonate, kaolin, starch, lactose, calcium phosphate may be mixed with eutectic substance and then blended together.

iv. Explosive powder.

- When an oxidizing substance such as potassium chlorate is mixed with reducing substance such as tannic acid there are chances of violent explosion which may leads to serious consequences.

Method of dispensing:

- The later approach avoids physical contact between interacting substances.
- Mixing using mortar pestle is not advisable.
- Spatulation or tumbling are convenient methods.

e. Define eye drop, give its ideal characteristics and name the different adjuvant used in the formulation of eye drop.

Definition: (0.5mark)

- Eye drop are sterile aqueous or oily solution or suspension of drugs that are instilled into the eye with the dropper.

Characteristic of eye drop (0.5 X3 = 1.5)

- It should be Sterile
- It should be Iso-osmotic with lachrymal secretion.
- It should have almost neutral pH.
- It should be Free from foreign particles.
- It should be physically and chemically Stability.
- It should be Preserved with bactericidal solution

Adjuvants: (0.5 X 4 =2Mark)

1. Thickening agent.
2. Buffers.
3. Antioxidants.
4. Chelating agents.
5. Wetting agents.
6. Isotonicity adjustment substance.

SUMMER– 15 EXAMINATION

f. Explain principle, material used, method of testing for pyrogen using animal.

Principle: (0.5Mark)

- The test involves the measurement of the rise in the body temperature of rabbit following i.v. injection of a sterile solution of a substance being examined.
- Rabbits are used to perform this test because they are more sensitive to pyrogen.

Material Used: (1 Mark)

- Temperature recording device, glass wares, syringes & needles.
- Three healthy adult rabbits of either sex, each weighing not less than 1.5kg.
- Do not use any rabbit having a temperature higher than 39.8°c.

Method of testing: (2.5Marks)

Sham Test:

Pyrogen testing done on **rabbit**: The test involves the measurement of rise in body temp. of rabbit following intravenous injection of a sterile solution of a substance being examined. Three healthy rabbits ,each weighing not less than 1.5 kg are selected. They are kept on balanced diet.& are not showing any loss in body weight .The solution under test is injected slowly through ear vein in a volume of 0.5 to 10 ml/body weight. Record the temperature of each rabbit in an interval of 30 mins for three hrs. after the injection. The difference between initial temp & the maximum recorded as response.

If no rabbit shows an individual rise in temperature of 0.6 °C or more above its respective control temperature, and if the sum of the 3 temperature rises does not exceed 1.4 °C, the tested material meets the requirements for the absence of pyrogen. If 1 or 2 rabbits show a temperature rise of 0.6 °C or more, or if the sum of the temperature rises exceeds 1.4 °C, continue the test using 5 other rabbits.

If not more than 3 of the 8 rabbits show individual rises in temperature of 0.6 °C or and sum of group maximum temp rises doesn't exceed 3.7°c.