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 anyequivalent 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 judgement 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.

Q. No.	Sub Q. N.	Answer	Marking Scheme
1		**Answer any *Eight* of the followings:**	**16M**
1	**a)**	**Why gargles are submitted in concentrated form?** Gargles are submitted in concentrated form because, • 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.	**2M**
1	**b)**	**What is double wrapping? Where it is useful?** When wrapping is done in white glazed paper which is lined with waxed paper is called as double wrapping. The lining is cut a few mm smaller than the white glazed paper and is quite satisfactory to fold both papers together. It is **useful** for wrapping of volatile, hygroscopic and deliquescent substances.	**2M (1MDefination, 1M use)**
1	**c)**	**Discuss the drawbacks of cocoa butter as a suppository base.** Following are drawbacks of cocoa butter as a suppository base- • Exhibits marked polymorphism. • Rancidity. • Stick to mould. • Leakage from body cavity. • Costly. • Immiscibility with body fluid. • Chloral hydrate or lactic acid liquefies it. • Melts in warm weather	**2M (0.5 x 4 = 2M)**
1	**d)**	**Give the metric equivalent of the following:** **i)** **1 pound –** 450 gram **ii)** **1 grain –** 64.8 mg/60mg **iii)** **1 dessert spoonful –** 8.00 ml **iv)** **15 minim –** 0.06 x 15 = 0.9 ml	**2M (0.5 X4 = 2M)**

1	e)	**List reasons causing therapeutic incompatibility.** Following are reasons causing therapeutic incompatibility • Error in dosage. • Wrong dose or dosage form. • Synergism and Antagonism drug. • Contraindication. • Drug interactions	**2M (0.5 X4 = 2M)**
1	f)	**Define with example (any one)** **i) Douches** – Douches are medicated soln. for rinsing body cavity mostly for bladder, vagina, rectum, nasal cavity**.** **E.g.** Potassium permanganate douche solution, Isotonic sodium chloride solution etc. **ii) Gargles** – Gargles are clear aqueous solutions used to prevent or treat throat infections. They are brought into intimate contact with the mucous membrane of the throat and are allowed to remain in contact with it for few seconds, before they are thrown out of the mouth. **E.g.** Potassium chlorate and Phenol gargles B.P.C, Phenol gargles , Potassium chloride and phenol gargle **iii) Inhalations –** Inhalations are solutions or suspensions of volatile, aromatic substances administered by the nasal or oral respiratory route in the form of vapour inhaled from the surface of hot water. **Eg.** Eucalyptus oil Inhalations	**2M (1M Def., 1M e.g.) Any one example of each can be considered**
1	g)	**What is HLB? Give it's significance.** Griffin devised useful method for calculating balanced mixtures of emulsifying agents to provide a particular type of emulsion.in which every emulsifying agent has given number ranging from 1-18 .It is called as HLB or (Hydrophilic – Lipophilic Balance System	**2M (1 +1)**

		Significance – It is very difficult to select a proper emulsifying agents for the preparation of a stable emulsion from large number of emulsifying agents. No single emulsifying agent possess all the properties required for preparation of stable emulsion. So sometimes it is necessary to use two or more than two emulsifying agents instead of one to prepare stable emulsion.	
1	**h)**	**Give any four qualities of a good suspension.** The qualities of Ideal suspension- • It should settle slowly • It should be readily re-dispersed on gentle shaking of the container. • It should pour readily and evenly from its container. • It should be chemically inert. • The suspended particle should not form a cake. • It should be free from large particles which spoils its appearance & give gritty taste to oral preparation and also cause irritation to sensitive tissues when applied externally.	**2M** **(0.5 X4 = 2M)**
1	**i)**	**Define antiperspirants and deodorants.** **Antiperspirants:** These are the agents used to prevent the flow of perspiration to overcome bad smell which is due to bacterial decomposition Eg. Aluminium salts **Deodorants:** Deodorant inhibits the formation of bad odour in perspiration by suppressing the growth of bacteria or masks the unpleasant odour Eg Salicyclic acid, boric acid, zinc stearate	**2M** **(1 +1)**
1	**j)**	**Give the reasons, "glycerine is choice of vehicle for throat paints."** Glycerine is used as vehicle in throat paint because- • Glycerine is viscous in nature and adheres to the throat • Increases contact time and prolong the action • It is also act as soothing agent.	**2M**

1	k)	**White Vaseline is not used in ophthalmic ointment. Why?** White Vaseline is obtained from yellow soft paraffin by bleaching. White Vaseline is not used in ophthalmic ointment because it may contain small traces of bleaching agent which are left over after bleaching the yellow soft paraffin. Hence white Vaseline may cause irritation to eye.	**2M**
1	l)	**What are the advantages of parenteral products?** Advantages of parental products - • Rapid onset of action. • Immediate therapeutic action is possible. • Each dose can be administered accurately. • When oral route is not possible in unconscious and non-co-operative patient. • When drugs get inactivated in GIT tract • Prolong action can be possible by this route. • Absorption of the drug faster compare to other route.	**2M (0.5 X4 = 2M)**
2		**Attempt any FOUR of the followings**	**12M**
2	a) **Ans:**	**Write the advantages and disadvantages of powder as a dosage form.** **ADVANTAGES** • Faster dispersal of medicament compared to tablet, capsules • Convenient for dispersing bulky drug. • Dry therefore stable, less incompatible , rapid onset of action. • Convenient for children & elderly patients. • Economical. **DISADVANTAGES** • Drugs having bitter, nauseous, unpleasant taste cannot be dispensed in powder form. • Deliquescent & Hygroscopic drug cannot be given in powder form. • Drugs affected by atmospheric condition cannot be given in powder form. • Dispensing is time consuming • Weighing difficulty (qty. Less than 100mg.)	**3M (0.5 X3= 1.5 M + 0.5 X 3= 1.5M)**

2	b)	**Define incompatibility. What is tolerated and adjusted incompatibility?**	**3M**
	Ans:	**Incompatibility:-** Incompatibility occurs as a result of mixing two or more antagonistic substances & an undesirable product is formed which may affect the safety, efficacy & appearance of the pharmaceutical preparation. **1. Tolerated incompatibility -** 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 Glycerine …….. 20 ml Water …….upto…….. 90 ml Make a spray solution, When sodium bicarbonate, borax and glycerine 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 incompatibility -** 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	**(1+1+1)**

<table>
<tr><td></td><td></td><td>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.</td><td></td></tr>
<tr><td>2</td><td>c)</td><td>Explain the term superscription, inscription and subscription.
Superscription: It consist of symbol Rx which is instruction to pharmacist. Rx stands for Latin word recipe meaning ‘ you take’ and Rx represents sign of Jupiter meaning God of healing. This is for praying quick recovery of patient.
Inscription: This is main part of prescription order , contains name and quantities of the prescribed ingredients.
Subscription: It contain direction to the pharmacist for preparing prescription which is usually ‘Mix’,‘ Send tablets’, or ‘capsules’ etc.</td><td>3M
(1+1+1)</td></tr>
<tr><td>2</td><td>d)
Ans:</td><td>What are elixirs? How do they differ from syrup?
Elixirs - Elixirs are clear, sweetened and flavoured hydro alcoholic liquid preparation intended for oral use.

<table>
<tr><th>Elixirs</th><th>Syrups</th></tr>
<tr><td>Elixirs are clear, sweetened and flavoured hydro alcoholic liquid preparation intended for oral use.</td><td>Syrup is sweet, viscous, concentrated or nearly saturated aqueous solution of sucrose containing 66.7% w/w of sugar</td></tr>
<tr><td>Uses:
Can be used as Antibiotic Antihistaminic Sedative purpose</td><td>Uses:
Can be simple syrup use for sweetening and flavouring purpose and medicated syrup for therapeutic purpose</td></tr>
<tr><td>More viscous than elixir and less viscous than linctus</td><td>less viscous than syrup</td></tr>
<tr><td>Ex Tolu syrup, ginger syrup ect.</td><td>Ex chloral hydrate elixir ect</td></tr>
</table>
</td><td>3M
(1 +
0.5x4=2)</td></tr>
</table>

2	e)	**Describe layout of sterile product area.**	**3M**

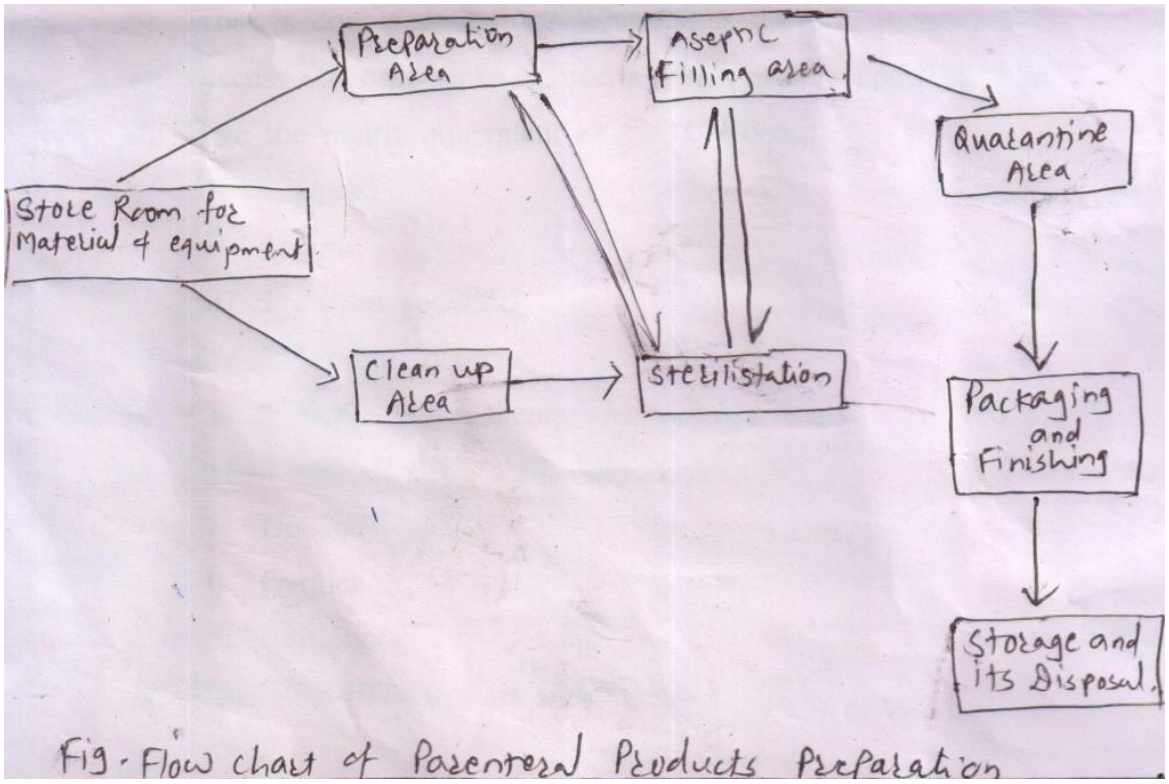


Fig - Flow chart of Parenteral Products Preparation

(1 + 2)

Clean up area:-In such area cleaning and steaming of packing materials and utensils is done therefore the walls and ceiling are constructed in such a way, that they withstand the effects of steam and chemicals. Generally, epoxy or vinyl paint is coated to solve the purpose. This area must be kept clean by washing it regularly. Precaution must be taken to prevent the growth of microorganism and collection of dust.

Compounding area:-It is nothing but a "preparation" area, where the formula is compounded, and not necessarily aseptic. There should be strict control it that these should not catch dust. The cabinets and counters should be of stainless steel. Ceiling wall and floor should be sealed and can be coated with Epoxy paint. Adequate sink and counter space should be provided.

Aseptic Area: - It is an entirely sealed area from outside atmosphere to keep aseptic environment free from physical and biological contamination. Therefore, at the time of designing and constructing the aseptic area civil work can compose to HVAC (High ventilating and air conditioning) system including the electrical wire fittings and switches.

		The walls facing outside should have double walled glass partition. Epoxy paints should be used.to prevent wall, ceiling ,and floor from the accumulation of dust and microorganisms The air in the aseptic area should be free from fibers ,,dust and microorganism. This can be achieved by the use of high efficiency particulate air filers (HEPA) which can remove particles upto 0.3 um. HEPA filters are fitted in laminar air flow system in which air free from dust and microorganism flows with uniform velocity.The air is supplied under positive pressure which prevents particulate contamination from sweeping from adjoining areas .Ultraviolet lamps are fitted to maintain sterility. . The personnel enter in this area through air lock door. Movement should be minimum and restricted during filling procedure . **Quarantine area:-** Approved batches from QC department can be kept here before labelling and packing.It must contain space that separates 'Approved batches' and 'In process batches'.This area is only restricted to a responsible person. **Labelling and packing area:-**Adequate space is required for installation of printing devices and packaging machines In this area, label printing and labelling can be take place. **Storage and its disposal:-** The finished product are stored under specified storage condition and dispensed off.	
2	**f)** **Ans:**	**Translate the following terms in English:** **i) Capiendus –** To be taken **ii) Guttae –** A drop, **iii) Hora somni –** Every hour iv) **Trochiscus –** A lozenge **v) Unguentum –** An ointment **vi) Dolere urgente –** When the pain is severe	**3M** **(0.5 X 6** **= 3M)**
3		**Attempt any FOUR of the followings**	**12M**
3	**a)**	**Report the incompatibility in following prescription how will you correct it ?** **Rx** **Quinine sulphate ……1.5 gm**	**3M** **(1.5+1.5)**

		Dilute sulphuric acid …..4ml **Potassium iodide …….8gm** **Water 9.5 ……200 ml** **Fiat Mistura** **Signa- Cochleare amplum quartis horis summendum** **Identification of incompatibility:** 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, 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.	
3	**b)**	**Define mixture and draught. Give different types of vehicle used in preparation with examples.** **<u>Definition:</u>** **Mixture**: A mixture is a liquid preparation meant for oral administration in which medicament or medicaments are dissolved, suspended or dispersed in a suitable vehicle. **Draught**: These are the liquid preparation where whole dose has to be taken at once. **<u>Vehicle used:</u>** **Water:** Purified water is used. **Aromatic waters** like camphor water, chloroform water, peppermint water. **Medicated vehicle**: vehicles having therapeutic value such as compound gentian infusion, orange peel infusion, infusion of senega.	**3M (1x2=2M Def., 0.5x2= 1M vehicle)**
3	**c)**	**Define cachets? Write the advantages and disadvantages of cachets as dosage form.** **Definition**: - Cachets are the solid Unit dosage form of drugs. These are moulded from rice paper, used	**3M (1 Def.+ 0.5x2=1**

		to enclose nauseous or disagreeable powders and are available in different sizes to hold drugs from 0.2 to 1.5 gm of powders. **Advantages**: 1) It can be made easily , 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. **Disadvantages**: 1) They have to be soften before swallowing 2) They are easily damaged 3) They cannot protect drug from light and moisture 4) The shell is very fragile 5) They cannot be manufactured on large scale	**+ 0.5x2=1)**
3	**d)**	**Write the dose of the following drugs.** **i) BCG Vaccine :** 0.1 ml **ii) Aspirin:** 0.6g to 1gm **iii) Sodium bicarbonate:** 5% **iv) Frusemide:** 40 to 120 mg **v) Streptomycine:** 0.5 to 1.0 g **vi) Castor oil:** 1 to 15 ml	**3M (0.5x6)**
3	**e)**	**What is emulsion? How emulsion prepared by dry gum method?** **Definition:** An Emulsion is a biphasic liquid preparation containing two immiscible liquids, one of which is dispersed as minute globules into the other. The liquid which Is converted into minute globules is called the "dispersed phase" and the liquid in which the globules are dispersed is called the "continuous phase " **Dry gum method for preparation of emulsion.** 1. Measure the required quantity of oil in a dry measure and transfer it into a dry mortar. 2. Add the calculated quantity of gum acacia into it and triturate rapidly so as to form a	**3M (1+2)**

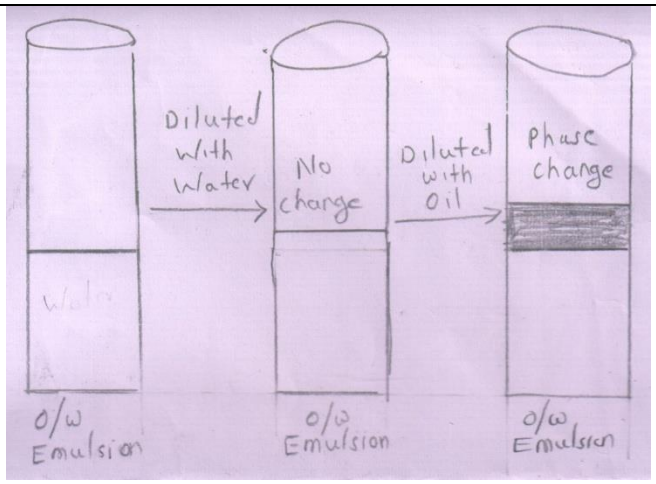
		uniform mixture. 3. Add required quantity of water and triturate vigorously till a clicking sound is produced and the product becomes white or nearly white due to the total internal reflection of light. The emulsion produced at this stage is known as primary emulsion. 4.If any other ingredient present in the formulation has to be added by dissolving in the vehicle 5. Add more of vehicle to produce required volume.	
3	**f)**	**Give in brief account on Contact lens solutions.** Contact lens solutions **For Hard contact lenses** two solutions are there 1) **Wetting solution** is use for treating the lenses before insertions since these are poorly wetted by lachrymal secretions. Hence the contact lenses require moistening with a wetting agent to make the insertion easy and comfortable. The formulation of contact lens solutions contains a wetting agent. Thickening agent (cellulose derivative), antimicrobial agent (benzalkonium chloride) Isotonicity adjustments (sodium chloride). **2) Storage solutions**: It is used for overnight cleansing, soaking and storage. They are stored in storage solution to prevent dehydration. The formulation of storage solutions contains non-ionic surfactant which helps in cleansing the contact lenses.it also contains preservative to prevent microbial growth. **For Soft contact lenses** These are cleansed by heating in 0.9% sodium chloride solution. The wetting of soft contact lenses is not problem because of the hydrophilic nature of the lenses. The storage solution should be sterile.	**3M** **(2+1)**
4		**Attempt any FOUR of the following.**	**12M**

4	**a)**	**What is importance of date and age of patient in prescription writing?** **Date**: It helps a pharmacist to find out the date of prescribing and date of presentation for filling the prescription. The prescription which prescribed narcotic and other habit forming drugs must bear the date so as to avoid the misuse of prescription if it is presented by the patient, a number of times for dispensing. **Age of the patient**: Age of the patient must be written in the prescription because it serves identity of the prescription. In case, if it is missing in the prescription, the same may be included by the pharmacist after proper enquiry from the patient. Age of the patient, especially in case of children, help the pharmacist to check the prescribed dose of medication.	**3M** **(2 x1.5)**
4	**b)**	**Name the additives used in suspension. Discuss the significance of wetting and flocculating agent.** Following additives used in formulation of suspensions**.** Flocculating agents: Thickening agents Wetting agents Preservatives Organoleptic additives **Wetting agents-** These are the substances which reduce the interfacial tension between solid particles and liquid medium, thus producing a suspension of required quality. For examples, alcohol in tragacanth mucilage, glycerine in sodium alginate or bentonite dispersion and polysorbate in oral and parenteral suspensions. **Flocculating agents**: The flocculating agent act by reducing the surface tension and There by improving dispersion of solids and minimise flocculation. eg. Sodium Lauryl Sulphate, tweens, spans and carbowaxes.	**3M** **(1+1+1)**

4	c)	**Define "displacement value". Write its Importance in suppository.** **Definition:** Displacement value of a medicament is defined as "The quantity of the drug which displaces one part of the base." **Importance**: The volume of suppository from a particular mould is uniform but its weight will vary because the densities of medicaments usually differ from the density of the base with which the mould is calibrated . For preparation of uniform suppositories, accurate weight, allowance must be made for the change in density of the mass due to added medicament. For this purpose displacement value of the medicament is taken into consideration.	**3M (1+2)**
4	d)	**What are Shampoos Mention desirable properties of shampoo?** **Definition:** Shampoos may be define as preparation containing surface active agents which are used to remove dirt, grease and debris from the hair scalp without affecting the natural gloss of hair **Qualities of an ideal shampoo.** • It should be capable of removing grease, dirt, and skin debris from the hair and scalp. • It should be non-toxic. • It should be non-irritant. • It should provide sufficient fragrance to the hair after its use. • It should be effective in small amounts • It should get easily removed by washing with water. • It should produce sufficient foam, both in hard soft water. • It reduces the fluffiness and smoothens the hair shafts. • It makes the hair soft and shiny.	**3M (1+0.5x 4=2)**

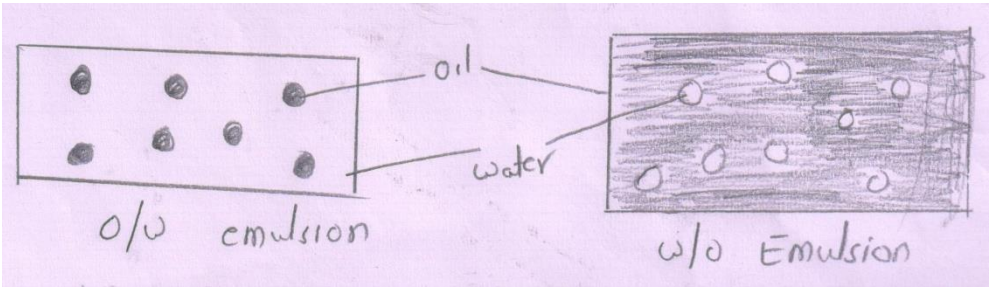
4	**e)**	**Name the various facial cosmetics. Describe in short rouges.** **Facial cosmetics:** a) Face powder b) Compact Face powder c) Rouge d) Cold cream e) Cleansing cream f) Vanishing cream g) Foundation cream h) Moisturising cream i) Preparation for Eye makeup j) Lipstick k) Bleaches l) Shaving media **Rouges :** Rouges are the cosmetic preparations which are applied on cheeks for enhancing the face beauty. It also impart and stimulate the rosy freshness of the young and healthy skin . It is used by ladies to add to their beauty. The colour of rouge may vary from pink to red or reddish brown colour. The shade of the rouge depends on the type and quantity of colour mixed with it. Rouges` are available in solid, liquid and cream form. The dry compact rouge is applied by means of a puff. FORMULA FOR DRY ROUGE Talcum Powder 80.0 g Zinc Oxide 5.0 g Zinc Stearte 5.0 g Rice Starch 10.0 g Perfume Sufficient quantity	**3M** **(1+2)**

		Colour Sufficient quantity	
4	**f)**	**What are ointments? Write the desirable properties of ointment base.** **Definition :** Ointments are semisolid preparations meant for external application to the skin or mucous membrane. They usually contain medicament or medicaments dissolved ,suspended or emulsified in an ointment base **Properties of ointment base.** **1)** It should be inert, odourless and smooth **2)** It should be physically and chemically stable **3)** It should be compatible with skin and with the incorporated medicaments **4)** It should be of such a consistency that it spreads and softens when applied to the skin with stress **5)** It should not retard healing of the wound **6)** It should not produce irritation or sensitisation of the skin	**3M** **(1+ 0.5x4=2)**
Q.5		**Answer any FOUR of the following:**	**12M**
Q.5	**a.**	**Describe the test for identification of type of an emulsion** **Tests for identification** 1) Dilution Test 2) Dye Test 3) Conductivity Test- 4**)** Fluorescence Test 5) Cobalt Chloride Test **1) Dilution Test** - • Emulsion diluted with water i)Emulsion remains stable then it is o/w emulsion ii)Emulsion break it is w/o emulsion • Emulsion diluted with oil i)Emulsion remains stable then it is w/o emulsion ii)Emulsion break it is o/w emulsion	**3M** **(0.5+0.5 X5)**



2) Dye Test-

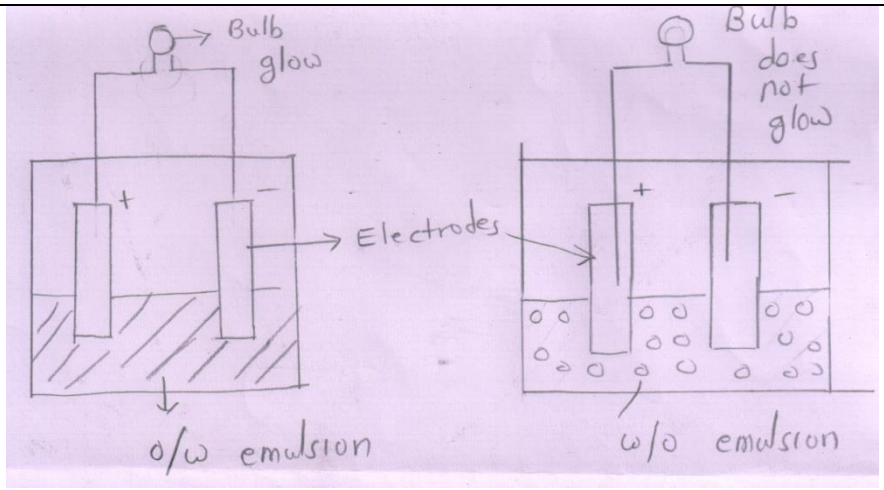
- Emulsion diluted with scarlet red dye i)Dispersed globules appear red & background is colourless then it is o/w type ii) Dispersed globules appear colourless & back ground is red then it is w/o type.



3) Conductivity Test-

This type of emulsion show bulb glowing on passing electric current.

- If bulb glow the emulsion is o/w type
- If bulb does not glow the emulsion is w/o type



4) Fluorescence Test:

- If an emulsion on exposure to ultra-violet radiations shows continuous fluorescence under microscope, then it is w/o type
- If it shows only spotty fluorescence, then it is o/w type.

5) Cobalt Chloride Test:

When a filter paper soaked in cobalt chloride solution is dipped in to an emulsion and dried, it turns from blue to pink, indicating that the emulsion is o/w type.

Q.5 b. **What is face powder write desirable properties of face powder** **3M**

Face powder is a cosmetic preparation meant for improvement of overall attractiveness of the face. It is applied to the face by means of powder puff, It provides a visual covering to skin and impart smooth finish to it **1+0.5x4 =2)**

Ideal properties of face powder

1. It should be very fine and should not have any gritty particles.
2. It should be non-toxic.
3. It should be non-irritant to the skin.
4. It should look natural.
5. It should not remove from the skin immediately after its application.
6. It should be stable both physically and chemically.
7. It should have good absorbing property.
8. Its ingredients should be evenly distributed.
9. It should remove shine from the face.
10. It should stick to the face and should not dust off in a few minutes

Q.5	**c.**	**Comment 'aqueous solutions are usually not preferred for ear drops".List formulation ingredients for ear drop** Aqueous solution are not preferred as secretion in the ear are mainly fatty or oily in nature and therefore aqueous solutions do not mix easily with them. **Formulation of Ear drop** • The main solvent used in ear drop includes glycerine propylene glycol and water. • The viscous glycerine solution permits the drug to remain in ear for longer time. • The viscous liquids such as glycerine or propylene glycol are used either alone or in combination with surfactant to aid in the removal of ear wax Example **(any one example can be considered)** Soda glycerine ear drop Rx Sodium carbonate 5.0gms Glycerine 30.0ml Purified water q.s 100.0ml	**3M** **(1.5+1.5)**
Q.5	**d.**	**Define Posology .Calculate the dose of acetaminophen for a child of six months, if adult dose is 500mg.** **Posology: It** is derived from Greek words 'posos' meaning how much and 'logos' meaning science. Posology is branch of science which deals with dose or quantity of drugs which can be administered to a patient to get desired pharmacological actions. According to fried's formula: Dose of the child=$\frac{\text{Age in months}}{150}$ X Adult dose $= \frac{6}{150} X500$ = 20.0mgs	**3M** **(1+2)**

Q.5	**e.**	**What are the various approaches to overcome incompatibility due to liquification** **Liquification**: When certain low melting point solids are mixed together they form a new chemical compound which has melting point lower than room temperature, therefore they become liquid at room temperature. Example: Rx Menthol ---------- 5g. Camphor ---------- 5g. Ammonium chloride ---------- 30g. Light magnesium carbonate ---- 60g. Send five powders The combination forms eutectic mixture. **The substance can be dispensed by any one of the following methods;** i) Triturate together to form liquid and mixed with an absorbent like light kaolin or light magnesium carbonate to produce free flowing powder. ii) The individual medicaments are powdered separately and mixed with absorbent and then combined together lightly and filled in suitable container	**3M** **(1+2)**
Q.5	**f.**	**What are intravenous fluids, write their uses** Large volume of parenteral solutions intended to be administered by intravenous route are commonly called intravenous fluids. The median basilic vein near the anterior surface of the elbow is usually selected. **Uses**: 1. To correct electrolyte imbalances. 2. To deliver medications, 3. For blood transfusion. 4. For Fluid replacement, for example, dehydration. 5. Used for chemotherapy.	**3M** **(1+0.5X 4=2)**

		6. To deliver Blood substitute. 7. To provide total parental nutrition 8. As a vehicle for other drug substances.	
Q.6		**Answer any FOUR of the following:**	**16M**
Q.6	**a.**	**Describe modern methods of dispensing the prescription** • Now a days role of pharmacist is to hand over the ready made preparations to the patients and provide advice if demanded regarding its mode of administration, dose schedule, drug interactions etc. • In present day set up, the writing of prescription is more significant. The prescription should be precise, accurate, clear and easily readable. As far as possible Latin terms should be avoided. The drugs should be prescribed by its official (generic) name not by its proprietary or trade name. **Advantages** of prescribing the drugs by its proprietary names 1) Easy to remember 2) Easy to communicate with the patient. 3) The continuity can be maintained by prescribing the same proprietary name every time. 4) Only those proprietary drugs can be prescribed which have better bioavailability. **Disadvantages** of prescribing the drugs by its proprietary names 1) It is cheaper to prescribe the drugs by its official name. 2) It becomes difficult for a pharmacist to dispense the substitute of the drugs which is not available in the stock..	**4M** **(1.5+1.5 +1)**
6	**b.**	**Classify the various methods and give the formulae for the calculation of paediatric doses** **Methods of calculation of doses:** • Dose proportionate to age • Dose proportionate to body weight. • Dose proportionate to body surface area. **Formula for the calculation of paediatric dose**	**4M** **(1+1x3)**

		1.Depending on age: Dillings formula: Child Dose = Age in years X Adult dose 20 Young's formula: Child dose =Age in years X Adult dose Age in years +12 Frieds Formula: Child Dose =Age in month X Adult dose 150 **2.Depending on weight.** Clarks formula: Child Dose = weight in pound X Adult dose 150 **3.Depending body surface area:** Body surface area formula: Child Dose = body surface area of child in m^2 X Adult Dose. 1.73 m^2	
6	**c.**	**What are liniment and lotion? Write the composition of Turpentine liniment and Calamine Lotion** **Liniment**: Are liquid or semi liquid preparation meant for application to the skin Applied with friction, Vehicle is mostly oily or alcoholic, These are used for application to the unbroken skin and applied directly. **Lotions** : Are liquid or semi liquid preparation They are used for topical effect such as local cooling, soothing protective & emollient effect, applied without friction, Vehicle is mostly aqueous, Lotions are applied on broken skin, they are applied with cotton gauze. **Composition of Turpentine liniment** Rx Soft soap 90.0gms	**4M** **(1+1+1+1)**

		Camphor 50.0gms Turpentine oil 650.0ml Purified water q.s 1000.0ml **Composition of Calamine Lotion** Rx Calamine 150.0gms Zinc oxide 50.0 gms Bentonite 30.0gms Sodium Citrate 5.0gms Liquified Phenol 5.0ml Glycerin 50.0ml Rose water q.s 1000.0ml	
6	**d**	**Define eye drops. Mention the terminal sterilization process of eye drop** **Eye drops:** Eye drops are sterile aqueous or oily suspension of drugs, that are instil into the eye with the dropper they usually contain drugs having antiseptic, anaesthetic, anti-inflammatory, mydriatic or meiotic properties. **Terminal sterilization process: They can be sterilize by moist heat sterilization or by heating with bactericide** **Moist heat sterilization -Autoclaving:** **This is most reliable method and is used whenever the medicament is sufficiently stable.** In this method preparation is filled in final container and then sterilised by autoclaving at desired temperature and pressure i.e. 10 lbs/sq inch with corresponding temp 115 ^{0}C or 15 lbs/sq inch with corresponding temp 121 ^{0}C After the stated period, switch off the autoclave. Allow it to cool to about 40^{0}C before opening the vent. When whole of the steam is removed, the lid is opened and the sterilized material is taken out. **Heating with bactericide**: It is used particularly for solutions containing medicaments	**4M** **(1+2x1.5)**

		that can be degraded by autoclaving but can withstand temp of 98-100 ^{o} C suitable preservative in required concentration are added to the eye drops for e.g cholrocresol, phenyl mercuric nitrate etc. and the container is sealed and kept in the water bath at 98-100^{o} C for half an hour and than the preparation is cooled	
6	**e.**	**Give significance of particulate matter and mention different method in its detection** **Significance:** Presence of particulate matter in IV solutions may lead to septicemia, fever and blockage of small blood vessels. The presence of undissolved particles create doubt about the quality of product Methods: 1)Visual method 2) Coulter counter method 3) Filtration method 4) Light blockage **Visual Method:** It is an old but reliable method. The filled containers are examined against strong illuminated screen by holding the neck and rotating it slowly or inverted it to exclude the possibility of foreign particles. If any particulate matter is visible, that container is rejected. **Coulter Counter Method:** The method is based on the principle that increase in resistance is observed between two electrodes, as the particle approaches and passes through the orifice. An electrolyte is required to be included in the preparation before its evaluation. The particles with diameter below 0.1 /um can be detected by this method. **Filtration method:** The liquid sample is passed through a filter and the material collected on the surface of the filter. It is examined under microscope. **Light blockage method:** It allows a stream of the fluid under test to pass between a bright white light source and photodiode sensor. It is possible to detect cross sectional area in this instrument because it blocks the path of light and size of the particle is consider as a diameter of a circle of equivalent area.	**4M** **1+1 x3**

6	**f.**	**Describe various methods for the preparation of ointment** **Ointments can be prepared by any one of the following methods** • **Trituration method** • **Fusion method** • **Chemical reaction method** • **Emulsification method** **Trituration method:** This method is used when the base is soft and the medicament is insoluble in the base 1.Finely powder the solid medicament 2.Weigh the required amount of base and place it at one end of the ointment tile and place the medicament at the opposite end of the tile 3.Take the proportionate amount of base and the drug in the centre and uniformly mixed them with the help of the ointment spatula 4.Continue the process until whole of the drug is uniformly mixed with the base. **Fusion method:** This method is used when the base contains number of solid ingredients 1.Melt the solid bases in their decreasing order of their melting points i.e the high melting point solids has to melted first in the porcelain dish followed by next in the order 2.When the base has been melted than medicament is incorporated and uniformly mixed and cooled till it solidifies 3.In case any liquid ingredient or aqueous substance has to be incorporated than it has to be heated at same temperature as that of the base and than it has to be mixed with the base and stir continuously till it solidifies. **Chemical reaction method:** **Ointment containing free Iodine**	**4M** **(1+1+1+1)**

Iodine is slightly soluble in most fats and vegetable oils. But it is readily soluble in concentrated potassium iodide solution in water ,due to formation of polyiodides. These polyiodides are readily soluble in water ,alcohol and glycerine .The liquid selected should ensure proper distribution of medicament and should be non-volatile otherwise distributed medicament may crystallise when the solvent evaporates .

Ointment containing combined Iodine

Certain chemical reactions are involved in preparing certain ointments

for e.g non staining Iodine ointment :

Fixed oils contains unsaturated fatty acids which reacts with iodine and iodine gets attached to either side of double bond, therefore free iodine is not available in the preparation

$CH_3.(CH_2)_7.CH=CH.(CH_2)_7.COOH + I_2 \longrightarrow CH_3.(CH_2)_7.CHI.CHI.(CH_2)_7,COOH$

Oleic acid di-iodo stearic acid

Emulsification method:

1. In this method the fat, oil and waxes are melted together on a warm bath and temperature is maintained at 70^oC .The aqueous solution containing all water soluble component is also heated at the same temperature
2. Aqueous solution is added to the melted oily base little by little with continuous stirring till emulsification takes place and the ointment solidifies.