DOUG FORMS

1. Define drug?
   According to WHO, a drug is defined as any substance or product that is used or intended to be used to modify or explore physiological systems or pathological states for the benefit of the recipient.

2. Define drug dosage form?
   A dosage form is the way of identifying the drug in its physical form.

3. What are the factors to be considered while determining drug dosage form?
   1) Physical appearance of the drug product
   2) Physical form of the drug product prior to dispensing to the patient.
   3) The way the product is administered
   4) Frequency of dosing,
   5) How pharmacists and other health professionals might recognize and handle the product.

4. Which are the qualities of an ideal drug dosage form?
   1) Resist action by gastric fluids
   2) Prevent vomiting and nausea.
   3) Reduce or alleviate the undesirable taste and smells.
   4) Achieve a high concentration of drug at target site.
   5) Produce a delayed or long-acting drug effect.

5. Which are the types of dosage forms?
   1) Solid dosage forms
   2) Liquid dosage forms
   3) Gaseous dosage forms

6. What are the examples of solid dosage forms?
   1. Capsules
   2. Tablets
   3. Powder
   4. Lozenge
   5. Pill
6. Suppository

7. What is a capsule?

A solid oral dosage form consisting of a shell and a filling. The shell is composed of a single sealed enclosure, or two halves that fit together and which are sometimes sealed with a band. Capsule shells may be made from gelatin, starch, or cellulose, or other suitable materials, may be soft or hard, and are filled with solid or liquid ingredients that can be poured or squeezed.

7 (I) What are the types of capsule?

A. Coated capsules
B. Liquid filled capsules

I (A) What is meant by a coated capsule?

A solid dosage form in which the drug is enclosed within either a hard or soft soluble container or "shell" made from a suitable form of gelatin; additionally, the capsule is covered in a designated coating.

I(A) 1. What is meant by an extended release capsule?

The capsule is covered in a designated coating, and which releases a drug (or drugs) in such a manner to allow at least a reduction in dosing frequency as compared to that drug (or drugs) presented as a conventional dosage form.

Eg: Wellbutrin (Bupropion)

2. What is meant by a delayed released capsule?

A solid dosage form in which the drug is enclosed within either a hard or soft soluble container made from a suitable form of gelatin, and which releases a drug (or drugs) at a time other than promptly after administration. Enteric-coated articles are delayed release dosage forms.

Manoprolol (Propranolol)

3. What is meant by a film coated capsule?

The capsule is covered in a designated film coating, and which releases a drug (or drugs) in such a manner to allow at least a reduction in dosing frequency as compared to that drug (or drugs) presented as a conventional dosage form.

4. What is meant by gelatine?

A solid dosage form in which the drug is enclosed within either a hard or soft soluble container made from a suitable form of gelatin; through a banding process, the capsule is coated with additional layers of gelatin so as to form a complete seal.
7. I (B) What is a Liquid filled capsule?
A solid dosage form in which the drug is enclosed within a soluble, gelatin shell which is plasticized by the addition of a polyol, such as sorbitol or glycerin, and is therefore of a somewhat thicker consistency than that of a hard shell capsule; typically, the active ingredients are dissolved or suspended in a liquid vehicle.

8. What is a tablet?

A tablet is a mixture of active substances and excipients, usually in powder form, pressed or compacted into a solid. The excipients include binders, glidants (flow aids) and lubricants to ensure efficient tabletting; disintegrants to ensure that the tablet breaks up in the digestive tract; sweeteners or flavours to mask the taste of bad-tasting active ingredients; and pigments to make uncoated tablets visually attractive. A coating may be applied to hide the taste of the tablet's components, to make the tablet smoother and easier to swallow, and to make it more resistant to the environment, extending its shelf life.

Eg: paracip-500 (Acetaminophen)

8.I What are the types of tablet?
  a. Chewable
  b. Coated – (i) Enteric coated
     - (ii) Sugar coated
     - (iii) Film coated
  c. Extended release
  d. Delayed release
  e. Dispersible
  f. Multilayer
  g. Orally disintegrating
  h. Soluble
  i. Effervescent

8.I (a) What is a Chewable tablet?

A solid dosage form containing medicinal substances with or without suitable diluents that is intended to be chewed, producing a pleasant tasting residue in the oral cavity that is easily swallowed and does not leave a bitter or unpleasant after-taste.

Eg: Cisapride MPS (Chloradiazepoxide&Clidinium Br)
(b) What is a coated tablet?

A solid dosage form that contains medicinal substances with or without suitable diluents and is covered with a designated coating.

i) What is an enteric coated tablet?
Enteric coated tablets are coated with a material which will dissolve in the intestine but remain intact in the stomach.

Pantocid (Pantoprazole)

ii) What is a sugar coated tablet?

A solid dosage form that contains medicinal substances with or without suitable diluents and is coated with a colored or an uncolored water-soluble sugar.

iii) What is a film coated tablet?

A solid dosage form that contains medicinal substances with or without suitable diluents and is coated with a thin layer of a water-insoluble or water-soluble polymer. Eg: Gaspaz (Domperidone & rantidine)

(c) What is an extended release tablet?

A solid dosage form containing a drug which allows at least a reduction in dosing frequency as compared to that drug presented in conventional dosage form

(d) What is a delayed release tablet?

A solid dosage form which releases a drug (or drugs) at a time other than promptly after administration. Enteric-coated articles are delayed release dosage forms.

(e) What is a dispersible tablet?

Eg – Gastropen (Cisapride & methylpolysiloxane)

(f) What is a multilayer tablet?

A solid dosage form containing medicinal substances that have been compressed to form a multiple-layered tablet or a tablet-within-a-tablet, the inner tablet being the core and the outer portion being the shell.

(g) What is orally disintegrating tablet?
A solid dosage form containing medicinal substances which disintegrates rapidly, usually within a matter of seconds, when placed upon the tongue.

Eg: Xanax, (Alprazolam)

(h) **What is a soluble tablet?**

A solid dosage form that contains medicinal substances with or without suitable diluents and possesses the ability to dissolve in fluids.

(i) **What is an effervescent tablet?**

A solid dosage form containing mixtures of acids (e.g., citric acid, tartaric acid) and sodium bicarbonate, which release carbon dioxide when dissolved in water; it is intended to be dissolved or dispersed in water before administration.

Eg: Zantac (Ranitidine Hydrochloride)

9. **What is powder?**

An intimate mixture of dry, finely divided drugs and/or chemicals that may be intended for internal or external use.

Eg: Cremaffin –FS(Ispaghula)

9(I) **What are the types of powder?**

1. **powder for solution:** An intimate mixture of dry, finely divided drugs and/or chemicals, which, upon the addition of suitable vehicles, yields a solution.

2. **powder for suspension:** An intimate mixture of dry, finely divided drugs and/or chemicals, which, upon the addition of suitable vehicles, yields a suspension (a liquid preparation containing the solid particles dispersed in the liquid vehicle).
3. **powder dentifrice** A powder formulation intended to clean and/or polish the teeth, and which may contain certain additional agents.

4. **powder metered** - An powder dosage form that is situated inside a container that has a mechanism to deliver a specified quantity.

10. **What is lozenge ?**
    A solid preparation containing one or more medicaments, usually in a flavored, sweetened base which is intended to dissolve or disintegrate slowly in the mouth.

    Eg : Alex (Dextromethorphan)

11. **What is a pill ?**

    A small, round solid dosage form containing a medicinal agent intended for oral administration.

    Eg : Ovaral (Levonorgestrel & Ethinyl estradiol)

12. **What is mean by a suppository ?**

    A solid body of various weights and shapes, adapted for introduction into the rectal orifice of the human body; they usually melt, soften, or dissolve at body temperature.

    Eg: Anusol-HC Suppository (Hydrocortisone)

13. **What is a bead?**

    A solid dosage form in the shape of a small ball.
14. **What is a bead implant?**

A small sterile solid mass consisting of a highly purified drug intended for implantation in the body which would allow at least a reduction in dosing frequency as compared to that drug presented as a conventional dosage form.

15. **What is a cone?**

A solid dosage form bounded by a circular base and the surface formed by line segments joining every point of the boundary of the base to a common vertex. A cone (usually containing antibiotics) is normally placed below the gingiva after a dental extraction.

16. **What is a diaphragm?**

A device usually dome-shaped, worn during copulation over the cervical mouth for prevention of conception or infection.

17. **What is a fiber extended dosage form?**

A slender and elongated solid thread-like substance that delivers drug in such a manner to allow a reduction in dosing frequency as compared to that drug (or drugs) presented as a conventional dosage form.

18. **What is a globule?**
Globules are made of pure sucrose, lactose, or other polysaccharides. They are formed into small globular masses of various sizes, and are medicated by placing them in a vial and adding the liquid drug attenuation in the proportion not less than one percent (v/w). After shaking, the medicated globules are dried at temperatures not to exceed 40 degrees Centigrade.

19. What is a granule?

A small particle or grain is known as granule

Citro-Soda (Sodium bicarbonate, Na citrate, Tartaric acid & citric acid)

19(I) What are the types of granules?

A. Granule delayed release

A small medicinal particle or grain to which an enteric or other coating has been applied, thus delaying release of the drug until its passage into the intestines.

B. Granule effervescent

A small particle or grain containing a medicinal agent in a dry mixture usually composed of sodium bicarbonate, citric acid, and tartaric acid which, when in contact with water, has the capability to release gas, resulting in effervescence.

20. What is a pellet?

A small sterile solid mass consisting of a highly purified drug (with or without excipients) made by the formation of granules, or by compression and molding.
21. What is a troche?

A discoid-shaped solid containing the medicinal agent in a suitably flavored base; troches are placed in the mouth where they slowly dissolve, liberating the active ingredients. Eg: Lotrimin (Clotrimazole)

22. What is the Indian concept of solid dosage forms?

1. Gudika
2. Choornam
3. Vatika

23. What is a liquid dosage form?

A dosage form consisting of a pure chemical in its liquid state.

24. Write down the examples of liquid dosage forms?

1. Solution
2. Suspension
3. Liniment
4. Lotion
5. Oil
6. Spray
7. Syrup
8. Tincture
9. Concentrate
10. Douche
11. Elixir

25. What is a solution?

A clear, homogeneous liquid dosage form that contains one or more chemical substances dissolved in a solvent or mixture of mutually miscible solvents. Eg: Balvidine M solution (Metronidazole, Povidone & Iodine)

25 (a) What are the types of solutions?

1. Concentrated
2. For flush
3. Drops Gel forming

26. What is mean by suspension?
A liquid dosage form that contains solid particles dispersed in a liquid vehicle. Eg: Aviband (Albendazole)

26. (a) Types of suspension?
   1. Extended released
   2. Drops

27. What is a liniment?

A solution or mixture of various substances in oil, alcoholic solutions of soap, or emulsions intended for external application.

28. What is lotion?

An emulsion, liquid dosage form. This dosage form is generally for external application to the skin.
Eg: Caladryl lotion (Calamine & Diphenhydramine hydrochloride)

28 (a) What is a lotion augmented?

A lotion dosage form that enhances drug delivery. Augmentation does not refer to the strength of the drug in the dosage form. NOTE: CDER has decided to refrain from expanding the use of this dosage form due to difficulties in setting specific criteria that must be met to be considered "augmented".

29. What is oil?
An unctuous, combustible substance which is liquid, or easily liquefiable, on warming, and is soluble in ether but insoluble in water. Such substances, depending on their origin, are classified as animal, mineral, or vegetable oils.

Eg: Oliade bath oil (Vit A, Vit D, Vit E, Olive oil)

30. What is a spray?

A liquid minutely divided as by a jet of air or steam

Eg: Lignox spray (Lidocaine)

30. What are the types of spray?

1. Spray metered - A non-pressurized dosage form consisting of valves which allow the dispensing of a specified quantity of spray upon each activation.

2. Spray suspension - A liquid preparation containing solid particles dispersed in a liquid vehicle and in the form of coarse droplets or as finely divided solids to be applied locally, most usually to the nasal-pharyngeal tract, or topically to the skin.

31. What is a syrup?

An oral solution containing high concentrations of sucrose or other sugars; the term has also been used to include any other liquid dosage form prepared in a sweet and viscid vehicle, including oral suspensions.

Eg: Avicot O (Sucralfate & oxythazine)

32. What is a tincture?

An alcoholic or hydroalcoholic solution prepared from vegetable materials or from chemical substances.

Eg: Iodine tincture

33. What is a concentrate?
34. **What is a douche?**

A liquid preparation, intended for the irrigative cleansing of the vagina, that is prepared from powders, liquid solutions, or liquid concentrates and contains one or more chemical substances dissolved in a suitable solvent or mutually miscible solvents.

35. **What is an elixir?**

A clear, pleasantly flavored, sweetened hydroalcoholic liquid containing dissolved medicinal agents; it is intended for oral use.

Eg: Merizyme (Fungal diastate & Pepsin)

36. **What is an irrigent?**

A sterile solution intended to bathe or flush open wounds or body cavities; they're used topically, never parenterally.

37. **What is a mouth wash?**
An aqueous solution which is most often used for its deodorant, refreshing, or antiseptic effect.

39. What is shampoo?

A liquid soap or detergent used to clean the hair and scalp and is often used as a vehicle for dermatologic agents. Eg: Exsel Shampoo (Selenium Sulfide)

40. What is meant by drops?

A solution which is usually administered in a drop-wise fashion.

Carmicide-D(Simethicone, Dill oil, Fennel oil)

41. What is the Indian concept of liquid dosage forms?

1. Arishta
2. Asava
3. Ghritha
4. Thaila

42. Write examples for gaseous dosage form?

1. Aerosole
2. Inhalents
3. Gas

43. What is an aerosole?

A product that is packaged under pressure and contains therapeutically active ingredients that are released upon activation of an appropriate valve system; it is intended for topical application to the skin as well as local application into the nose (nasal aerosols), mouth (lingual aerosols), or lungs (inhalation aerosols).

44. What are the types of aerosols?

1. Aerosol foam – A dosage form containing one or more active ingredients, surfactants, aqueous or nonaqueous liquids, and the propellants; if the propellant is in the internal (discontinuous) phase (i.e., of the oil-in-water type), a stable foam is discharged, and if the propellant is in the external (continuous) phase (i.e., of the water-in-oil type), a spray or a quick-breaking foam is discharged.
   Eg: Entofoam (Hydrocortisone acetate)

2. Aerosole metered: A pressurized dosage form consisting of metered dose valves which allow for the delivery of a uniform quantity of spray upon each activation.

3. Aerosole powder: A product that is packaged under pressure and contains therapeutically active ingredients, in the form of a powder, that are released upon activation of an appropriate valve system.

4. Aerosol spray: An aerosol product which utilizes a compressed gas as the propellant to provide the force necessary to expel the product as a wet spray; it is applicable to solutions of medicinal agents in aqueous solvents.

45. What is an inhalent?

A special class of inhalations consisting of a drug or combination of drugs, that by virtue of their high vapor pressure can be carried by an air current into the nasal passage where they exert their effect.

46. What is meant by gas?
Any elastic aeriform fluid in which the molecules are separated from one another and so have free paths.

47. What is a semisolid dosage form?
A semisolid dosage form is not pourable; it does not flow or conform to its container at room temperature. It does not flow at low shear stress and generally exhibits plastic flow behavior.

48. What are the examples of semisolid drug dosage forms?
1. Cream
2. Gel
3. Ointment
4. Paste
5. Jelly

49. What is cream?

An emulsion, semisolid dosage form, usually containing > 20% water and volatiles and/or < 50% hydrocarbons, waxes, or polyols as the vehicle. This dosage form is generally for external application to the skin or mucous membranes.

Eg – Prilox (Lidocaine & prilocaine)

50. What is a gel?

A semisolid dosage form that contains a gelling agent to provide stiffness to a solution or a colloidal dispersion. A gel may contain suspended particles.

Eg – Acidine (Dried Al(OH)3 gel, Mg, activated dimethicone)

52. What are the types of gel?

1. Gel dendrifice A combination of a dentifrice (formulation intended to clean and/or polish the teeth, and which may contain certain additional agents), and a gel. It is used with a toothbrush for the purpose of cleaning and polishing the teeth.

2. Gel metered - A gel preparation, with metered dose valves, which allow for the delivery of a uniform quantity of gel upon each activation.

53. What is an ointment?
A semisolid dosage form, usually containing <20% water and volatiles and >50% hydrocarbons, waxes, or polyols as the vehicle. This dosage form is generally for external application to the skin or mucous membranes.

Eg: Nitrogescic (Glyceryl trinitrate)

54. What is a salve?

A thick ointment or cerate, a fat or wax based preparation with a consistency between an ointment and a plaster.

55. What is mean by paste?

A semisolid dosage form, containing a large proportion (20 – 50%) of solids finely dispersed in a fatty vehicle. This dosage form is generally for external application to the skin or mucous membranes.

Eg: TESS (Triamcinolone)

56. What is a jelly?

A class of gels, which are semisolid systems that consist of suspensions made up of either small inorganic particles or large organic molecules interpenetrated by a liquid—in which the structural coherent matrix contains a high portion of liquid, usually water.

Eg: Gesicain (Lidocaine)

57. What is mean by an emulsion?

A dosage form consisting of a two-phase system comprised of at least two immiscible liquids, one of which is dispersed as droplets (internal or dispersed phase) within the other liquid (external or continuous phase), generally stabilized with one or more emulsifying agents

Eg: Cremaffin (Milk of magnesia& liquid paraffin )

58. What is the Indian concept of semisolid dosage forms?
   1. Lehyam
   2. Vatakam

59. What is a parenteral drug dosage form?
   Dosage forms of drugs that can be applied through parenteral route only.
   Eg: Injection

60. What is an injection?
   A sterile preparation intended for parenteral use
   Eg : Pepticool( Pentoprazol)

61. Types of injections?
   1. Emulsion- An emulsion consisting of a sterile, pyrogen-free preparation intended to be administered parenterally.
   2. Lipid
   4. Solution - A liquid preparation containing one or more drug substances dissolved in a suitable solvent or mixture of mutually miscible solvents that is suitable for injection.
   5. Suspension - A liquid preparation, suitable for injection, which consists of solid particles dispersed throughout a liquid phase in which the particles are not soluble. It can also consist of an oil phase dispersed throughout an aqueous phase, or vice-versa.

62. Rectal dosage forms?
   1. Enema
   2. Suppository : Dulcolax (Bisacodyl)

61(i). What is an enema?
A rectal preparation for therapeutic, diagnostic, or nutritive purposes
Eg : Laxicon (Docusate)

63. Vaginal dosage forms
1. Douche
2. Intrauterine device
3. Vaginal rings
4. Pessary (vaginal suppository)
5. Vaginal tablet

62(i). What is mean by a ring?

A small circular object with a vacant circular center that is usually intended to be placed in the body by special inserters, where the medication is released, generally for localized effects. Eg: NuvaRing (Etonogestrel/Ethinyl Estradiol)

64. Explain the nature of opthalmic drug dosage form?

The dosage form is a suspension of 10 to 300 micrometre particles in a liquid medium. The particles are made up of drug enclosed within a drug release rate-controlling material which bio erodes in the environment of the eye.
Eg : Leeflox eye drops (Levofloxacin)

65. What is a core extended release?

An ocular system placed in the eye from which the drug diffuses through a membrane at a constant rate over a specified period.