Pharma Unit

Pharmaceutics Top 10 Most Repeated Questions with Answers

According to New Syllabus ER 2020-21

1st Year D. Pharmacy

1) Define Pharmacopoeia? Write about Indian pharmacopoeia in detail?

Ans.

Pharmacopoeia is the standard book which helps in formulating the drugs. The book is published in almost every country under the authority of its own government. Pharmacopoeia is derived from Greek word Pharmakon – Drugs, Copoeia - Means to make

Indian Pharmacopoeia (IP): The Indian Pharmacopoeia is published by the Indian Pharmacopoeia commission (IPC) on behalf of the ministry of health and family welfare Government of India. Indian Pharmacopoeia Headquarter is in Ghaziabad (Uttar Pradesh). Indian Pharmacopoeia commission (IPC) is regulated by the Ministry of Health and Family Welfare. Indian Pharmacopoeia is written in English and the official title of monographs given in Latin.

1st Edition: The first attempt to publish in India's own book of standard was made in 1946. The Indian pharmacopeia list contains a list of drugs which were of medicinal value. For the preparation of pharmacopeia of India, the pharmacopeia of other countries like British, Europe, United States, Japan, national formulary, and Merck index were also used. The first edition of Indian pharmacopeia was published in 1955 by the controller of publications Delhi on the behalf of the government of India and ministry of health and family welfare. It was written in English and official titles of monographs were in Latin. It covered 986 monographs.

2nd edition: The second edition of Indian pharmacopeia was published in 1966 under the chairmanship of Dr. Nityanand. The official titles of monographs were in English. In all 274 monographs from IP 1955 and their supplements were deleted and 93 new monographs were added.

3rd edition: The third edition of Indian pharmacopeia was published in 1985 under the chairmanship of Dr. Nityanand. This edition of Indian pharmacopeia published in two volumes as volume one and volume two which included total of 261 new monographs were added and 450 monographs were deleted.

4th edition: 4th edition of IP was published in 1996 which contained 1149 monographs including 291 new monographs and 110 monographs were deleted and the titles of 142 monographs was changed. the 4th edition of IP was also presented in two volumes, Volume 1 and volume 2. Volume one contains the monographs from alphabet A to O and volume 2 contains the monograph from alphabet P to Z.

5th edition: The 5th edition of IP was published in 2007 by Indian pharmacopeia Commission in Ghaziabad. The 5th edition of pharmacopeia was presented in 3 volumes. The 5th edition of pharmacopeia included those herbal drugs which had supporting quality control standards. Monographs on vaccines Sera for human use, blood and blood related products, and biotechnological products were also added.

6th edition: The 6th edition of IP was published in 2010 by IPC Ghaziabad. This IP was also presented in three volumes volume 1 contains notices, acknowledgments, introduction, and general chapters. Volume 2 contains the monographs on dosage form, drug substance, pharmaceutical aids from A to M whereas volume 3 contains the monographs on drug substance dosage form and pharmaceutical aids from N to Z.

7th edition: The 7th edition of IP was published in 2014 and was presented in 4 volumes with DVD. It was released by Ghulam Nabi Azad under the chairmanship of PK Pradhan. In this edition 2548 monographs of drugs were added, 19 new radiopharmaceutical monographs were also added. Separate volumes of veterinary products with 143 monographs were also added.

8th edition: The 8th edition of IP was published in 2017 but made effective from 1st January 2018. This IP was also presented in four volumes, 220 new monographs were also added, and 7 monographs were omitted.

2) Define Tablets? Write advantages and disadvantages of tablets? Explain different defects of tablets?

Ans.

Definition: Tablet is defined as a compressed unit solid dosage form containing medicaments with or without excipients

Advantages of tablets

- Accuracy of dose of drug can be maintained
- Tablet is stable dosage form as compared to other dosage forms
- The cost of tablets is lower as compared to other dosage form
- Tablets are easy for transportation
- Tablets have elegant appearance
- Tablets have greatest physical chemical and microbial stability
- Any person can identify tablet easily

Disadvantages of tablets

- Tablets are difficult to swallow by small children and unconscious patients
- Drugs with poor wetting properties are difficult to manufacture as a tablet
- The drugs which are bitter in taste and have bad odour require special type of coating
- Tablets requires more time to show their action as compared to other dosage forms

Defects in tablets

1. Capping and lamination: capping is the partial or complete removal of top or bottom portion of the tablet's lamination is the breakdown of tablets in two or more layers

Reasons	Remedies
Excessive fines in granules	By reducing the percentage of fines
Defective punches and dies	Replace defective punches
Excessive drying of granules	Do not dry the granules too much

2. Chipping and cracking: chipping is the defect in which small pieces are broken off from the tablet cracking is the defect in which the tablet is cracked from anywhere

Reasons	Remedies
Due to damaged punches	Setting the dies and punches properly
Excessive fines in granules	By reducing the percentage of fines
Low level of binder	By using proper level of binders
Machine speed	Maintaining the speed of machine

3. Picking and sticking: In some case the material is picked up by the upper punch from the upper surface of the tablet is called as Picking. When material of tablet stick to the wall of dies is called a sticking

Reasons	Remedies
Presence of excessive moisture in granules	Drying the granules properly
Use of less quantity of lubricants	By using proper quantity of lubricants
Defect in dies and punches	By using proper set of punches and dies
Excess of powder in granules	By using proper quantity of powders

4. Mottling: An unequal distribution of color on the surface of tablet with light and dark portion appearing on the tablet is called as mottling

Reasons	Remedies
Difference in color of drug and excipients	Addition of appropriate coloring agent
Color dyes migration to either the small or large granules during granulation process	By reducing drying temperature
Uneven distribution of color	Mixing of color properly

5. Weight variation: When there is a change in weight of 1 tablet to another tablet is known as weight variation

Reasons	Remedies
Difference in the size of granules	Make the size of granules uniform
Speed of machine	Control the speed of machine
Flow of granules is not uniform from hopper to die	Make sure that the flow of granules is uniform

6. Hardness: It is the change in hardness from one tablet to another tablet. When did tablet do not have sufficient mechanical strength, and they do not have uniform hardness, and they break easily under pressure

7. Double impression: This defect occurs mostly in the tablet having a monogram on the lower punch. Lower punch moves slightly upward before the removal of the tablet, and this leads to a double impression of the monogram on the tablet.

3) Define Capsule? Write the difference between hard gelatin capsule and soft gelatin capsule?

Ans.

Definition: Capsules are unit solid dosage forms in which drug substance is enclosed within hard or soft soluble shell.

Hard Gelatine Capsule & Soft Gelatine Capsule

Hard Gelatine Capsule	Soft Gelatine Capsule
➢Hard gelatine capsule shell consists of two parts body and cap	➢Soft gelatine capsule shell consists of single unit
➢cylindrical in shape	➢Round, oval and tube-like shape
➢In hard gelatine capsule powder and granules can be filled	➢In soft gelatine capsule paste, ointments & creams can be filled
➢Filling and sealing of hard gelatine capsule can occur in different steps	➢Filling and sealing of soft gelatine capsule are done in one single step
➢Shell is completely dried	➢Shell is not perfectly dried
➢Eight different types of sizes are available	➢No specific size is available
➢Difficult to swallow because the shell is dry and hard	➢Easy to swallow since the shell are soft
➢Capsule shell are made up of hard gelatine	➢Capsule shell are made up of soft gelatine

4) Write a note on preservatives?

Ans.

Preservatives: A preservative is a natural or synthetic substance that is added to pharmaceutical products to prevent decomposition by microbial growth or by undesirable chemical changes. Preservatives inhibit the growth of bacteria, yeast and Molds that can cause disease.

Ideal properties of preservatives

- It should be non-toxic.
- It should protect the pharmaceutical product from microbial growth.
- It should be chemically stable.
- It should produce the desired effect.
- It should not change the chemical nature of the drug.
- It should give it effect in small quantities i.e., potent.

Types of preservatives with examples and uses:

1) Based on mechanism of action:

A) Antioxidant: The agent that prevent oxidation of drugs are called as antioxidants

Examples: Vitamin E, Vitamin C, Butylated hydroxytoluene, Butylated hydroxyanisole, etc.

Uses: antioxidants such as vitamin E are used as preservatives in pharmaceutical products to protect the drug from oxidation and deterioration. They are used in concentration of 0.001-0.05%.

B) Antimicrobial Agents: The agents that prevent or kill the microbes are called antimicrobial Agents.

Examples: sodium benzoate, methyl paraben, propylparaben, etc.

Uses: Antimicrobial agents such as Methylparaben is used in almost all types of pharmaceutical formulation, it may be used either alone or in combination with other parabens. Methylparaben is most effective against yeast and molds.

Propyl paraben as a preservative is used in cosmetics such as creams, lotions, shampoos, and soaps. It is also used in food as preservatives.

Sodium Benzoic is used as preservative in concentration of 0.02 to 0.5% in oral medicines, 0.5%. In parenteral products and 0.1 to 0.5% in cosmetics

C) Chelating Agents: These are the agents which form the complex with the pharmaceutical ingredients and prevent degradation of pharmaceutical products.

Examples: Disodium ethylenediamine tetraacetic acid(EDTA), Poly phosphates, citric acids, etc.

Uses: EDTA is used as a preservative for pharmaceutical products.

2) Based on source:

A) Natural Preservatives: These are the substances obtained from natural sources such as plant minerals and animals.

Examples: Neem oil, sodium chloride, lemon, honey, etc

Uses: Natural preservatives are Used to protect the drug from microbes.

B) Artificial Preservatives: These are the preservatives prepared by chemicals that are effective in small concentrations.

Examples: Benzoates, sorbates, nitrites, etc.

Uses: Artificial preservatives are used in almost all the drugs to prevent deterioration of drugs from microorganisms during storage.

5) What are NDDS? Give the classification of NDDS? Write advantages and disadvantages of NDDS?

Ans.

Definition: Novel drug delivery system refers to the approaches, formulations, technologies and systems for transporting of pharmaceutical compounds in a body as needed to safely achieve its desired therapeutic effect.

Classification:

1) Based on particle size
   - Microsized: Microsphere, Microsponge, Microcapsule
   - Nanosized: Liposome, Niosome, Nanoparticles

2) Based on Carrier: Liposome, Niosome, Microcapsule, Microsphere, Nonosponge, Dendrimers, Hydrogel, Implants, Occuserts, Micelles
3) Based on Mode of Action: Transdermal drug delivery, Gastroretentive drug delivery, Mucosal drug delivery, Osmotic drug delivery
4) Based on drug release mechanism, Dissolution controlled release, Diffusion controlled release, Dissolution & Diffusion controlled release

Advantages

- Total dose is low
- This drug delivery system reduces gastrointestinal side effects
- This drug delivery system reduces dosing frequency
- It has better patient acceptance
- The effect of drug is more uniform

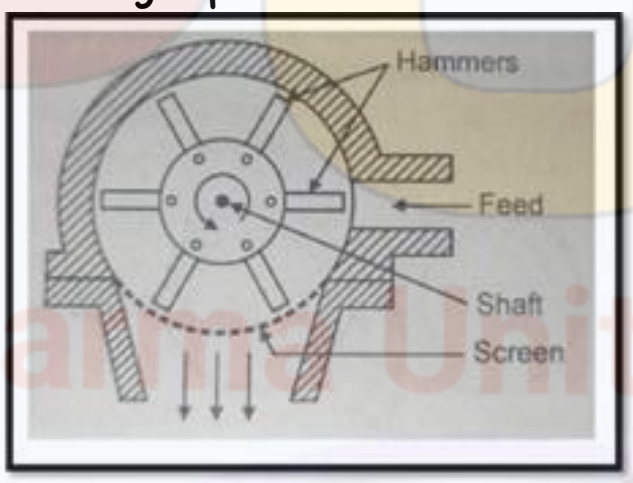
Disadvantages

- Dose dumping
- This drug delivery system requires additional patient education
- This drug delivery system has stability problem
- Cost of formulation is high

6) Explain the principle, construction, working and application of Hammer mill?

Ans.

Principle: It operates on the principle of impact i.e. the size of material is reduced when the material is hitted by a moving object at high speed.



Construction

- It consists of metal casing enclosing a central shaft to which four or more swinging hammers are attached, the hammers are sharp and very hard.
- The lower part of the casing consists of a screen through which material is passed and collected out when a desirable degree of size reduction is achieved.
- The shaft is rotated with an electric motor.
- In the hammer mill one opening is also present which is called a feed through which the material Is added for size reduction.
- The speed of the motor is 1000 to 5000 rpm.

Working

- Whole hammer mill is started by using electricity
- The material is put into the hopper which is passed into hammer mill through feed

- The material is reduced to small size due to fast rotation of hammers
- When material achieves the desired size passes through the screen

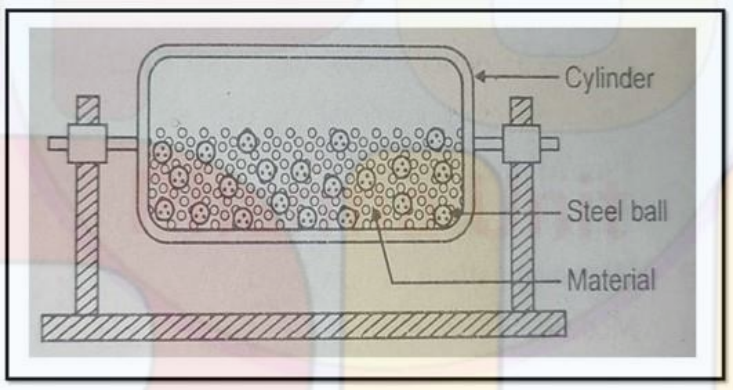
Applications

- Hammer mill can be used to crush play large fibrous materials into small
- Hammer mill is also used to reduce the size of large brittle material
- Hammer mill is also used to produce different grades of powders
- Hammer mill is also used four powdering of leaves, barks, roots

7) Explain the principle, construction, working and application of Ball mill?

Ans.

Principle: Ball mill works on the principle of combine impact and attrition. If material is hitted by a continuously moving ball then an impact mechanism occurs, and if material is present in between the two balls the attrition mechanism will occur.



Construction

- It consists of hollow metallic cylinder mounted on a metallic frame rotated on its longitudinal axis
- The cylinder contains ball made up of steel or rubber which occupy 30 to 50% volume of the cylinder
- The ball size depends upon the size of mill and diameter of mill, if the size of the cylinder is small then the size of the ball will also be small and if the size of the cylinder is big then the size of the ball will also be big.
- The cylinder has diameter of about 1 to 3 meters

Working

- The material or the drugs whose size to be reduced are put into the cylinder of the ball mill with the metallic balls.
- The speed of the rotation is very important in case of a ball mill.
- After putting drugs and balls in the cylinder we must close the cylinder tightly and set the speed of rotation.
- The speed of rotation is very critical, if the speed is low then the ball will slide over each other and if this speed is very high then the ball is thrown to the wall of the cylinder and hence no size reduction will take place. But at optimum and correct speed balls are carried to the top of the cylinder and then the ball falls on the material which results in the size reduction.
- After suitable time when the desired size reduction take place, we stop the machine and the material with balls are taken out from the cylinder and the materials are separated from the balls

Applications

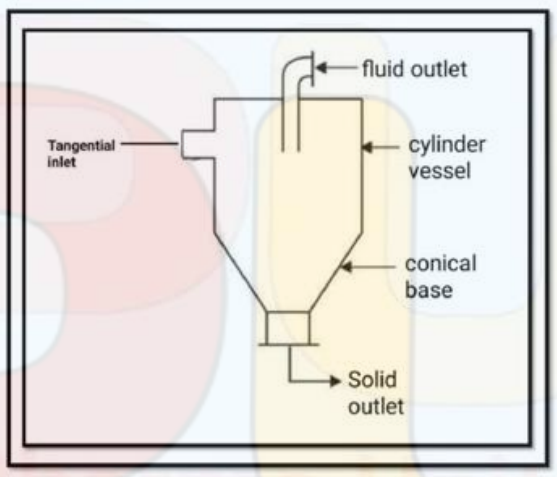
- Ball mill is used for grinding of hard solid material
- Ball mill is also used for grinding of wet pharmaceutical material
- Ball mills is also used to grind brittle drugs into small and fine particles
- Ball mill is also used for grinding of ores
- Ball mill is also used for reducing the size of sticky pharmaceutical material

8) Explain the principle, construction and working of Cyclone separator?

Ans.

Principle: In cyclone separator centrifugal force is used to separate solids from fluid, the separation depends upon particle size and density of particles. Cyclone separator is used to separate all types of particles depending on the fluid velocity, otherwise it can be also used to separate only coarse particles while fine particles are carried out with the fluid.

Construction



- It consists of cylindrical vessel with a conical base
- Upper part of vessel consists of tangential inlet
- A fluid outlet is present at the topmost position in centre of the cylindrical vessel
- Solid outlet is fitted at the base of cylindrical vessel
- Cyclone separator is available in different shapes and sizes

Working: The suspension of a solid in gas (usually air) is introduced tangentially through tangential inlet at very high velocity so that Rotary moments take place within the vessel. The fluid is removed from the central fluid outlet present at the top position of the cylindrical vessel; if any fine particle is present then this fine particle is also removed with fluid from the fluid outlet. The Solid particles are thrown to the walls and fall to the conical base of the cylinder and collected through solid outlets.

Application

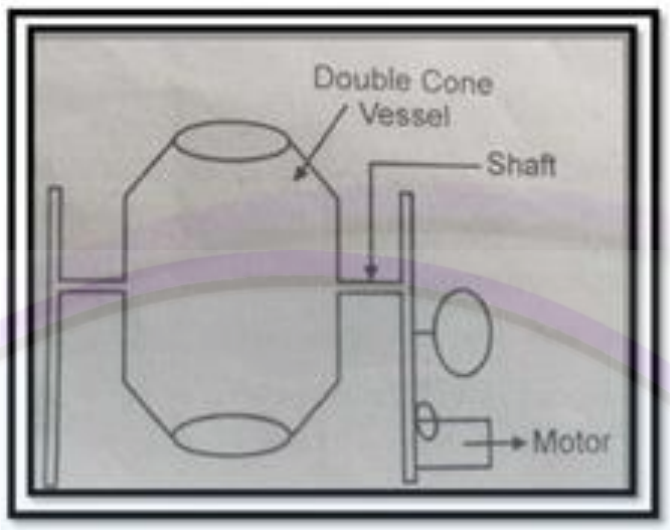
- Separation of suspension of solid in gas or liquid
- It is also used for separation of fine particle from coarse granules

9) Explain the principle, construction and working of Double cone blender?

Ans.

Principle: Double cone blender works on the principle of tumbling and shear action i.e., the mixing of powder take place due to tumbling action (Due to rotation of vessel) and shear action with the blades

Construction



- Double cone blender is also called as twin shell blender
- It consists of two cone shaped vessel mounted on a shaft
- Inside the vessel agitator blades are also present
- Double cone blender is made up of stainless steel and available in different capacities ranging from 5Kg to 200Kg or more
- The speed of rotation of double cone blender is about 30 to 100 rpm

Working: The solid to be mixed is taken in the conical shape vessel. Due to rotation the powder starts to mix. When the vessel starts to rotate the powdered material moves along the side of the vessel and it reaches to the top position then from the top position the powder falls at the bottom of the vessel and thus mixing takes place. As the vessel rotates the material undergoes tumbling motion and agitator blades provide shearing action to the material and mixing takes place thoroughly.

Application

- Double cone mixer is used for mixing the powder of different densities
- It is also used for mixing of granules
- It is also used for dry powder to wet mixing
- It is also used for mixing of chemicals which are used in cosmetic products

10) Write the difference between Suspension and emulsion, syrup and elixir, cream and ointment?

Ans.

A) Suspension and Emulsion

Emulsion	Suspension
1. It is Heterogeneous mixture of two immiscible liquids	1. It is heterogeneous mixture of solid and liquid

2. Dispersed particle do not settle on standing	2. Dispersed particles settle on standing
3. Dispersed particle size is 1 to 1000nm	3. Dispersed particle size is more than 1000nm
4. Particles are not visible through the naked eye	4. Particles are visible through the naked eye
5. It cannot be separated by filtration	5. It can be separated by filtration
6. Emulsifying agent is required	6. Suspending agent is required
7. Freezing should be avoided during storage as it leads to cracking	7. Freezing should be avoided during storage as it leads to aggregation

B) Syrup and Elixir

Syrup	Elixir
1. Alcohol is not used in syrup	1. Alcohol is used in elixir
2. Sweeter than elixir	2. Less sweet than syrup
3. More viscous than elixirs	3. Less viscous than syrup
4. Amount of sugar is high	4. Amount of sugar is low
5. Syrups are less stable	5. Elixirs are more stable
6. It cannot be used for diabetic patient	6. It can be used for diabetic patient
7. May not be a clear formulation	7. These are clear formulations

C) Cream and Ointment

Cream	Ointment
1. Quickly absorbed by the skin	1. Not easily absorbed
2. Consistency is lighter	2. Consistency is thicker
3. Less greasy	3. More greasy
4. Cream have a lower concentration of oil than ointment	4. Ointment have a higher concentration of oil than cream
5. Spreading ability is high	5. Spreading ability is low
6. Healing power of cream is fast	6. Healing power of cream is slow

All The Best For Your Exam

Very Imp Note:

- Please Read All the chapters very carefully before Pharmaceutics Exam.
- These questions are only for the reference purpose.