



RRB PHARMACIST

2024

MODEL PAPER -1

TIME:-

9 P.M

40 QUESTIONS

WITH DETAILED EXPLANATION

SUBJECT -

PHARMACEUTICS

VIDEO DEKHNE KE LIYE BANNER PAR CLICK KARE

1.

The first edition of Indian Pharmacopoeia was published in

- (a) 1955
- (b) 1966
- (c) 1947
- (d) 1945

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EDITIONS OF INDIAN PHARMACOPOEIA

Edition	Year	Addendum	Chairmanship	Volume
1 st	1955	1960	Dr. B. N. Ghose	1
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8 th	2018	2019/ 2021	Dr. C.K. Mishra	4
9 th	2022	-	Dr Mansukh Mandaviya	4

2.

Who publish the Indian Pharmacopoeia

- (a) Central Governor
- (b) Central drug laboratory
- (c) Ministry of Health and Family Welfare
- (d) Central Indian Pharmacopoeial Laboratory

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Indian Pharmacopoeia (IP) is published by the **Indian Pharmacopoeia Commission (IPC)** on behalf of the **Ministry of Health & Family Welfare, Government of India** in fulfillment of the requirements of the **Drugs and Cosmetics Act, 1940** and **Rules 1945** there under.

3.

International pharmacopoeia is published by

- (a) UNCTAD
- (b) WHO
- (c) UNICEF
- (d) UNESCO

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- (b) WHO
- (c) UNICEF
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The International Pharmacopoeia is published by WHO with the aim to provide specifications and test methods for priority medicines of major public health importance, for example listed in the WHO Model list of Essential Medicines, recommended by specific WHO disease programs, as well as medicines for children.

4.

Which of the following provides the best definition of Pharmaceutics

- (a) It is the study of dosage form design including associated manufacturing techniques
- (b) It is the study of the effect that the body has on drug
- (c) It is the study of how drugs can be chemically synthesized
- (d) It is the study of the effect that drugs have on the body

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Which of the following provides the best definition of Pharmaceutics

- (a) It is the study of dosage form design including associated manufacturing techniques
- (b) It is the study of the effect that the body has on drug
- (c) It is the study of how drugs can be chemically synthesized
- (d) It is the study of the effect that drugs have on the body



Pharmaceutics is the discipline of pharmacy that deals with the process of turning a new chemical entity or old drugs into a medication to be used safely and effectively by patients. **Pharmaceutics helps relate the formulation of drugs to their delivery and disposition in the body.**

5.

IP 2015 incorporates

- (a) 1550 monographs
- (b) 2050 monographs
- (c) 2550 monographs
- (d) 3050 monographs

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- (a) 1550 monographs
- (b) 2050 monographs
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- (d) 3050 monographs

2010	I.P 6 th edition	2000 old, 287 new & more than 600 have been updated.	Volume 1st - structures of I.P.C
			Volume 2nd - general monograph on dosage form, & pharmaceutical aid (A to M).
			Volume 3rd - dosage forms (N to Z) monograph on vaccines, herbal products & veterinary products
2014	I.P 7 th edition	2548	APLS, excipients, dosage forms and herbal products crude herbal drugs and their extracts.
2018	I.P 8 th edition	4 volumes	53 Fixed Dose Formulations. 02 Excipients. 02 Antibiotics. 15 New Herbs and Herbal Products Monographs
2022	I.P 9 th edition	3152	92 new monographs including 60 Chemical, 21 Vitamins, Minerals, Amino acids, Fatty acids etc.,

6.

The first edition of British Pharmacopoeia was published in which year

- (a) 1854
- (b) 1857
- (c) 1864
- (d) 1867

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The first edition of British Pharmacopoeia was published in which year

- (a) 1854
- (b) 1857
- (c) 1864
- (d) 1867

British Pharmacopoeia



Edition	Year	Description
1 st	1864	Due to the fusion of the three pharmacopoeias by the General Medical Council, it superseded the London Pharmacopoeia
2 nd	1867	Improved version of previous
3 rd	1885	Improved version of previous
4 th	1898	Improved version of previous
5 th	1914	Improved version of previous
latest	2024	Improved version of previous

7.

Indian Pharmacopoeia uses

- (a) Metric system
- (b) Avoirdupois system
- (c) Apothecaries system
- (d) All of these

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Indian Pharmacopoeia uses

- (a) Metric system
- (b) Avoirdupois system
- (c) Apothecaries system
- (d) All of these

Year	Edition	No. of monographs	Content contains
1955	I.P 1 st edition	986	crude drugs, chemicals, biological and several formulae
1966	I.P 2 nd edition	890 & 41 appendices	Doses given in metric system/ vegetables drugs like Jatamansi, Rasna, Vidang and antibiotics like Bacitracin, Neomycin

8.

Latest edition of Indian Pharmacopoeia was published in the year

- (a) 1996
- (b) 2022
- (c) 2010
- (d) 2007

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Latest edition of Indian Pharmacopoeia was published in the year

- (a) 1996
- (b) 2022**
- (c) 2010
- (d) 2007

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7 th	2014	2015/ 2016	Nabi Azad	4
8 th	2018	2019/ 2021	Dr. C.K. Mishra	4
9 th	2022	-	Dr Mansukh Mandaviya	4

9.

The second edition of the Indian Pharmacopoeia was published in

- (a) 1947
- (b) 1955
- (c) 1966
- (d) 1975

9.

The second edition of the Indian Pharmacopoeia was published in

- (a) 1947
- (b) 1955
- (c) 1966
- (d) 1975

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10.

In which year the government of India constituted a permanent Indian Pharmacopoeia committee

- (a) 1955
- (b) 1948
- (c) 1960
- (d) 1945

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- (a) 1955
- (b) 1948
- (c) 1960
- (d) 1945

HISTORY OF INDIAN PHARMACOPOEIA

- The government of India published the Indian Pharmacopoeial list in 1946 as a supplement to the British Pharmacopoeia (B.P.).
- The Indian Pharmacopoeial list contained about 180 monograph & a number of appendices prepared on the lines of the B.P.
- After the publication of the Indian Pharmacopoeial list, the government of India constituted 11 members Indian Pharmacopoeial committee in 1948 for the preparation of Pharmacopoeia of India.
- The first edition of Pharmacopoeia of India was compiled and then published in 1955.



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11.

Which of the following test is NOT official as per Indian Pharmacopoeia

- (a) Uniformity of content
- (b) Uniformity of weight
- (c) Uniformity of colour
- (d) Disintegration

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- (a) Uniformity of content
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- (c) Uniformity of colour
- (d) Disintegration

EVALUATION OF TABLET

NON OFFICIAL TESTS

- 1) General appearance
 - I) Organoleptic
 - II) Size & Shape
- 2) Hardness
- 3) Friability

OFFICIAL TEST

- 1) Weight Variation
- 2) Content uniformity
- 3) Dissolution
- 4) Disintegration

12.

In 1885, which of the following Pharmacopoeias was made official in India

- (a) Indian Pharmacopoeia
- (b) European Pharmacopoeia
- (c) United States
- (d) British Pharmacopoeia

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- (c) United States
- (d) British Pharmacopoeia

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13.

The number of newly added monographs in Indian Pharmacopoeia 2022 is

- (a) 92
- (b) 74
- (c) 63
- (d) 103

13.

The number of newly added monographs in Indian Pharmacopoeia 2022 is

- (a) 92
- (b) 74
- (c) 63
- (d) 103



I.P 2022

2022	I.P 9th edition	3152	92 new monographs including 60 Chemical, 21 Vitamins, Minerals, Amino acids, Fatty acids etc.,
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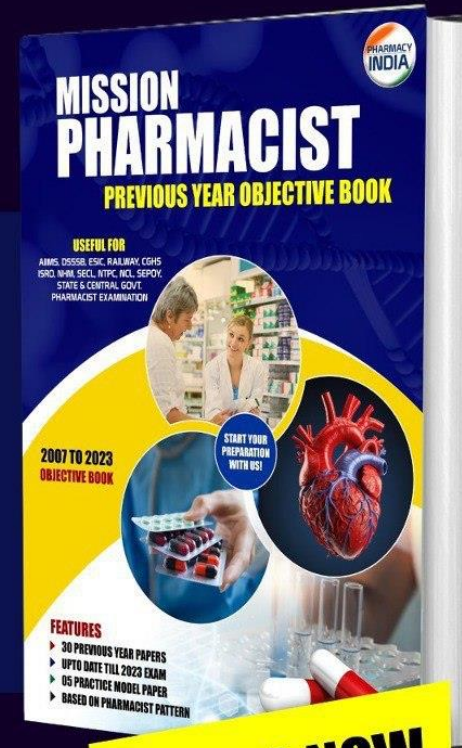
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14.

The latest Martindale edition is the

- (a) 29th
- (b) 40th
- (c) 42th
- (d) 33rd

14.

The latest Martindale edition is the

- (a) 29th
- (b) 40th
- (c) 42th
- (d) 33rd



As of June 2024, there have been 41 editions of Martindale: The Complete Drug Reference, with the 41st edition being the final print edition. The 40th edition was published in May 2020.

15.

The standard for Insulin was introduced in the USP in the year

- (a) 1937
- (b) 1938
- (c) 1941
- (d) 1949

15.

The standard for Insulin was introduced in the USP in the year

- (a) 1937
- (b) 1938
- (c) 1941
- (d) 1949



The United States Pharmacopoeia (USP) introduced its first official insulin standard in November 1941. The USP worked with the FDA and other stakeholders to develop the standard in less than a month to ensure patients would continue to have access to insulin, a lifesaving product, as the patent on it was about to expire.

16.

Which is an Extra Pharmacopoeia

- (a) BP
- (b) BPC
- (c) IP
- (d) Martindale

16.

Which is an Extra Pharmacopoeia

- (a) BP
- (b) BPC
- (c) IP
- (d) Martindale

EXTRA PHARMACOPOEIA

MARTINDALE

- The Extra Pharmacopoeia originally produced by **William Martindale in 1883** and published by the **Pharmaceutical Society of Great Britain**.
- It contains information of the drugs currently used in Great Britain.
- It is a reference book listing 6,000 drugs and medicine used worldwide, including descriptions of more than 180,000 proprietary preparations.
- It also includes nearly 700 disease treatment reviews.



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WISE TEST**



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17.

The supplement for Indian Pharmacopoeia in 2000 was introduced to include which of the following

- (a) Liposomal products
- (b) Veterinary products
- (c) Herbal drugs
- (d) Vaccines

17.

The supplement for Indian Pharmacopoeia in 2000 was introduced to include which of the following

- (a) Liposomal products
- (b) Veterinary products**
- (c) Herbal drugs
- (d) Vaccines



IP 1996 Supplement

- The 2000 supplement to the Indian Pharmacopoeia (IP) included 208 monographs and four appendices for veterinary products. The supplement was published in response to the increasing number of drugs being produced in India.

18.

After independence, in which year Indian Pharmacopoeia was made official in India

- (a) 1949
- (b) 1980
- (c) 1948
- (d) 1947

18.

After independence, in which year Indian Pharmacopoeia was made official in India

- (a) 1949
- (b) 1980
- (c) 1948
- (d) 1947

Indian Pharmacopoeia

- **Indian Pharmacopoeia Headquarter - Ghaziabad (Uttar Pradesh).**
- After publication of Indian Pharmacopoeial list the government of India constituted a permanent Indian Pharmacopoeia committee in 1948.

19.

As per Indian Pharmacopoeia, a tablet should not be

- (a) Round shaped
- (b) Flat spherical
- (c) Bi-convex spherical
- (d) Star shape

19.

As per Indian Pharmacopoeia, a tablet should not be

- (a) Round shaped
- (b) Flat spherical
- (c) Bi-convex spherical
- (d) Star shape

Tablet as per IP

- Tablet is defined as a compressed solid dosage form containing medicaments with or without excipients. According to the Indian Pharmacopoeia Pharmaceutical tablets are solid, flat or biconvex dishes, unit dosage form, prepared by compressing a drug or a mixture of drugs, with or without diluents.

20.

The third edition of Indian Pharmacopoeia (IP) was published in

- (a) 1985
- (b) 1990
- (c) 1960
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21.

Supplement to IP 1955 was published in the year

- (a) 1985
- (b) 1959
- (c) 1960
- (d) 1961

21.

Supplement to IP 1955 was published in the year

- (a) 1985
- (b) 1959
- (c) 1960
- (d) 1961

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22.

Indian pharmacopoeia of India has adopted type of classification system

- (a) Morphological
- (b) Pharmacological
- (c) Chemical
- (d) Alphabetical

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Indian Pharmacopoeia

- The alphabetical system of classification was adopted in Indian Pharmacopoeia e.g., A → Aspirin, B → Bumetanide, C → Cetirizine etc.

23.

Which of the following is NOT an unofficial pharmacopoeia

- (a) British Pharmaceutical Codex
- (b) Remington's Pharmaceutical Sciences
- (c) Merck Index
- (d) The United States Dispensary

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- (c) Merck Index
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History of British Pharmacopoeia

- The first list of approved drugs with information on how they should be prepared was the **London Pharmacopoeia** published in **1618**.
- In 1907 the British Pharmacopoeia was supplemented by the **British Pharmaceutical Codex**, which gave information on drugs and other pharmaceutical substances not included in the BP, and provided standards for these.

24.

How many no. of monographs does the IP 7th edition contains

- (a) 1584
- (b) 2548
- (c) 2594
- (d) 2586

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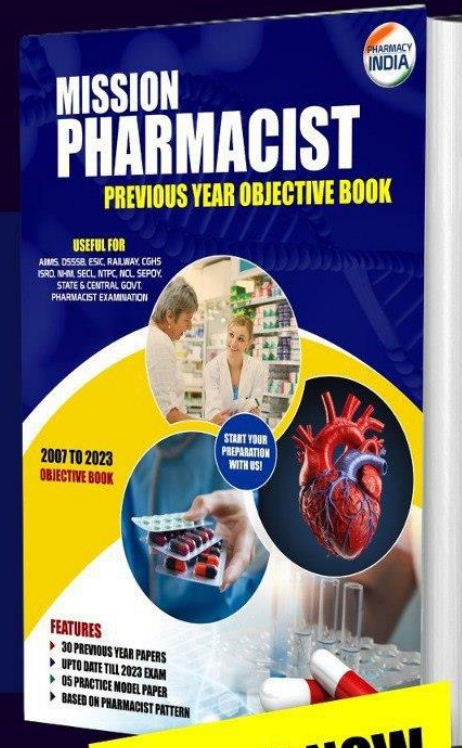
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IP 2014

- The IP 2014 incorporates 2548 monographs of drugs out of which 577 are new monographs consisting of APIs, excipients, dosage forms, herbal products, biotechnology products and radiopharmaceuticals etc.

25.

The third edition of the India Pharmacopoeia was published in under the chairmanship of

- (a) 1966 & Dr. B. Mukherji
- (b) 1985 & Dr. Nityanand
- (c) 2022 & Dr. Mansukh Mandaviya
- (d) 1955 & Dr. B. N. Ghosh



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- (c) 2022 & Dr. Mansukh Mandaviya
- (d) 1955 & Dr. B. N. Ghosh

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26.

Choose the wrong statement from the following with regard to amorphous solids

- (a) Usually they are anisotropic
- (b) They tend to flow when subjected to sufficient pressure
- (c) Considered as super cooled fluids
- (d) They do not have definite melting point

26.

Choose the wrong statement from the following with regard to amorphous solids

- (a) Usually they are anisotropic
- (b) They tend to flow when subjected to sufficient pressure
- (c) Considered as super cooled fluids
- (d) They do not have definite melting point

Difference between Amorphous & Crystalline Forms

Crystalline Solids	Amorphous Solids
Long range orderly arrangement of constituents	Short range random arrangement of constituents
Definite shape	Indefinite shape
Generally crystalline solids are anisotropic in nature	They are isotropic like liquids
They are true solids	They are considered as pseudo solids or super cooled liquids
Definite heat of fusion	Heat of fusion is not definite
They have sharp melting points	Gradually soften over a range of temperature and so can be moulded
Examples – NaCl, Diamond etc.	Examples – Rubber, Plastics, Glass etc

27.

The polymorphs exhibit the following different properties EXCEPT

- (a) X-ray crystal and diffraction patterns
- (b) Melting points
- (c) Solubility
- (d) Chemical structures

27.

The polymorphs exhibit the following different properties EXCEPT

- (a) X-ray crystal and diffraction patterns
- (b) Melting points
- (c) Solubility
- (d) Chemical structures

POLYMORPHISM

Polymorphs

Substance exists in more than one crystalline form.

Polymorphs are different from each other from - Solubility, Melting point, Density, Hardness, Compression.

• **Order of solubility - Amorphous > Metastable > Stable**

Method to determine polymorphism

i. X-ray diffraction

ii. NMR technique

iii. Optical crystallography

iv. Hot stage microscopy

v. Melting point determination

Two types of polymorphs

Enantiotropic polymorph

One which can be reversibly changed into another form by altering the temperature or pressure.
Example sulphur

Monotropic polymorph

One which is unstable at all temperatures and pressures. Example: Glyceryl stearates.

28.

Which of the following statements regarding polymorphs is true

- (a) Polymorphic forms of the same drug are similar and can be substituted in a formulation
- (b) Different polymorphic forms of the same drug have identical X-ray diffraction patterns
- (c) The metastable polymorphic forms will generally result in a higher dissolution rate
- (d) All of these

28.

Which of the following statements regarding polymorphs is true

- (a) Polymorphic forms of the same drug are similar and can be substituted in a formulation
- (b) Different polymorphic forms of the same drug have identical X-ray diffraction patterns
- (c) The metastable polymorphic forms will generally result in a higher dissolution rate
- (d) All of these

Polymorphs

- The metastable form has high solubility and rate of dissolution as compared with the crystalline form and if we consider the chemical degradation, the solid crystalline form is more stable, so they are preferred for a pharmaceutical suspension (fluorides are the most stable while iodides are the least stable).

29.

Which of the following substances liberate water of crystallization

- (a) Hygroscopic
- (b) Efflorescent
- (c) Deliquescent
- (d) Eutectic mixtures

29.

Which of the following substances liberate water of crystallization

- (a) Hygroscopic
- (b) Efflorescent**
- (c) Deliquescent
- (d) Eutectic mixtures

- **Efflorescence** - Substances can lose water of crystallization through a process called efflorescence, which occurs when the crystals are exposed to dry air, even for a short time.
- **Deliquescent** - If a hygroscopic substance absorbs so much moisture that an aqueous solution is formed, the substance becomes deliquescent.

30.

Which of the following method is used to determine flow property of powders

- (a) Angle of repose
- (b) Sedimentation
- (c) Deflocculation
- (d) None of these

30.

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- (a) Angle of repose
- (b) Sedimentation
- (c) Deflocculation
- (d) None of these

Angle of repose - It is the maximum angle possible between surface of the pile of the powder and horizontal plane.

1. Fixed cone method

$$\theta = \tan^{-1} \frac{h}{r}$$

Where, $\theta \rightarrow$ Angle of repose

$h \rightarrow$ Height of pile

$r \rightarrow$ Radius of the base of pile

2. Rotating cylinder method

3. Tilted box method

ANGLE OF REPOSE	POWDER FLOW
< 25	Excellent
25 - 30	Good
30 - 40	Passable
> 40	Very poor

Addition of glidant, may improve flow of powder but in low concentration

31.

Photon correlation spectroscopy is associated with

- (a) Shape & surface morphology determination
- (b) Surface area determination
- (c) Particle size determination
- (d) All of these

31.

Photon correlation spectroscopy is associated with

- (a) Shape & surface morphology determination
- (b) Surface area determination
- (c) Particle size determination
- (d) All of these

METHODS FOR PARTICLE SIZE DETERMINATION

- Coulter Counter method
- Elutriation
- Surface method
- Fluid classical method
- X-ray diffraction method
- Photon correlation spectroscopy
- Cascade Impactor, for aerosols (0.1-80 microns)
- Rotating drum method (0.5-1000 microns)

32.

The instrument used to measure particle size is

- (a) Coulter counter
- (b) Sorptometer
- (c) Tonometer
- (d) Osmometer

32.

The instrument used to measure particle size is

- (a) Coulter counter
- (b) Sorptometer
- (c) Tonometer
- (d) Osmometer

COULTER COUNTER METHOD

- It operates on the principle that when a particle suspended in a conducting liquid passes through a small orifice (opening), on either side of which are electrodes, a change in electric resistance occurs.
- The coulter counter is a popular instrument for measuring the particle volume & particle size.

33.

Hot stage microscopy is a tool for the study of

- (a) Pseudopolymorphism
- (b) Particle size measurement
- (c) Microbial contamination
- (d) Compaction behavior

33.

Hot stage microscopy is a tool for the study of

- (a) Pseudopolymorphism
- (b) Particle size measurement
- (c) Microbial contamination
- (d) Compaction behavior

Polymorphism



- Analytical methods for the characterization of solid forms:
 - ✓ Microscopy
 - ✓ Hot stage microscopy
 - ✓ Thermal analysis
 - ✓ X-ray diffraction
 - ✓ Infrared (IR) spectroscopy
 - ✓ Proton magnetic resonance (PMR)
 - ✓ Nuclear magnetic resonance (NMR)
 - ✓ Scanning electron microscopy (SEM)

34.

The solvates can exist in different crystalline forms called as

- (a) Enantiotropic
- (b) Monotropic
- (c) Pseudopolymorphs
- (d) Amorphous

34.

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Pseudopolymorphism

- Solvates, also known as pseudopolymorphs, can exist in different crystalline forms. Solvates are crystalline solids that form during crystallization with the help of a solvent, and incorporate solvent molecules into their crystal lattice.



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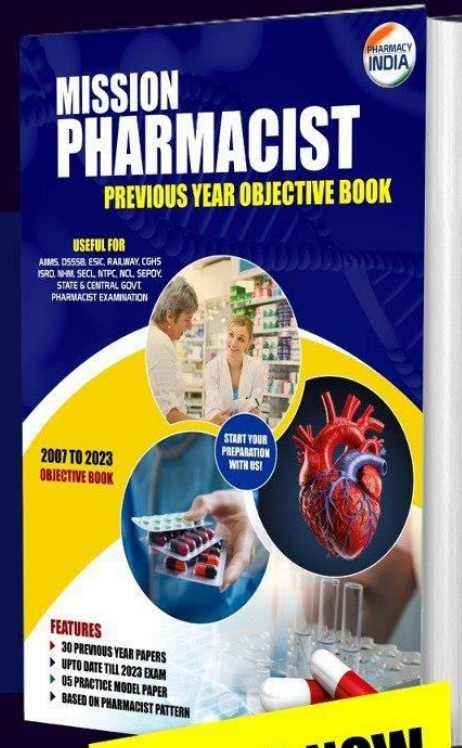
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35.

Which polymorphic form of a drug candidate has highest melting point

- (a) Unstable
- (b) Metastable
- (c) Hydrates
- (d) Stable

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Stability Characteristics

- Classified as two forms of Polymorphs based on relative stability;
 1. Stable form
 2. Meta form
- Stable polymorph represents the lowest energy state, has highest melting point and least aqueous solubility.
- Metastable form represent the higher energy state, have lower melting point and high aqueous solubility.
- Metastable form converted to the Stable form due to their higher energy state.
- Dissolution rate: amorphous > metastable > stable.

36.

Which of the following is NOT a semisolid dosage form

- (a) Paste
- (b) Creams
- (c) Hydrates
- (d) Suspension

36.

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- (a) Paste
- (b) Creams
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Suspension

- ✓ **Pharmaceutical suspension** may be defined as a dispersion in which insoluble solids (drugs) are suspended in a liquid medium .
- ✓ Pharmaceutical suspension is a heterogeneous system consisting of two phases in which internal phase is dispersed uniformly throughout the external phase.

37.

Part of Compression machine which holds the upper & lower punch is known as

- (a) Die cavity
- (b) Turrets
- (c) Cam track
- (d) Hopper

37.

Part of Compression machine which holds the upper & lower punch is known as

- (a) Die cavity
- (b) Turrets**
- (c) Cam track
- (d) Hopper

Explanation -

Hopper	For holding & feeding granulation to be compressed.
Dies	Defines the size and shape of the tablet
Punches	Used for compression of granulation with the die.
Cam track	Guide the movement of the punches.
Turrets	Hold upper and lower punches.
Feeding Machine	Used for moving granulation from the hopper to the dies.
Die table	Portion holding the dies.

38.

Which of the following is a type of Oral dosage form

- (a) Aerosol
- (b) Nebulizer
- (c) Subcutaneous administration
- (d) Tablet

38.

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- (a) Aerosol
- (b) Nebulizer
- (c) Subcutaneous administration
- (d) Tablet

Tablet

According to the Indian Pharmacopoeia

:- Pharmaceutical tablets are solid, flat or biconvex dishes, unit dosage form, prepared by compressing a drug or a mixture of drugs, with or without diluents meant for oral administration.

39.

Which of the following types is an inhalation dosage forms

- (a) Aerosols
- (b) Suppositories
- (c) Capsules
- (d) Tincture



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39.

Which of the following types is an inhalation dosage forms

- (a) Aerosols
- (b) Suppositories
- (c) Capsules
- (d) Tincture

Aerosol

"Aerosol is a pressurized dosage forms containing one or more therapeutic active ingredients which upon actuation emit a fine dispersion of liquid and/or solid materials in a gaseous medium".

Pharmaceutical Aerosol is defined as aerosol product containing active ingredients dissolved ,suspended or emulsified in a propellant or a mixture of solvent and propellant and intended for oral or topical administration or for administration into the eye, nose ,ear, rectum and vagina.

- **In 1942** - First aerosol was developed. (insecticide)
- **In 1950** - Pharmaceutical aerosol for topical administration was developed.
- **In 1955** - Aerosol for the local activity in the respiratory tract was developed (Epinephrine).

40.

Drugs converted to suitable forms are known as

- (a) Dosage form
- (b) Excipients
- (c) API
- (d) Diluents

40.

Drugs converted to suitable forms are known as

- (a) Dosage form
- (b) Excipients
- (c) API
- (d) Diluents

Drug : Substances and specified devices meant for treatment, mitigation or prevention of diseases or disorders in human being or animals, intended to affect any function or any structure of human body are termed as Drug. e.g. Paracetamol, Aspirin, Salbutamol.

Dosage form: It is a transformation of pure chemical compound into predetermined form by admixing drug compound with different kinds of non drug components collectively known as Adjuvants each having specific function. E.g. Tablet, capsules, syrups, suppositories, creams.



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