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Complete Book for the
PHARMACIST EXAM PREPARATION

PHARMACIST

Prep Guide

Competition Exam Book Series

MODULE 1

Useful For

ISRO, DSSSB, ESIC, AIIMS, RRB, CGHS, NHM,
SECL, NTPC, NCL, SEPOY, ITBP, BCCL, DHS,
State and Central Government Pharmacist
Examination

SUBJECT COVERED

- Pharmaceutical Technology
- Pharmaceutical Jurisprudence
- Hospital & Clinical Pharmacy
- Pharmaceutical Engineering
- Physical Pharmacy
- Cosmetic Technology
- Dispensing Pharmacy
- Biopharmaceutics

Rationalised as per Latest Pharmacist Exam Syllabus

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PHARMACIST Prep Guide

MODULE

1

Pharmaceutics

Useful for

**ISRO, DSSSB, ESIC, AIIMS, RRB, CGHS,
NHM, SECL, NTPC, NCL, SEPOY, ITBP, BCCL, DHS,
State and Central Government Pharmacist Examination**

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3rd Floor, Shiv Hari Tower, Ashok Nagar,
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PHARMACIST EXAM PREP GUIDE (Set of 7 Books)

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- ❖ Medication Errors and Drugs Interactions
- ❖ Body Mass Index (BMI)



DISPENSING PHARMACY

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Prescription

❑ INTRODUCTION

A written prescription is an order given to a pharmacist by a registered medical professional or another licensed professional, such as a dentist, veterinarian, etc., to prepare and dispense a particular medication for the patient.

Physician/Doctor/Dentist/Veterinarian $\xrightarrow{\text{Prescription}}$ Pharmacist $\xrightarrow{\text{Medicine}}$ Patient

❑ PARTS OF PRESCRIPTION

1. **Date:** Helps to find out the date of prescribing and date of presentation for filling the prescription.
2. **Name, age, sex and address of patient:** Serves to identify the prescription. In case of children, helps to check the prescribed dose of medication. [MPESB-2023]
3. **Superscription:** Written before writing the prescription. It is represented by R_x (Latin term) "recipe" which means "take thou" or "you take" [MPESB-2023, TNMRB-2023, SEPOY-2023]**

(Latin word \rightarrow You take 'Take thou')

Earlier \rightarrow Sign of Jupiter, God of healing

4. **Inscription:** Contains the names and quantities of the prescribed ingredients. [RJ- 2016, MPPGCL-2024, J&K-2024]
5. **Subscription:** Direction to the pharmacist for preparing the prescription and number of doses to be dispensed. [ISRO-2024, SEPOY-2024, MPESB- 2025]**
6. **Signatura:** Direction to be given to the patient regarding the administration of the drug. [MPESB- 2025, BIHAR- 2025]**
7. **Renewal instructions:** Indicate whether the prescription is to be renewed and so when and how many times.
8. **Signature, address and registration no. of the prescriber:** Must bear the signature of the prescriber along with its registration number and address to prevent the misuse of any narcotic and other habit-forming drug. [ESIC- 2016, MPESB- 2023, MH- 2023]**



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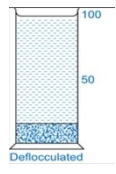
Suspension

❑ INTRODUCTION

- A pharmaceutical suspension is a coarse dispersion in which insoluble solid particles are dispersed in a liquid medium.
- The particles have diameters for the most part greater than 0.1 μm.

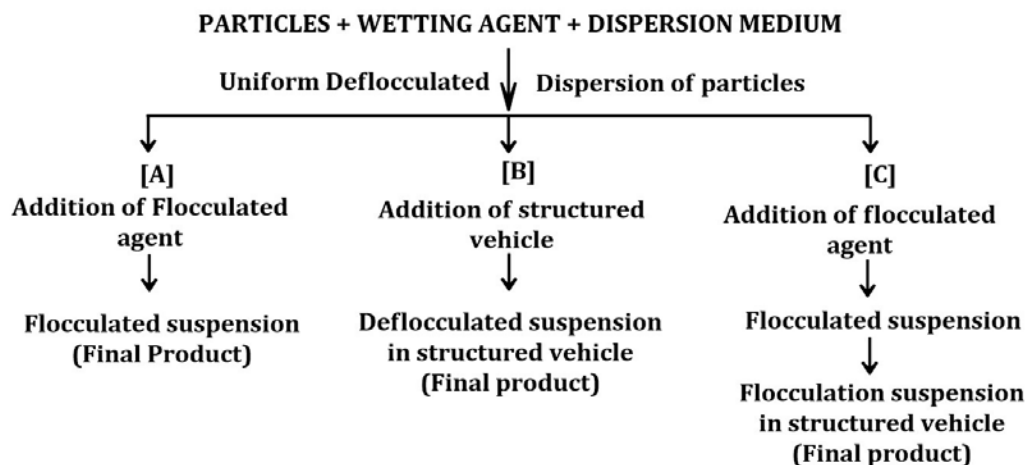
❖ Difference between flocculated suspension and deflocculated suspension

[TNMRB - 2023, BIHAR - 2025]

FLOCCULATED SUSPENSION	DEFLOCCULATED SUSPENSION
Somewhat unsightly sediment	Pleasant appearance, because of uniform dispersion of particles
Clear supernatant	Cloudy supernatant
Particles experience attractive forces	Particles experience repulsive forces
Particles form loose aggregates	Particles exist as separate entities
Rate of sedimentation is high	Rate of sedimentation is slow
Particles settle as flocs	Particles settle independently and separately
Sediment is a loosely packed network and hard cake cannot be formed	The sediment is closely packed and form a hard cake
Easy to redisperse (Loosely packed)	Hard to redispersed (Hard cake)
Bioavailability is comparatively less	Bioavailability is relatively high
 <p style="text-align: center;">Flocculated</p>	 <p style="text-align: center;">Deflocculated</p>

❑ FORMULATION OF SUSPENSION

- It depends on whether suspension is flocculated or deflocculated.
- Three approaches are followed in preparation of physically stable suspension
 1. Use of structured vehicles to keep particles in deflocculated state.
 2. Addition of flocculating agent in order to prevent cake formation.
 3. Combination of both approaches to prevent settling.



Biphasic Liquid Dosage Form

Emulsion

INTRODUCTION

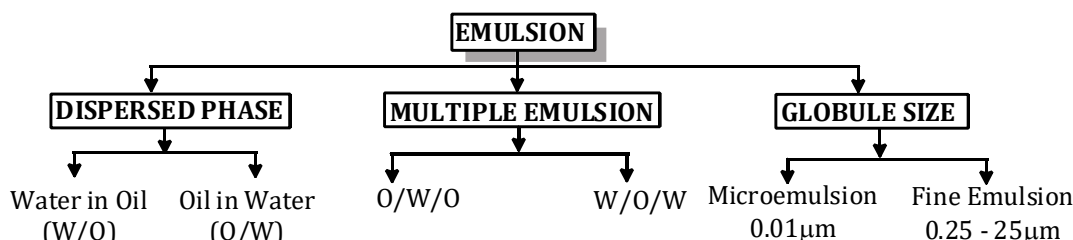
- Biphasic system consisting of two immiscible liquids usually water and oil.
- It consists of two phases
 1. Internal phase - Dispersed or Discontinuous
 2. External phase - Dispersion or Continuous [MPESB-2020]
- Particles ranging in diameter from 0.1 to 100 μm.



Example of emulsion

EMULSION	EXAMPLE
Oral emulsion	Usually O/W type, e.g.- Castor oil, Cod liver oil
Cosmetics	<ul style="list-style-type: none"> • O/W type (Vanishing cream) • W/O type (Cold cream)
Parenteral emulsion	Fat soluble vitamins A, D, E and sex hormones
Diagnostic emulsion	Radio opaque emulsion for X- ray

CLASSIFICATION OF EMULSION



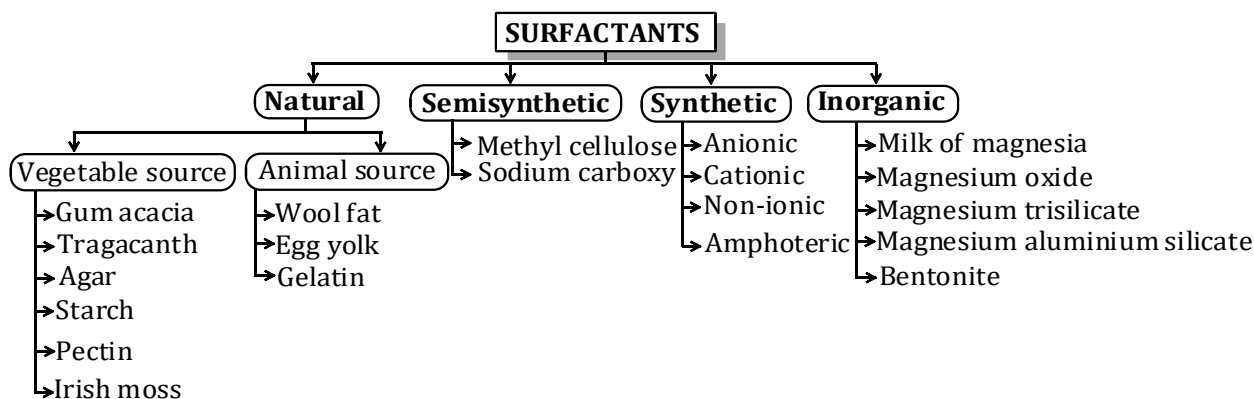
FORMULATION OF EMULSION

Emulsion are formulated by using the following components [MPPGCL-2024, OSSSC-2024]

1. Surfactants
2. Antioxidants
3. Preservative
4. Flavouring agents

Surfactants [BFU-2018, MH-2023, BIHAR -2025]**

- Surfactants are used as emulsifying agent/emulgents.
- They decrease interfacial tension.
- They prevent coalescence of droplets and stabilize the system by acting as barrier to droplets.
- It increases the solubility of hydrophobic drugs.
- The Phase Inversion Temperature (PIT) of a surfactant is one at which Hydrophilic and lipophilic properties of surfactant are balanced. [MH-2012]



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- Pathophysiology
- Pharmacotherapeutics

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PHARMACOLOGY AND TOXICOLOGY

SCAN ME



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General Pharmacology

Introduction of Pharmacology

- Pharmacology is the **science of drugs** (Greek: *Pharmacon*-drug; *logos*-discourse in).
- ❖ **Pharmacology** - Branch of science that concerned with **study of drug and its action** in the body. [KERALA-2018, DSSSB-2018, MPESB-2022]
- ❖ **Drug**- It is a substance that is used or intended to be used to **modify or explore physiological system or pathological states**, for benefit of the recipient.
- In a broad sense, it **deals** with **interaction of exogenously** administered chemical molecules with living systems, and any single chemical substance which can produce a biological response is a 'drug'.
- ❖ **Toxicology** - It is the study of **poisonous effect** of drugs and other **chemicals** (industrial, homicidal) with emphasis on detection, prevention and treatment of poisonings. [MPESB-2022, RRB-2025]
- ❖ **Chemotherapy** - It is the **treatment of systemic infection/malignancy** with specific drugs that have selective toxicity for the infecting organism/malignant cell with no/minimal effects on the host cells. [MPESB -2023]
- ❖ **Clinical pharmacology** - It is the **scientific study of drugs** (both old and new) in man. It includes **pharmacodynamic and pharmacokinetic investigation** in healthy volunteers as well as in patients. [MPESB-2022]

❑ HISTORICAL ASPECT OF PHARMACOLOGY

DISCOVERIES	SCIENTIST
Father of Pharmacology [MPPGCL - 2024]	Oswald Schmiedeberg
Father of Indian Pharmacology	Ram Nath Chopra
Father of Indian Pharmacy Education	Mahadeva Lal Schroff
Father of Chemotherapy	Paul Ehrlich
Father of Medicine	Hippocrates
Discovery of Penicillin [RRB - 2019]	Alexander Fleming
Discovery of Streptomycin	Selman Waksman
Discovery of Insulin	Banting and Best
Discovery of antimicrobial effect of Prontosil	Gerhard Domagk

❑ ORPHAN DRUGS

- These are drugs used for prevention and treatment of **rare diseases**. [CGHS BANGALORE-2019, MP NHM-2022]
- Orphan drug may be **life-saving drugs** for some patients.

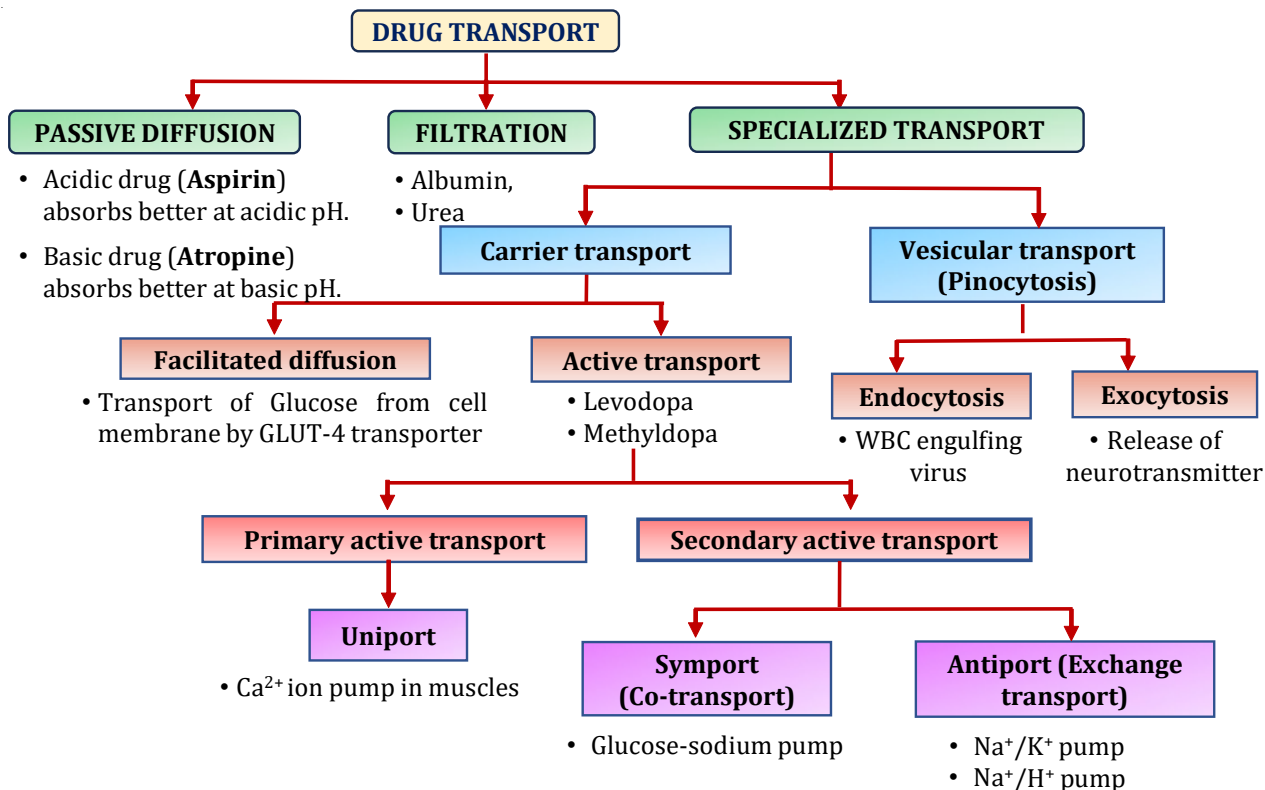


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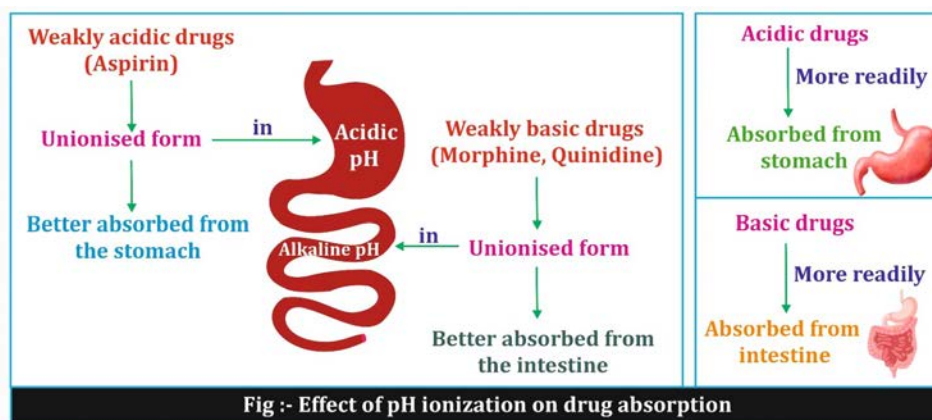
❖ **Facilitated diffusion**

- It merely facilitates permeation of a **poorly diffusible substrate**, e.g. the entry of glucose into muscle and fat cells by the glucose transporter GLUT-4. [RJ-2016, ISRO - 2018]

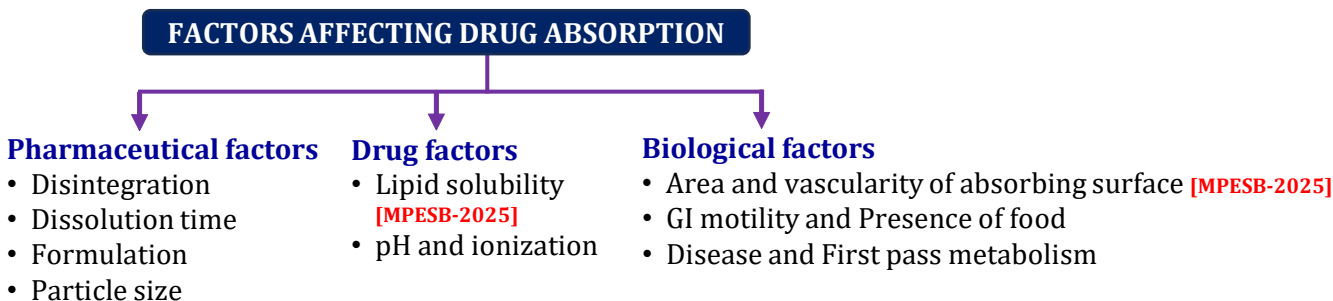


ABSORPTION

Absorption: Absorption is the **movement of drug** from its site of administration **into the blood circulation**.



❑ **FACTORS AFFECTING DRUG ABSORPTION** [RRB- 2016]



$$\text{Maintenance dose} = \frac{\text{Target steady state plasma conc. (C}_{\text{pss}}) \times \text{Clearance}}{\text{Bioavailability (F)}}$$

❖ **THERAPEUTIC DRUG MONITORING (TDM):** [RJ-2016, MH-2023, MPESB-2023]

- Monitoring drug therapy by **measuring plasma concentration** of a drug is known as therapeutic drug monitoring.
- TDM is indicated at the onset of therapy. [DSSSB -2025]

Therapeutic Drug Monitoring is required for	
A	A minoglycosides
D rug	D igitalis
P ossessing	P henytoin
L ow	L ithium
T herapeutic Index	T ricyclic antidepressants
I ndex	I mmunomodulators

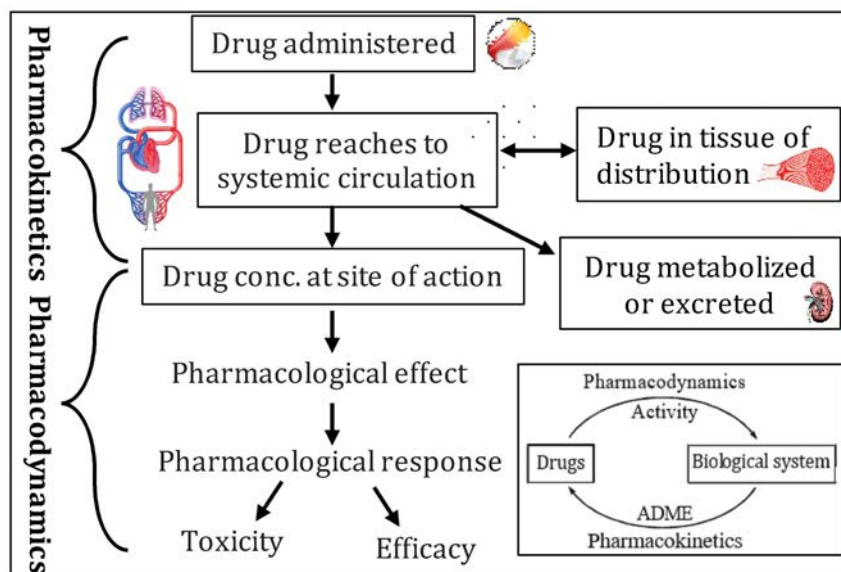
Pharmacodynamics

❑ **INTRODUCTION**

- Pharmacodynamics is Greek word. *Pharmacon* means **drug** and *dynamis* means **power**.
- Pharmacodynamics means **“What the drug does to the body”**. [CGHS NAGPUR-2018, CGHS BANGALORE-2019, RRB - 2025]**
- Pharmacodynamics is the **study** of **biochemical** and **physiological** effects of drugs their **mechanism of action, pharmacological actions** and **adverse effects** in living organism. [CGHS BANGALORE-2019, NCL -2020, TNMRB-2023]**

❖ **Stimulation:** Stimulation is a type of Drug action [MPESB-2020]

- It refers to **selective enhancement** of the level of activity of specialized cells, e.g. adrenaline stimulates heart, pilocarpine stimulates salivary glands. [MPESB -2023]



❑ **MECHANISM OF DRUG ACTION**

1. **NON-RECEPTOR MEDIATED**

1. **By physical action**

(a) **Osmosis** - Mannitol

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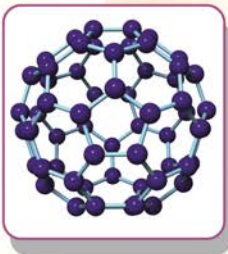
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INORGANIC CHEMISTRY

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❑ SOURCES OF IMPURITY

❖ Purity

- In inorganic chemistry, purity refers to the degree to which a substance **is free from contaminants or impurities**.
- Purity is defined as the extent to which a substance or material is free from any other substance, whether organic, inorganic, or foreign matter, that may arise from manufacturing processes, degradation, or contamination.

❖ Impurity

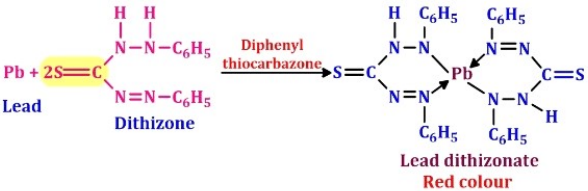
- An impurity is any component of a substance other than the principal compound or element, arising from the starting materials, intermediates, by-products, reagents, solvents, or external contamination, and which may affect the quality, safety, or efficacy of the substance.

❖ Sources of impurity

- A compound having foreign materials is said to be impure.
- The origin of impurities in drugs is from various sources and phases of the synthetic process and preparation of pharmaceutical dosage forms.
- Majority of the impurities are characteristics of the synthetic route of the manufacturing process

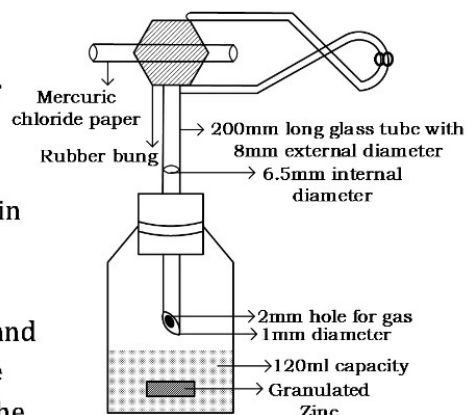
SOURCE	EXAMPLE
Raw Materials	• Natural contaminants in ores or salts (e.g., sulphates in NaCl).
Manufacturing Process	• Incomplete reactions, by-products, catalysts, filter aids.
Reagents	• Carry-over of acids, alkalis, solvents, unreacted reagents.
Solvents	<ul style="list-style-type: none"> • Water is the cheapest and most commonly used solvent, especially in the manufacture of inorganic chemicals. (a) Tap water – Contains small amounts of calcium, magnesium, sodium, chlorides, sulfates, and carbonates as impurities. (b) Softened water – Prepared by passing tap water through sodium zeolite, which removes divalent cations (Ca^{2+}, Mg^{2+}) in exchange for sodium. (c) De-mineralized water – Obtained by passing tap water through ion-exchange resins, removing calcium, magnesium, sodium, etc. (d) Distilled water – Free from all inorganic and organic impurities (including albuminoid ammonia) and is considered the best solvent.
Environment / Handling	• Dust, dirt, microbial contamination, mechanical contamination (glass, rubber, metals).





<p>LEAD [TNMRB-2023, MH-2023, J&K-2024]**</p>	<p>Limit test of lead reacts with dithizone in the presence of acidic medium.</p> 	<ul style="list-style-type: none"> Dithizone itself is green in colour and the final product (lead dithizonate) in chloroform is red in colour, mixture of these two appears as violet in colour.
<p>ARSENIC (Gutzeit's apparatus Used) [TNMRB-2023, MH-2023, TG-2024]**</p>	<p>Limit test of arsenic based on reaction of arsine gas with hydrogen ion on mercuric chloride paper in presence of reducing agents like potassium iodide.</p> $\text{As}^{3+} \longrightarrow \text{H}_3\text{AsO}_4 \text{ Arsenic acid}$ $\text{As}^{5+} \longrightarrow \text{H}_3\text{AsO}_3 \text{ Arsenious acid}$ $\text{H}_3\text{AsO}_4 + 2[\text{H}] \xrightarrow[\text{KI}]{\text{SnCl}_2} \text{H}_3\text{AsO}_3$ <p style="text-align: center;">Arsenic acid Arsenious acid</p> $\text{H}_3\text{AsO}_3 + 3\text{H}_2 \xrightarrow{\text{Zn} + \text{HCl}} \text{AsH}_3 + 3\text{H}_2\text{O}$ <p style="text-align: center;">Arsenious acid Arsine gas</p> $2\text{AsH}_3 + \text{HgCl}_2 \longrightarrow \text{Hg} \begin{matrix} \text{AsH}_2 \\ \text{AsH}_2 \end{matrix} + 2\text{HCl}$ <p style="text-align: center;">Arsine gas Mercuric chloride (Yellow stain)</p>	<ul style="list-style-type: none"> The yellow stain developed in the test solution is compared with that of standard if the stain is less, then it passes the limit test of arsenic. The intensity of the stain is proportional to the amount of arsenic present.

Gutzeit Apparatus [BFU-2022, ISRO-2024, MPESB-2025]**

- Wide-mouthed 120 ml glass bottle with **2.5cm** diameter of mouth.
- Bottle fitted with **20cm** long Glass tube with **0.65cm** inner diameter & **0.8cm** external diameter.
- The tube is constricted at its lower end extremity to about **1mm** diameter and there is blown a hole, not less than **2mm** in diameter, in the side of the tube near the constricted part.
- The upper end of the glass tube has been fitted with two rubber bungs (about **25 mm×25 mm**), each having a hole bored centrally and exactly **6.5 mm in diameter**. One of the bungs has been fitted to the upper end of the tube, while the second bung has to be fitted upon the first bung in such a way that the **mercuric chloride paper** gets exactly sandwiched between the central perforations of the two.



ACID-BASE AND BUFFERS [RRB - 2025]

ACID	BASE
 <p style="text-align: center;">Acid Blue litmus turns red</p>	 <p style="text-align: center;">Base Red litmus turns blue</p>
<p>Acids are substances that release hydrogen ions (H⁺) when dissolved in water. [MPESB-2022]</p>	<p>Bases release hydroxide ions (OH⁻) when dissolved in water. [MPESB-2020]</p>

COMPOUND	FORMULA	USES
HYPHOPHOSPHOROUS ACID [HPSSC-2018, HAMIRPUR-2021, ITBP-2023]**	H_3PO_2 [HPSSC-2022]	<ul style="list-style-type: none"> 0.5 to 1 % use as antioxidant. And mainly use in syrup of ferrous iodide as reducing agent. It is a clear yellowish liquid.
SULPHUR DIOXIDE [TNMRB-2023]	SO_2	<ul style="list-style-type: none"> Industrial manufacturing of Sulphuric acid.
SODIUM BISULPHITE	NaHSO_3	<ul style="list-style-type: none"> Used for removing permanganate stains and solubilizing certain dyes and other chemicals.
SODIUM META-BISULFITE [SIKKIM-2024]	$\text{Na}_2\text{S}_2\text{O}_5$ [HAMIRPUR-2021]	<ul style="list-style-type: none"> Preservation of food items. & Used as stabilizer in injections.
SODIUM NITRITE (Sodium Salt, Nitrous Acid) [HPSSC-2020, KERALA-2022, TNMRB-2023]**	NaNO_2	<ul style="list-style-type: none"> Use in angina pectoris & used in cyanide poisoning, it acts as a physiological antidote.
SODIUM THIOSULPHATE [HPSSC-2022, ITBP-2023, TG-2024]	$\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$	<ul style="list-style-type: none"> Used as Antidote in cyanide poisoning. "Hypo" is a shortened, informal name for sodium thiosulfate, used as a fixing agent in photographic developing.
NITROGEN GAS	N_2	<ul style="list-style-type: none"> Used to displace oxygen in containers and prevent oxidation (inert atmosphere).

❑ GASTRO INTESTINAL AGENTS

Gastrointestinal agents are the drugs which are used for their effects on the gastrointestinal system, as to control gastric acidity, regulate gastrointestinal motility and water flow, and improve digestion.

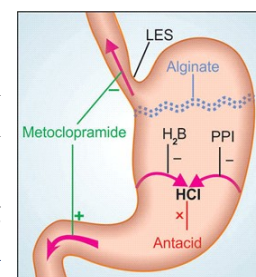
❖ Acidifying agents [ITBP-2023]

- Drugs or substances that **increase gastric acidity** by providing free hydrochloric acid (HCl) or stimulating its secretion.
- Acidifiers are useful in **achlorhydria** [MPESB-2023, SAFDARJUNG-2023] (complete absence of gastric acid (HCl) in stomach) & **hypochlorhydria** (decreased secretion of gastric acid).
- Some drugs are used to increase the Gastric HCl or some drugs to increase the metabolic acidosis. Example: - Hydrochloric acid i.e. Spirit of salt (HCl).



❖ Antacids [MPESB-2023, TNMRB-2023]

- Antacids** are **weak bases** that react with the **excess hydrochloric acid (HCl)** in the stomach to form salt and water, thereby neutralizing gastric acidity and providing relief from conditions like heartburn, acid indigestion, and ulcers.
- These are the drugs which are usually alkaline substances and used for neutralizing excess acid in the stomach of patients suffering from **hyperchlorhydria** (Hyperacidity). These drugs give relief of pain due to hyperchlorhydria.
- Effectiveness of antacids is measured in neutralizing capacity.



➤ Ideal Characteristics of antacids

- The antacid should exert its effect rapidly and should not cause excessive gas formation.
- The antacid should neither act as a laxative nor causes constipation.
- It should not interfere with the absorption of food.
- It should buffer within the pH range of 4–6, inhibit pepsin, and be palatable as well as inexpensive.

➤ Types of antacids

- ✓ **Systemic antacids** - Soluble, readily absorbable and capable of producing systemic electrolytic alteration and alkalosis. Examples - **Sodium bicarbonate**. [MH-2012, RJ-2016]



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- Biochemistry and Clinical Pathology
- Biotechnology
- Microbiology

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PHARMACOGNOSY

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Introduction of Pharmacognosy

INTRODUCTION

- Pharmacognosy is defined as the scientific study of the structural, physical, chemical and biological characters of crude drugs along with their history, cultivation, collection, preparation for the market and preservation. [MPESB- 2020]
- Term Pharmacognosy is the combination of two words **Pharmakon** and **Gignosco**



- Initially in 19th century the term 'Materia Medica' was used for the subject now known as Pharmacognosy. [HPSSB-2020]

SCIENTIST AND THEIR CONTRIBUTION

SCIENTISTS	CONTRIBUTION
Dioscorides	Father of Pharmacognosy (Materia Medica)
Seydler	Coined the term "Pharmacognosy" 1815 (<i>Analecta Pharmacognostica</i>) [MPESB- 2020, MP NHM- 2022]
Ebers	Papyrus Ebers - Oldest document containing 700 medicinal herbs and more than 870 formula.
Theophrastus	Father of Botany
Aristotle	Father of Zoology , Father of Natural History (Animal kingdom)
Hippocrates	Father of Medicine
Galen	First pharmacist , Father of Experimental Physiology
Bentham & Hooker	Plant classification was further developed by them
Shen Nung	Pen-t Sao (The oldest known herbal, Contain 365 drugs).
Charaka	Charaka Samhita - Arranged 50 group of 10 Herbs. [BFU - 2020] Treatise dealing with Ayurveda - Charak Samhita, Sushruta Samhita.
Sushruta	Father of Cosmetic Surgery Arranged 760 herbs in 7 distinct set
Haberlandt	Father of Plant Tissue Culture
Stass and Otto	A new extraction process for Alkaloid was developed.
Mahadeva Lal schroff	Father of Indian Pharmacy , His birth anniversary (06 march) celebrated as National Pharmacy Education Day.
William withering	Carry out detailed study at digitalis . [MPESB - 2017]
Gantle fosse	Coined the term " Aromatherapy "
Edward Bach	Discovered " Bach flower remedies ", include 38 remedies.



47.	Papilionaceae	Karanja oil, Lecithin, Soya bean oil, Palash
48.	Linaceae	Linseed oil, Linseed, Flax fibre
49.	Meliaceae	Neem oil, Neem
50.	Papaveraceae	Poppy seed oil, Opium
51.	Pedaliaceae	Sesame oil
52.	Erusiferie	Canola oil
53.	Myrtaceae	Tea tree oil, Eucalyptus oil, Clove
54.	Bromeliaceae	Bromelain enzyme
55.	Caricaceae	Papain enzyme
56.	Moraceae (Mulberry family)	Fig
57.	Marantaceae	Thaumatococin (Protein)
58.	Saccharomycetaceae	Yeast
59.	Violaceae	Benafsha
60.	Piperaceae	Black pepper, Long pepper, Pippala root, Cubeb
61.	Lauraceae	Camphor oil, Cassia cinnamon, Cinnamon
62.	Chenopodiaceae	Chenopodium
63.	Zingiberaceae	Cardamom, Rasna, Shati, Ginger, Ginger oleo resin, Haridra
64.	Geraniaceae	Geranium oil
65.	Valerianaceae	Jatamansi, Valerian, Valerian European
66.	Santalaceae	Sandal wood oil
67.	Labiataeae or Lamiaceae	Lavender oil, Peppermint oil, Rosemary oil, Thyme, Spearmint, Tulsi, Coleus
68.	Myristicaceae	Nutmeg
69.	Pinaceae	Turpentine oil, Colophony, Tar
70.	Myrsinaceae	Vidang
71.	Araceae	Acorus
72.	Cannabinaceae	Hops, Cannabis
73.	Styraceae	Benzoin
74.	Burseraceae	Boswellia, Guggul, Myrrh
75.	Convolvulaceae	Ipomoea, Jalap, Kaladana, Aloe weed
76.	Polypodiaceae	Male fern
77.	Verbenaceae	Monk's pepper
78.	Taxaceae	Taxus
79.	Physeteridae (animal)	Ambergris
80.	Bixaceae	Annatto
81.	Iridaceae	Saffron
82.	Hemamelidaceae	Storax
83.	Berberidaceae	Podophyllum, Podophyllum resin, Daruhaldi
84.	Loganiaceae	Nux vomica, Physostigma, Curare
85.	Erythroxylaceae	Coca leaves
86.	Nyssaceae or Cornaceae	Camptotheca
87.	Ephedraceae or Gnetaceae	Ephedra
88.	Campanulaceae	Lobelia
89.	Theaceae or Ternstroemiaceae	Tea
90.	Ranunculaceae	Aconite

For pretreated plant materials For plant material intended for topical use.	Aerobic bacteria - 10^5 /gm. Yeasts and moulds - 10^4 /gm. Other enterobacteria - 10^4 /gm. Salmonellae-none
For plant materials for internal use	Aerobic bacteria - 10^5 /gm. Yeasts and moulds - 10^3 /gm. <i>E.coli</i> - 10gm Other enterobacteria - 10^4 /gm. <i>Salmonellae</i> -none

Test of Aflatoxins: WHO has recommended thin layer chromatography method for detecting the aflatoxins G₁, G₂, B₁, B₂ in plant material.

❑ PLANT HORMONE

GROWTH PROMOTER	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #28a745; color: white; padding: 5px; border-radius: 10px;">Auxin</div> <div style="color: #c00000; font-weight: bold;">[RJ -2012]</div> </div>	
<p>Synthetic:</p> <ul style="list-style-type: none"> • Promote elongation of coleoptiles tissues. • Internodes' elongation, Leaf growth • Initiation of vascular tissues • Cambial activity, Fruit growth • Apical dominance • Inhibition of root growth [RRB-2015] 	<p>Natural:</p> <ol style="list-style-type: none"> 1. Indole acetic acid (IAA) 2. Phenyl acetic acid (PAA) 3. Indole 3- acetonitrile (IAN) <p>Synthetic:</p> <ol style="list-style-type: none"> 1. Indole-3- butyric acid 2. 1-Napthalene acetic acid
<div style="text-align: center; background-color: #28a745; color: white; padding: 5px; border-radius: 10px; width: fit-content; margin: 0 auto;">Cytokinin</div> <ul style="list-style-type: none"> • Natural (zeatin) or synthetic (kinetin) compounds. • Zeatin (Cell division and leaf senescence) • Kinetin (promoting lateral bud development and inhibition of senescence) 	<div style="text-align: center; background-color: #28a745; color: white; padding: 5px; border-radius: 10px; width: fit-content; margin: 0 auto;">Gibberellin</div> <div style="color: #c00000; font-weight: bold; text-align: right;">[ESIC-2019]</div> <ul style="list-style-type: none"> • Mixture of at least 6 gibberellins are GA₁, GA₂, GA₃, GA₄, GA₇, and GA₉. • GA₃, is termed as gibberellic acid. • Stem elongation • Rapid expansion of plant cells • Stimulation of seed germination • Induction of flowering • Breaking dormancy • Flower initiation • Induction of parthenocarpy
GROWTH INHIBITOR	
<div style="text-align: center; background-color: #28a745; color: white; padding: 5px; border-radius: 10px; width: fit-content; margin: 0 auto;">Abscisic acid</div> <ul style="list-style-type: none"> • Inhibit growth • Helps in seed dormancy • It enhanced in stress conditions, like mineral deficiency, injury, drought and flooding & close the stomata 	<div style="text-align: center; background-color: #28a745; color: white; padding: 5px; border-radius: 10px; width: fit-content; margin: 0 auto;">Ethylene</div> <ul style="list-style-type: none"> • It is present in ripening fruits, flowers, stems, roots, tubers and seeds • Present in the form of volatile gas • Leaf abscission • Stem swelling • Leaf bending • Flower petal discoloration, and inhibition of stem and root growth

❑ PLANT TISSUE CULTURE

- Tissue culture is **in vitro cultivation** of plant cell or tissue under **aseptic and controlled environmental conditions**, in liquid or on semisolid well-defined nutrient medium for the **production of primary and secondary metabolites** or to regenerate plant
- Father of plant tissue culture is **Haberlandt**.



8.	Duboisia	Obtained from dried leaves of <i>Duboisia myoporoides</i> Family:- Solanaceae	l-hyoscyamine, atropine	Anticholinergic, bronchial asthma
9.	Coca Leaves	Obtained from dried leaves of <i>Erythroxylon coca</i> Family:- Erythroxylaceae	Cocaine, cinnamyl cocaine and α -truxilline (Cocaine = Ecgonine + methyl alcohol + benzoic acid)	Local anesthetic, stimulant, restorative and also in convulsions
QUINOLINE ALKALOIDS				
10.	Cinchona (Jesusit's bark, Penvian bark) [HPSSC-2018]	Obtained from dried bark of plant <i>Cinchona calisaya</i> , <i>Cinchona succirubra</i> , <i>Cinchona officinalis</i> , <i>Cinchona ledgeriana</i> Family:- Rubiaceae	Quinine, Quinidine, Cinchonine, Cinchonidine [HPSSC-2020, MH VMC - 2021]**	Antimalarial and Antiarrhythmic [HPSSB-2020, ESIC AYURVEDIC] Substitute - Cuprea bark, False cuprea bark [KERALA-2015, 2020]**
11.	Camptotheca	Obtained from the dried wood of plant <i>Camptotheca acuminata</i> . [AIIMS] Family:- Nyssaceae	Camptothecin Topotecan	Anticancer
ISOQUINOLINE ALKALOIDS				
12.	Opium (Afim)	Obtained from dried latex by incision from capsule fruits of <i>Papaver somniferum</i> [NCA-2015, ISRO-2021]** Family:- Papaveraceae	<ul style="list-style-type: none"> • Salt of meconic acid [PHARMACIST HEALTH SERVICES-2015] • Morphine [BFU-2018] • Codeine • Thebaine • Noscapine • Narceine • Papaverine 	Analgesic, sedative and hypnotic, cough suppressants Adulterants, substitute- Opium capsules in powder form, gum and sugary fruit
13.	Ipecac	Obtained from dried roots and rhizome of <i>Cephaelis ipecacuanha</i> Family:- Rubiaceae [KERALA - 2022]	Emetine, Cephaeline Psychotrine [VMC -2021, HPSSC-2018, RRB-2019]**	Expectorant, emetic, amoebic dysentery. [BIHAR - 2018, CGHS BANGLORE-2019, MP NHM-2022]** Adulterants substitute- Alangium, Hillia, Manettia Psychotria, Borreria
14.	Curare	Obtained from dried bark of plant <i>Chondrodendron tomentosum</i> Family:- Menispermaceae	d-tubocurarine	Skeletal muscle relaxants
INDOLE ALKALOIDS				
15.	Ergot (St. antony fire) [RAJASTHAN- 2012, RRB-2019]	Obtained from dried sclerotium of a fungus, <i>Claviceps purpurea</i> Family:- Clavicipitaceae [ESIC, BFU-2022]	Ergotamine is derived from Lysergic acid [ISRO - 2018] Water soluble - Ergometrine	Oxytocic(Ergometrine), migraine, treatment of dementia [KERALA-2015, BFU-2018, KERALA-2022]** LSD- Lysergic acid diethylamide [MP-2017]

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- ❖ **Recording of the Transaction**
- ❖ **Trial Balance**
- ❖ **Financial Statement**



HEALTH EDUCATION AND COMMUNITY PHARMACY

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Introduction to Health Education and Community Pharmacy

❑ HEALTH EDUCATION

- Health education is the art of persuading people, with the help of the educational process, to adopt such practices are good for their health, and giving up those that are harmful.

➤ Aims of health education:

- To promise the value of health.
- To make the health as particular of the community.
- To give the knowledge, attitude and arts in people.
- To raise the development and use of health services.

❑ COMMUNITY PHARMACY

- Community pharmacy is defined as a **concept** which **considers treatment and care of patient** by staff of health care team in **presence of pharmacy students**, with regular emphasis on safe and appropriate use of drugs.

❖ Terminology used in practice of medicine

TERMINOLOGY	SPECIFIC ADVICE
Acquired	Acquired after birth
Acute	Rapid onset and progress of disease
Organic	Associated with abnormality in structure of organ
Familial	Occurring in family
Local	Involving only a part of body
Functional	Abnormality of function
Congenital	Present at birth
Chronic	Slow inset and progress on disease
Systemic	Involving body system

❖ Drugs and their uses

DRUGS	DESCRIPTION
Analeptics	Drugs which stimulate CNS.
Analgesic	Drugs which relive the pain.
Anticoagulants	Drugs which prevent coagulation of blood.
Antidote	Drugs which neutralize effect of poison.
Antihypertensive	Drugs which lower the blood pressure.
Antimalarial	Drugs preventing or curing malaria.
Antimicrobials	Agents which reduce or destroy the pathogens.
Carminatives	Drugs that prevent formation of gas and help to expel it out.

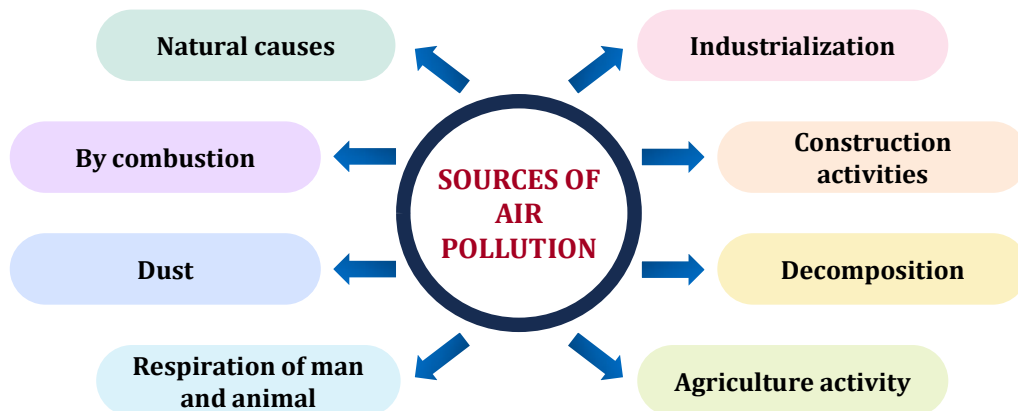


❖ **Air borne diseases:**

- An airborne disease is any disease that is caused by pathogens that can be transmitted through the air.

CAUSATIVE AGENTS	DISEASE
Fungus	Cryptococcosis, Blastomycosis, Coccidioidomycosis, Histoplasmosis, Aspergillosis
Virus	Common cold, Influenza, Measles, Mumps, Chickenpox
Bacteria	Tuberculosis [MPPGCL-2024], Pneumonia, Whooping Cough, Diphtheria, Meningitis, Anthrax

❖ **Sources of Air Pollution**



❖ **Prevention and control of Air Pollution**

- **Containment:** It is prevention of the release of toxic substances into air by using devices like arrestor.
- **Replacement:** Using energy sources like electricity instead of oil and coal.
- **Dilution:** By establishing green belts of vegetation around industries.
- **Legislation:** Like Smoke nuisance pollution
- **International:** By establishing international network of laboratories for monitoring and study of air pollution.
- Use of CNG (Compressed Natural Gas), in controlling vehicular air pollution.

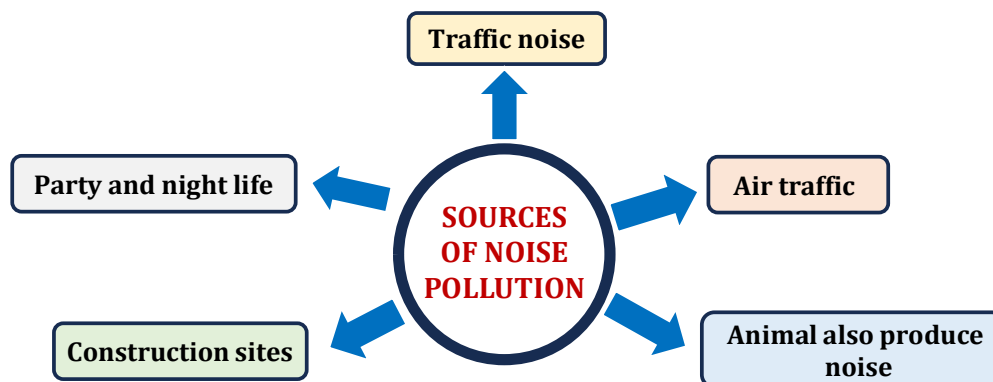
❑ **NOISE**

- It is an unacceptable sound that is not pleasant to hear.

❖ **Properties of Noise**

1. Intensity or loudness
2. Pitch or frequency
 - The unit of frequency is **Hertz (Hz)**.
 - We can hear from **20 Hz to 20,000Hz**.

❖ **Sources of Noise**



❑ FRACTURE

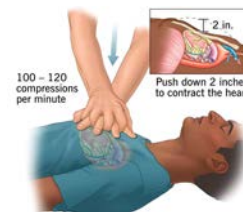
A break or crack in a bone is called a fracture. This is caused by direct violence, indirect violence, or muscular action. Broadly the fractures can be classified as open or closed.

❖ Types of Fractures

TYPES OF FRACTURE	DESCRIPTION
Simple fracture	The bone is broken into two pieces and there is no open injury or wound around or near the fracture.
Compound fracture	In this type of fracture, the skin is torn by the broken bone which may protrude through the wound.
Complicated fracture	In this type of fracture, the surrounding structures e.g., muscles, blood vessels, nerve, joint capsule etc. are also damaged in addition to the break in the bone.
Comminuted fracture	This type of fracture is characterized by breaking of a bone into several fragments.
Depressed fracture	In this type of injury, a piece of bone pressed down on the soft tissue.
Greenstick fracture	In this type of fracture, the bone is not completely broken. The incompletely broken bone bends at the site of injury resembling the incomplete splintered break in a green stick. Such type of fractures occurs in children.

❑ CARDIO-PULMONARY RESUSCITATION (CPR)

- Cardio-Pulmonary Resuscitation (CPR) is most important first aid procedure to save the life of patient
- Cardiopulmonary resuscitation (CPR) is an emergency treatment that’s done when patient breathing or heartbeat has stopped.
- It aims to maintain gas exchange in the lungs through artificial respiration.



❖ ABC formula for performing CPR

A	Airway	<ul style="list-style-type: none"> • Airway of the patient should be opened and cleaned. • Changes the position of his face, so airway is not blocked due to tongue. Keep the patient in his position with the chin facing upward.
B	Breathing	<ul style="list-style-type: none"> • If breathing has stopped, then after cleaning the airway, immediately start giving mouth to mouth breathing, also known as artificial respiration.
C	Circulation	<ul style="list-style-type: none"> • If the pulse is absent, cardiac massage should be done. • It should be done by pressing hard with both hands on the victim’s chest at exact position.

❑ ELEMENT OF MINOR SURGERY AND DRESSING

❖ Minor surgery:

- It is an invasive operative procedure in which only the skin, connective tissues or mucus membrane are resected.
- It includes incision of boils, draining of wounds, applying simple sutures on a cut and application of dressings and bandages.

❖ The element of minor surgery includes the following:

- Common surgical instruments
- Glass and plastic instruments
- Rubber instruments
- Suture material and surgical (suturing) needles
- Dressings

2.	Morbidity measurement	<ul style="list-style-type: none"> Two important rates are described to study the morbidity of a community: Incidence rate and Prevalence rate Morbidity data are superior to mortality data as they indicate the disease situation
(a)	Incidence rate	This is the occurrence of new cases of a disease in a particular geographical area per one thousand population in a defined time period.
(b)	Prevalence rate	It includes the occurrence of all cases i.e. old and new both in a defined geographical area per one thousand population.
3.	Fertility measurement	All the rates related with the health of the mother and child are included in the fertility measurement.
4.	Disability measurement	Important diseases for disability measurements are poliomyelitis, vit. A deficiency and leprosy.

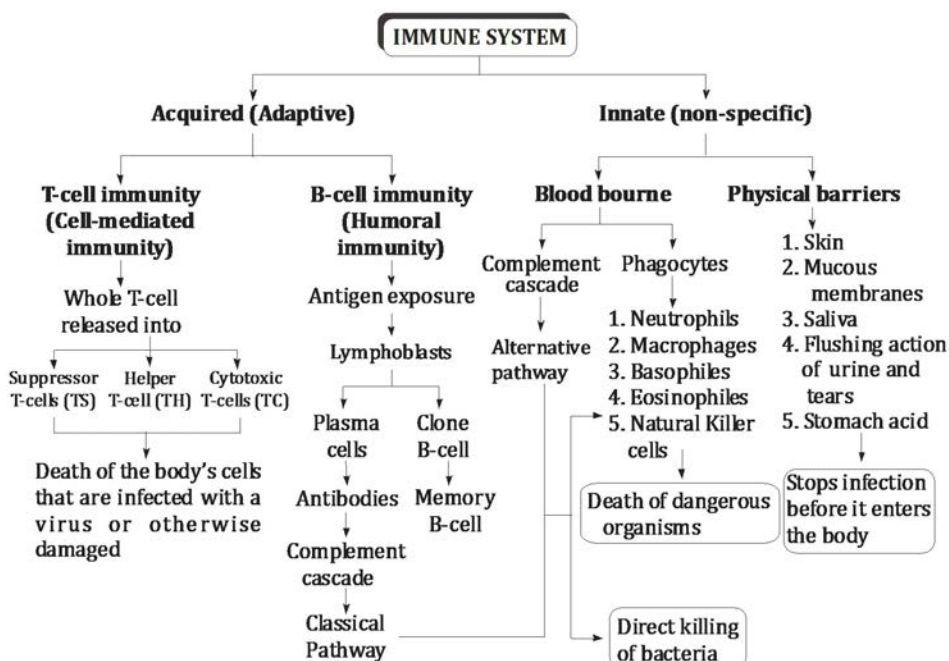
➤ Epidemiological method

TYPES OF EPIDEMIOLOGICAL METHOD	DESCRIPTION
Descriptive epidemiology	It deals with the detailed description of disease and then making observation about the trend of disease distribution.
Analytical epidemiology	It includes various types of advanced epidemiological studies dealing with the determinants of the disease.
Experimental epidemiology	These studies are some of the experimental studies in laboratories using rates and mice for study of drug action.

❑ IMMUNITY

- The resistance of the body to overcome any disease is known as **immunity**. The Latin term “**immunis**” meaning “**exempt**” or freedom, has given the English word Immunity. It refers to all the mechanisms used by the body for protection from environmental agents that are foreign to the body. e.g. micro-organisms or their products, certain food items, chemical, drugs and pollen etc.
- Immunology**: Study of the ability of an organism to resist a disease is called “**immunology**”.
- Father of immunology**- Edward Jenner

❖ Immune System



- Immunity** is defined as the resistance offered by the host against microorganism or any foreign substance.



SOCIAL PHARMACY

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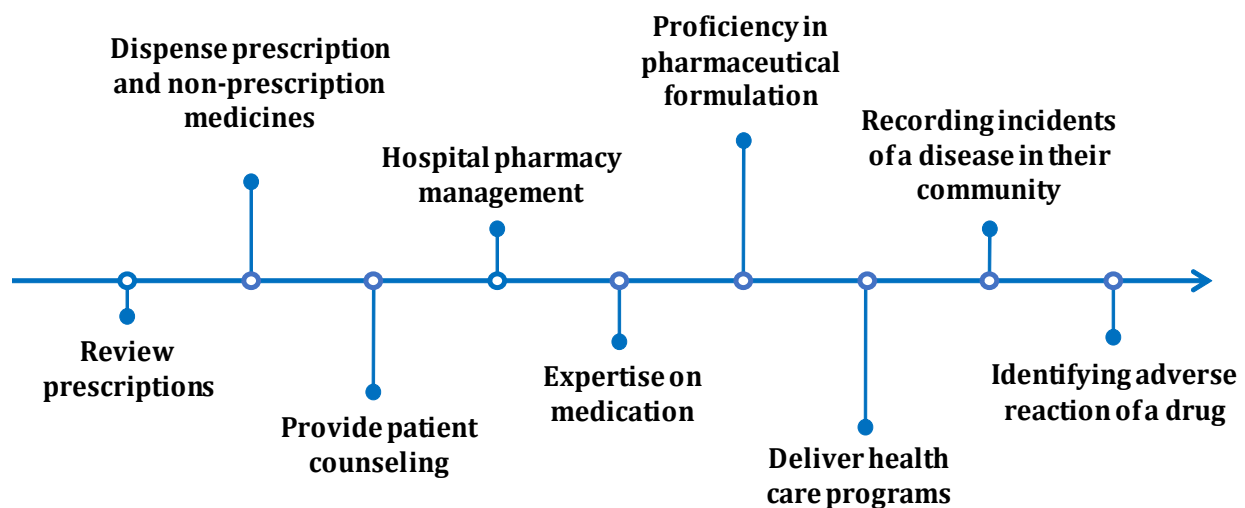
Introduction to Social Pharmacy

❑ DEFINITION SOCIAL PHARMACY

- A science that addresses the social aspects of the pharmacy profession is known as “social pharmacy,” and it deals with the function of medicines from social, scientific, and humanistic perspectives.



❖ Role of Pharmacist in Public Health



❑ CONCEPT OF HEALTH

- **(WHO) World Health Organization defines health as: [MCPE-2022]**
- The World Health Organization (WHO) defines health as “a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity and the ability to lead a socially and economically productive life.”
- As per WHO health has major three dimensions - physical, mental and social - which are interrelated and influence each other greatly.



❑ VARIOUS DIMENSIONS

- Health is a complex and multidimensional concept that encompasses various aspects of an individual’s well-being.



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MODULE 6

GENERAL INTELLIGENCE
AND REASONING

GENERAL ARITHMETIC

सामान्य हिन्दी

GENERAL ENGLISH

COMPUTER AWARENESS

GENERAL SCIENCE

GENERAL KNOWLEDGE

CURRENT AFFAIRS

Rationalised as per Latest Pharmacist Exam Syllabus

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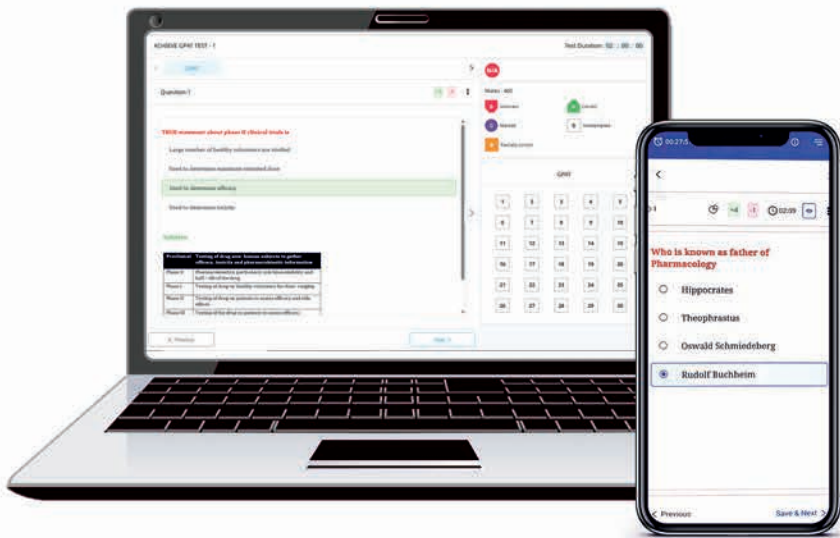
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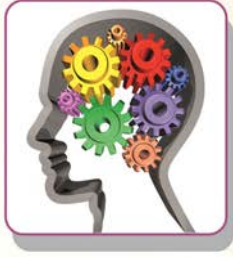
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GENERAL INTELLIGENCE AND REASONING

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VERBAL REASONING

Analogy

“Analogy means correspondence or similarity.”

It comes from two words – “Ana” = Relation and “Logy” = Information.

It shows comparison between two things based on different relations like unit, country, work, etc.

□ Types of Analogy

❖ Type 1 – Word Analogy

- **Country & Capital** – China : Beijing :: India : New Delhi
(France : Paris, Australia : Canberra, Canada : Ottawa)
- **State & Capital** – Rajasthan : Jaipur :: Bihar : Patna
- **Country & Currency** – India : Rupee :: USA : Dollar
- **Country & Parliament** – USA : Congress :: UK : Parliament
- **Instrument & Measurement** – Barometer : Pressure :: Thermometer : Temperature
- **Country & National Game** – India : Hockey :: USA : Baseball
- **Individual & Group** – Bees : Swarm :: Sheep : Flock
- **Animal & Young One** – Cow : Calf :: Cat : Kitten
- **Individual & Class** – Man : Mammal :: Snake : Reptile
- **Animal/Thing & Sound** – Dog : Bark :: Snake : Hiss
- **Male & Female** – Horse : Mare :: Lion : Lioness
- **Individual & Dwelling** – Bee : Hive :: Lion : Den
- **Game & Place** – Tennis : Court :: Wrestling : Arena
- **Profession & Workplace** – Teacher : School :: Doctor : Hospital
- **Study & Topic** – Ornithology : Birds :: Cardiology : Heart
- **Product & Material** – Paper : Pulp :: Shoes : Leather
- **Word & Synonym** – Inception : Beginning :: Diligent : Attentive
- **Word & Antonym** – Absolve : Accuse :: Cease : Begin
- **Disease & Cause** – Malaria : Mosquito :: Tuberculosis : Air

❖ Type 2 – Alphabetical Analogy

Before dealing with the problems, candidates are advised to remember the following.



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Question: Find the mismatch [BIHAR 2018]

- (a) Gorichen Peak - Arunachal Pradesh
- (b) Nilgiri Hills - Kerala
- (c) Nanda Devi - Uttarakhand
- (d) Khardung La Pass - Jammu and Kashmir

Solution:

- **Gorichen Peak** → Arunachal Pradesh (correct)
- **Nanda Devi** → Uttarakhand (correct)
- **Khardung La Pass** → Ladakh (earlier J&K, correct as per old context)
- **Nilgiri Hills** → Mainly in **Tamil Nadu**, partly in Karnataka & Kerala → not only Kerala.

Ans : (b) Nilgiri Hills - Kerala

Question: Pick the odd one. [DDHS MH - 2021]

- (a) Teacher
- (b) Parent
- (c) School
- (d) Student

Solution:

- **Teacher, Student, School** → All are directly part of the education/learning system.
- **Parent** → Belongs to family, not a formal part of the school system.

Hence, **Parent** is the odd one out.

Ans : (b) Parent

Question: Which word do not fit in the group.

[DDHS MH- 2021]

- (a) Diamond
- (b) Gold
- (c) Coal
- (d) Graphite

Solution:

- **Gold** - A metallic element (not a form of carbon)
- **Diamond** - A crystalline allotrope of carbon
- **Coal** - An amorphous form of carbon, mainly used as fuel
- **Graphite** - A layered allotrope of carbon used in pencils and as a lubricant

Ans : (b) Gold

Question: In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the pair in which the numbers are related in the same way as are the numbers of the following pairs. [RRB - 2025]

(Note Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g., 13 -

Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

59, 71.6

86, 98.6

(a) 92, 106.6

(b) 65, 77.6

(c) 77, 91.6

(d) 41, 63.6

Solution:

Given Pairs:

- **59** → **71.6** → $59 + 12.6 = 71.6$
- **86** → **98.6** → $86 + 12.6 = 98.6$

So, the rule is: **add 12.6 to the first number**

$65 + 12.6 = 77.6$

Ans : (b) 65, 77.6

Question: Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.) [RRB - 2025]

(a) JLK

(b) NPO

(c) RTU

(d) FHG

Solution:

- All others follow the pattern:
First letter +2 → second letter, then (-1) → third letter
- Only RTU follows +2 and then +1, breaking the pattern.

Ans : (c) RTU

Question: Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the letter-cluster pair that DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.) [DSSSB - 2025]

(a) PS-RU

(b) BE-GM

(c) UX-WZ

(d) DG-FI

$$39 + (7^2 - 3) = 39 + 46 = 85$$

$$85 + (9^2 - 3) = 85 + 78 = 163$$

Therefore, the missing number in the given series is 163.

❖ **Alphabet Series:** Involves patterns in letters based on their positions in the alphabet.

Before dealing with the problems, candidates are advised to remember the following.

➤ **Ascending/forward order letter position**

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	5	6	7	8	9	10	11	12	13
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

➤ **Descending/forward order letter position**

A	B	C	D	E	F	G	H	I	J	K	L	M
26	25	24	23	22	21	20	19	18	17	16	15	14
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	12	11	10	9	8	7	6	5	4	3	2	1

➤ **Opposite letter**

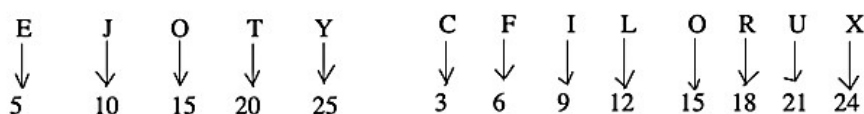
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N

NOTE: Methods to Remember the Position of Letter in English Alphabet

Some methods/techniques are given below to remember the position of English alphabets in forward or backward order.

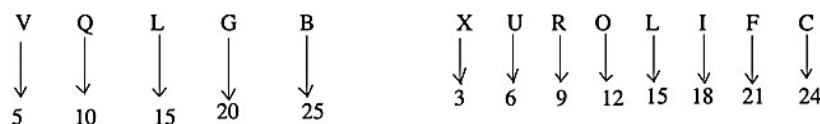
1. By using **EJOTY** and **CFILORUX** formulae, we can easily remember the position of letters of English alphabet in forward order.

Intervals like :



2. By using **VQLGB** and **XUROLIFC**, we can easily remember the position of letters of English alphabet in reverse order.

Intervals like :

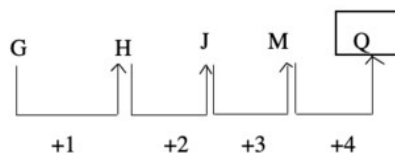


Examples:

- A, C, E, G, ... (Skipping one letter).
- Z, X, V, T, ... (Reverse order, skipping one letter).

Example: G, H, J, M, ?

Solution:



6. Which one of the given responses would be a meaningful order of the following?

[GDC PRACTICE MCQ]

- (1) Sentence (2) Word
(3) Chapter (4) Phrase (5) Paragraph

- (a) 4, 3, 1, 2, 5 (b) 2, 3, 5, 4, 1
(c) 3, 5, 1, 4, 2 (d) 1, 3, 2, 4, 5

7. Arrange the following words as per order in the dictionary: [GDC PRACTICE MCQ]

- (1) Dissident (2) Dissolve (3) Dissent
(4) Dissolute (5) Dissolution

- (a) 3, 1, 4, 5, 2 (b) 3, 2, 1, 4, 5
(c) 3, 1, 4, 2, 5 (d) 3, 2, 4, 5, 1

8. Arrange the following words as per order in the sequence: [GDC PRACTICE MCQ]

- (1) Major (2) Captain (3) Colonel

- (4) Brigadier (5) Lt. General

- (a) 5, 4, 3, 1, 2 (b) 5, 1, 4, 2, 3
(c) 4, 5, 1, 3, 2 (d) 3, 4, 2, 5, 1

9. Arrange the following words as per order in the dictionary: [GDC PRACTICE MCQ]

- (1) Noble (2) Nobilitary
(3) Noblesse (4) Nobility (5) Noble

- (a) 1, 4, 3, 2, 5 (b) 3, 4, 1, 2, 5
(c) 5, 2, 4, 1, 3 (d) 2, 4, 3, 5, 1

10. Arrange the given words in the sequence in which they occur in the Dictionary.

[GDC PRACTICE MCQ]

- (1) Frankenstein (2) Frankincense
(3) Frankalmoign (4) Frauendienst

- (a) 3, 2, 1, 4 (b) 1, 3, 2, 4
(c) 4, 1, 2, 3 (d) 3, 1, 2, 4

Answer Key

1- a	2- b	3- a	4- b	5- d	6- c	7- a	8- a	9- c	10- d
------	------	------	------	------	------	------	------	------	-------

Coding-Decoding

“The process of transmitting information securely using specific codes, ensuring only the intended recipient can decipher it”

Coding : Converting information into a specific code using rules or patterns to ensure safe communication.

Decoding : Reversing the coded message to retrieve the original information.

Memorization of following facts can be useful to answer this type of questions

1. Position number of letters in the alphabet

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	5	6	7	8	9	10	11	12	13
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

2. Position number of letters in the alphabet in reverse order

A	B	C	D	E	F	G	H	I	J	K	L	M
26	25	24	23	22	21	20	19	18	17	16	15	14
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	12	11	10	9	8	7	6	5	4	3	2	1

3. For opposite letters we can go through with the number of alphabets as the total of opposite letters always remain same (27).



5. If A =26, SUN=27, then CAT is equal to
[GDC PRACTICE MCQ]
(a) 24 (b) 27 (c) 57 (d) 58
6. If 'blue' in called 'black' 'black' is called 'green' 'green' in called 'white', 'white' is called 'red', 'red' is called 'yellow' and 'yellow' is called 'gray' then what is the colour of milk [GDC PRACTICE MCQ]
(a) White (b) Blue
(c) Red (d) Yellow
7. If tree means 'mountain', 'mountain', means 'water' 'water' means 'Jungle' 'Jungle' means 'bus', 'bus' mean 'truck' and truck' means 'house', then where do the fish live [GDC PRACTICE MCQ]
(a) Water (b) Jungle
(c) Mountain (d) Bus
8. If black' means 'pink', 'pink' means 'blue', 'blue' means 'white', white' means 'yellow, 'yellow' means 'red' and 'red' means 'brown', then what in the colour of clear sky [GDC PRACTICE MCQ]
(a) Brown (b) Red
(c) Blue (d) Pink
9. If yellow is called 'blue', 'blue' is called 'red', 'red' is called pink, pink is called black and black in called orange, then what is the colour of blood [GDC PRACTICE MCQ]
(a) Yellow (b) Orange (c) Pink (d) Blue
10. In a certain code language, 'go for morning walk' in written as \$*?# good for health is written as '£?@' and 'good to walk fast' is written as + @# then what in the code for health' in that code language [GDC PRACTICE MCQ]
(a)+ (b)# (c) £ (d)?
11. In a certain code, BASIC is written as DDULE. How is LEADER written in that code? [GDC PRACTICE MCQ]
(a) NGCFGT (b) NHCGGU
(c) OGDFT (d) OHDGHU
12. In a certain code, SPRING is written as UNUFRC. How is MOBILE Written in that code?
[GDC PRACTICE MCQ]
(a) KQEFPA (b) OMDGNC

- (c) OMDGPA (d) OMEFPA
13. If 'DELHI' is coded as '73541' and 'CALCUTTA' is coded as '82589662' then how 'CALICUT' will be written in that code language? [GDC PRACTICE MCQ]
(a) 5978213 (b) 5279431
(c) 8251896 (d) 8543691
14. In a certain code "UNDER" is written as "6152@" and "DEAF" is written as "52#7". How "FRAUD" is written is that code. [GDC PRACTICE MCQ]
(a) 7@6#5 (b) 72#65
(c) 7@#65 (d) None of these
15. In a certain code "89654" is written as "MNOPQ" and "1634" is written as "KOLQ". How "PNKLQ" will be written in that code. [GDC PRACTICE MCQ]
(a) 59134 (c) 59234
(b) 58134 (d) 59143
16. In a certain code "TREAD" is written as "7% #94" and "PREY" is written as "\$%#8" How is "ARTERY" written in that code? [GDC PRACTICE MCQ]
(a) 9#7%#8 (b) 9##7#8
(c) 9%7#%8 (d) 9%#7%8
17. If in a certain language "PROSE" is coded as "PPOQE", how is "LIGHT" coded in that code?
(a) LIGFT (b) LGGHT
(c) LGGFT (d) LLGFE
18. If the "KNIFE" is coded as "MPKHG", what do the letters "DTGCF" stand for?
(a) BARED (b) BREAD
(c) BRADE (d) BRAED
19. If in a certain language "SISTER" is coded as "535301", "UNCLE" is coded as "84670" and "BOY" as "129", how "son" is coded?
(a) 923 (b) 524
(c) 342 (d) 872
20. In a certain language, "WEAK" is coded as "9%2\$" and "SKIT" is coded as "#\$7@", then how will "WAIT" be coded in the same language?
(a) 927@ (b) 9267
(c) 92@6 (d) 9@67

Answer Key

1- c	2- c	3- b	4- b	5- c	6- c	7- c	8- d	9- c	10- c
11- b	12- d	13- c	14- c	15- a	16- c	17- c	18- b	19- b	20- a



➤ Net movement

2 km north - 2 km south = same level as start

19 east - 14 west = **5 km east** of start

Ans: (a) 5 km to the west

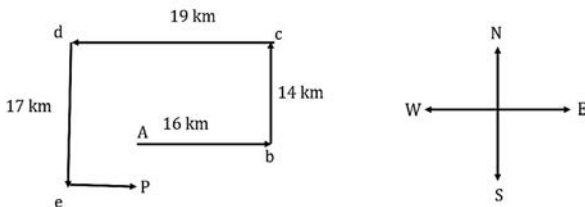
Question: Shaikh starts from Point A and drives 16 km towards the east. He then takes a left turn, drives 14 km, turns left and drives 19 km. He then takes a left turn and drives 17 km. He takes a final left turn, drives 3 km, and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? [DSSSB - 2025]

(All the turns are 90-degree turns only, unless specified.)

- (a) 4 km to the north
- (b) 3 km to the north
- (c) 2 km to the north
- (d) 1 km to the north

Solution:

According to the question:



Now, he is:

- **3 km south** to Point A
- **So, to return to Point A:** He should drive 3 km to the North.

Ans: (b) 3 km to the north

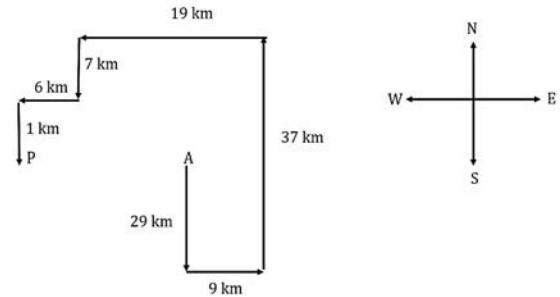
Question: Mr. Kent starts from Point A and drives 29 km towards the south. He then takes a left turn, drives 9 km, turns left and drives 37 km. He then takes a left turn and drives 19 km, turns left drives 7 km. He then 1 takes a right turn and drives 6 km. He takes a final left turn, drives 1 km and

stops at Point P. How far 6 (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90 degrees turns only, unless specified.) [DSSSB - 2025]

- (a) 18 km to the south
- (b) 16 km to the east
- (c) 18 km to the west
- (d) 16 km to the north

Solution:

According to the question:



Final position = 16 km west of Point A

To return to A go 16 km east

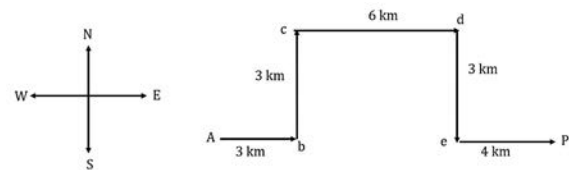
Ans: (b) 16 km to the east

Question: Point A walks 3 km east, then turns left and walks 3 km, then turns right and walks 6 km, turns right again for 3 km, and finally turns left and walks 4 km to reach Point P. What is the distance between Point A and Point P? [RRB - 2025]

- (a) 13 km towards east
- (b) 10 km towards east
- (c) 6 km towards east
- (d) 12 km towards east

Solution:

According to the question:



So, distance between A and P is 13 km east of the starting point

Ans: (a) 13 km towards east

MULTIPLE CHOICE QUESTIONS

1. Rahul put his timepiece on the table in such a way that at 6 P.M. hour hand points to North. In which direction the minute hand will point at 9.15 P.M.

[GDC PRACTICE MCQ]

- (a) South-East
- (b) South
- (c) North
- (d) West

2. One evening before sunset Rekha and Hema were talking to each other face to face. If Hema's shadow was exactly to the right of Hema, which direction was Rekha facing [GDC PRACTICE MCQ]

- (a) North
- (b) South
- (c) East
- (d) Data is inadequate



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BIOCHEMISTRY AND CLINICAL PATHOLOGY

BIOTECHNOLOGY, MICROBIOLOGY

COMMUNITY PHARMACY AND MANAGEMENT, DSBM

NON-PHARMA SUBJECTS

Rationalised as per Latest Pharmacist Exam Syllabus

GPAT DISCUSSION CENTER PVT. LTD.™





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PHARMACEUTICS AND ALLIED SUBJECTS



DISPENSING PHARMACY

- Signatura part of prescription contain**
 - Patient information
 - Direction to dispenser
 - Direction for patient
 - Renewal instruction
- The part of prescription containing directions to the pharmacist for preparing the prescriptions and for dispensing them, is known as**
 - Superscription
 - Refilling
 - Subscription
 - Signatura
- In a prescription, Rx is an abbreviation of the Latin word 'Recipe', meaning**
 - To take
 - To provide
 - To receive
 - To observe
- What is ter in die in prescription**
 - Once in three days
 - Three tablets at a time
 - Three times a day
 - Two or three times a day
- Which of the following must be present on a prescription in order for it to be valid**
 - Name of medicine
 - How to take the medicine
 - Quantity to be dispensed
 - Signature of the doctor
- Signatura is the direction given to**
 - Prescriber
 - Pharmacist
 - Patient
 - Manufacturer
- In a prescription order inscription denotes**
 - Main body of the prescription containing formula
 - Guidelines to the pharmacist
 - Address of patient
 - Address of prescriber
- Hora somni means**
 - Sufficient amount
 - At bed time
 - At once
 - If necessary
- The meaning of Latin term 'Mane'**
 - Every Night
 - Every Morning
 - In the morning
 - During the night
- The meaning of Latin term Rx**
 - Take thou
 - When necessary
 - Send
 - Write
- Latin term "Auristillae" stands for**
 - Eye drop
 - Ear drop
 - Nose wash
 - Mouth wash
- Latin term S.O.S. means**
 - Take alternate days
 - Take immediately
 - Take as directed
 - Take when necessary
- The term 'bd' in prescription means**
 - Twice daily
 - Thrice daily
 - Once a day
 - Four times a day
- In a prescription 'post cibos' means**
 - Before food
 - After food
 - As directed
 - Occasionally
- Meaning of the Latin term 'sumendus' is**
 - To be taken
 - You take
 - To be used
 - To be applied
- The dose for children can be calculated on the basis of body weight by**
 - Young's rule or Dilling's rule
 - Young's rule or Catzel rule
 - Dilling's rule or Catzel rule
 - Clark's formula



- 288. The model consists of one or more peripheral compartments connected to a central compartment is**
- (a) Catenary model (b) Open model
(c) Mammillary model (d) Closed model
- 289. Kinetically $K=(A_0 - A_t)$ is expressed for**
- (a) Zero order (b) First order
(c) Second order (d) All of these
- 290. When the kinetics of a pharmacokinetic process changes from first order to zero order with increasing dose is called as**
- (a) Mixed order kinetics
(b) Nonlinear kinetics
(c) Dose dependent kinetics
(d) All of these
- 291. Nonlinearities in pharmacokinetics can be observed in**
- (a) Naproxen (b) Vitamin C
(c) Riboflavin (d) All of these
- 292. The characteristic of non-linear pharmacokinetics includes**
- (a) Area under the curve is proportional to the dose
(b) Elimination half-life remains constant,
(c) Area under the curve is not proportional to the dose
(d) Amount of drug excreted through remains constant
- 293. Under BCS class I drug are having**
- (a) High solubility and permeability
(b) Low solubility and permeability
(c) High solubility and low permeability
(d) Low solubility and high permeability
- 294. IVIVC utilizes the principles of statistical moment analysis**
- (a) Level A (b) Level B
(c) Level C (d) Level D
- 295. When two brands of a drug product gives same clinical results, it is termed as**
- (a) Therapeutic equivalence
(b) Bio equivalence
(c) Pharmaceutical equivalence
(d) Clinical equivalence
- 296. Fraction of administered dose (which may be -n form of an ester of salt) of active drug is termed as**
- (a) Activity factor (b) Formulation factor
(c) Intrinsic factor (d) Salt factor
- 297. IVIVC utilizes the principles of a single point correlation**
- (a) Level A (b) Level B
(c) Level C (d) Level D
- 298. The loading dose L_d of a drug is usually based on the**
- (a) Total body clearance of the drug
(b) Percentage of drug bound to plasma proteins
(c) Fraction of drug excreted unchanged in the urine
(d) Apparent volume of distribution & desired drug concentration in plasma
- 299. For the determination of dissolution profile of Microspheres, which is the best dissolution model we can apply**
- (a) Baker - Lonsdale
(b) Hixson-Crowell model
(c) Higuchi model
(d) Noyes Whitney equation
- 300. The systems that follows, Weibull Mathematical Model used to describe drug release kinetics are**
- (a) Swellable polymeric devices
(b) Diffusion matrix formulation
(c) Erodible matrix formulation
(d) Transdermal system

PHARMACY LAW AND ETHICS

- 301. Who was the Chairman of the Drugs Enquiry Committee**
- (a) B. Mukherjee (b) Joseph Bhole
(c) S.S. Bhatia (d) R.N. Chopra
- 302. Which one of the following is NOT an ex-officio member or Pharmacy Council of India**
- (a) The Director General of Health Services
(b) The Director of Central Drugs Laboratory
(c) The Drug Controller General of India
(d) The Director of Pharmacopoeia Laboratory
- 303. State Pharmacy Council should have the following numbers of elected members**
- (a) 5 (b) 6 (c) 9 (d) 7



PHARMACOLOGY AND ALLIED SUBJECTS

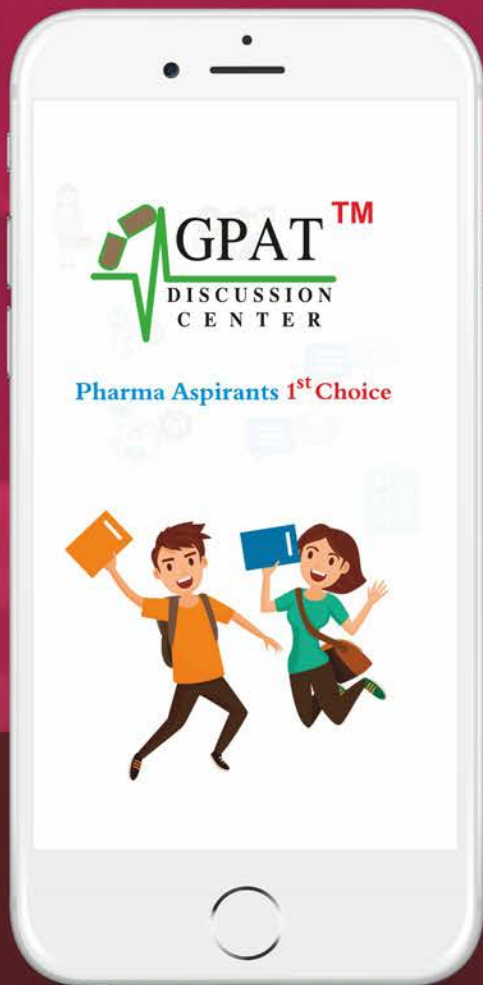


PHARMACOLOGY AND TOXICOLOGY

GENERAL PHARMACOLOGY

- Drugs used for rare diseases are known as**
 - Orphan drugs
 - Rare drugs
 - Over the counter drugs
 - Emergency drugs
- The fraction of an administered drug that reaches the systemic circulation in unchanged form from a given dosage form**
 - Bioavailability
 - Bioequivalence
 - Therapeutic equivalents
 - Pharmaceutical alternative
- Identify the antidote for toxic levels of opioids**
 - Glucagon
 - Beta-blockers
 - Aminocaproic acid
 - Naltrexone
- G-protein coupled receptors are**
 - 5-helical structure
 - 7-helical structure
 - 6-helical structure
 - 9-helical structure
- What is acute tolerance known as**
 - Habituation
 - Idiosyncrasy
 - Tachyphylaxis
 - Addiction
- Two structurally different drugs providing same experimental conditions are said to be clinical response under same**
 - Chemically equivalent
 - Biologically equivalent
 - Therapeutically equivalent
 - Clinically bioequivalent
- Which of the following is related to the study of adverse effects and poisoning of drugs**
 - Pharmacovigilance
 - Pharmacopoeia
 - Chemotherapy
 - Toxicology
- Which branch of medicine, biology, and pharmaceutical sciences is focused on understanding how drugs or medications work**
 - Pharmacology
 - Nephrology
 - Botany
 - Veterinary
- The parenteral preparations injected between the dermis and epidermis of the skin is termed as**
 - Intramuscular injections
 - Intracutaneous injections
 - Subcutaneous injections
 - Hypodermic injections
- Unexpected drug responses which cannot be predicted in individual recipients are defined as**
 - Hypersensitivity
 - Idiosyncrasy
 - Teratogenicity
 - Anaphylaxis
- In clinical pharmacy, what does "OTC" mean**
 - Outpatient Treatment Center
 - On-Time Consultation
 - Over-the-Counter
 - Order to Compound
- Who among the following personalities is considered as the father of modern pharmacology**
 - Corwin Hansch
 - Oswald Schmiedeberg
 - Claudius Galenus
 - William Procter
- Medication taken for prevention of a disease is known as**
 - Pre-workout drug
 - Prophylactic drug
 - Early drug
 - Recharge drug





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