



RRB PHARMACIST

MODEL PAPER -2

2024

TIME:-
9 P.M

40 QUESTIONS

WITH DETAILED EXPLANATION

SUBJECT -
PHARMACOLOGY

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LINK IS GIVEN IN DESCRIPTION

1. The science deals with the interaction of exogenously administered chemical molecules with living system

- (a) Anthropology
- (b) Bioinformatics
- (c) Cheminformatics
- (d) Pharmacology

1. The science deals with the interaction of exogenously administered chemical molecules with living system

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Definitions

- **Anthropology** is the scientific study of humanity, concerned with human behavior, human biology, cultures, societies, and linguistics, in both the present and past, including archaic humans.
- **Bioinformatics** is an interdisciplinary field of science that develops methods and software tools for understanding biological data, especially when the data sets are large and complex.
- **Cheminformatics** refers to the use of physical chemistry theory with computer and information science techniques—so called "in silico" techniques—in application to a range of descriptive and prescriptive problems in the field of chemistry, including in its applications to biology and related molecular fields.
- **Pharmacology** is the science deals with the interaction of exogenously administered chemical molecules with living system.

2. Who discovered Penicillin vaccine

- (a) Robert Koch
- (b) Alexander Fleming
- (c) Watson and Crick
- (d) Edward Jenner

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Scientists & their Contributions

SCIENTISTS	CONTRIBUTIONS
Charles Nicolle	Typhus fever
Enders, Robbins and Weller	Cultivation of Polio viruses
Georges Kohler	Developed hybridoma technology for monoclonal antibodies
Paul H. Muller	Discover DDT's insecticidal action.
Peyton Roux	Viral oncogenesis
Robert Koch	Discovery of causative agent of tuberculosis
Rosalyn Yallow	Developed radioimmunoassay
S. Tonegawa	Elucidated the nature of antibody diversity
Sinoussi Montagniar	Discovered HIV virus
Sir Alexander Fleming	Discovery of penicillin
Sir Ronal Ross	Malarial parasite life cycle in mosquitoes
Waksman	Streptomycin (first antitubercular)
Watson and Crick	Double helix structure of DNA

3. Source of Aspirin is

- (a) Plant
- (b) Mineral
- (c) Animal
- (d) Synthetic

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Different sources of drugs are:

Plants

Morphine, atropine
Digoxin, quinine
etc.

Animals

Insulin, heparin

Minerals

Ferrous sulphate,
magnesium
sulphate

Microorganism

Penicillin
,streptomycin

Semisynthetic

Hydromorphone,
hydrocodon

Synthetic

Aspirin,
Paracetamol

4. Drug obtained from animal source

- (a) Dicoumarol
- (b) Heparin
- (c) Insulin-human
- (d) Cocaine

4. Drug obtained from animal source

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5. Drugs used for rare diseases are known as

- (a) Orphan drugs
- (b) Rare drugs
- (c) Over the counter drugs
- (d) Emergency drugs

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5. Drugs used for rare diseases are known as

- (a) Orphan drugs**
- (b) Rare drugs
- (c) Over the counter drugs
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Orphan Drugs

- Drugs that are used for the diagnosis, treatment or prevention of rare diseases.
- The expenses incurred during the development, manufacture and marketing of drug cannot be recovered by the pharmaceutical company from selling the drug .

“SR DDLG Ka FAN Hai”

S → Sumatriptan

R → Rifabutin

D → Digoxin immune fab

L → Liothyronine (T3)

F → Fomipizole

A → Amphotericin B

N → Nitrates

6. An orphan drug is one that has

- (a) Low therapeutic index
- (b) Special manufacturer economic
- (c) Drug with high toxicity
- (d) Imported drug from foreign

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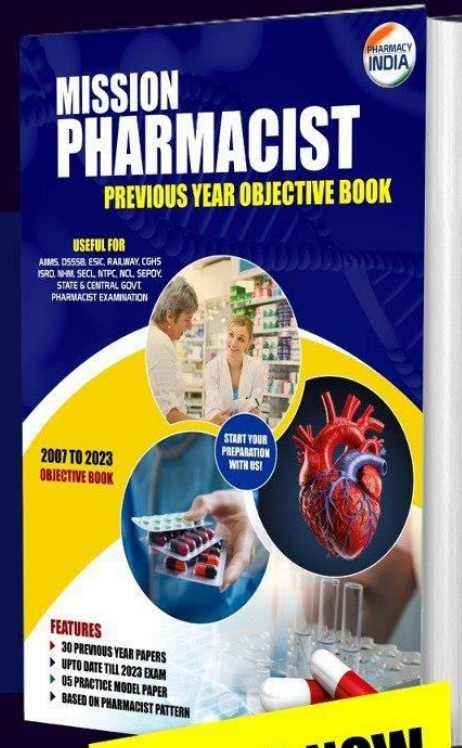
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Orphan Drugs

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7. Which of the following statement best describes an orphan drug

- (a) It is a drug which acts on orphan receptors
- (b) It is a very cheap drug
- (c) It is a drug which has no therapeutic use
- (d) It is a drug required for treatment or prevention of a rare disease

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8. Which of the following is NOT among the orphan drugs

- (a) Nitrates
- (b) Fomepizole
- (c) Liposomal Amphotericin B
- (d) Ketoconazole

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8. Which of the following is NOT among the orphan drugs

- (a) Nitrates
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Orphan Drugs

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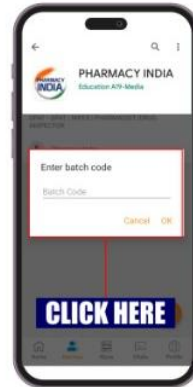
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9. Drugs that are obtained if prescribed are known as

- (a) Physician sample
- (b) Placebo
- (c) OTC drugs
- (d) Prescription drug



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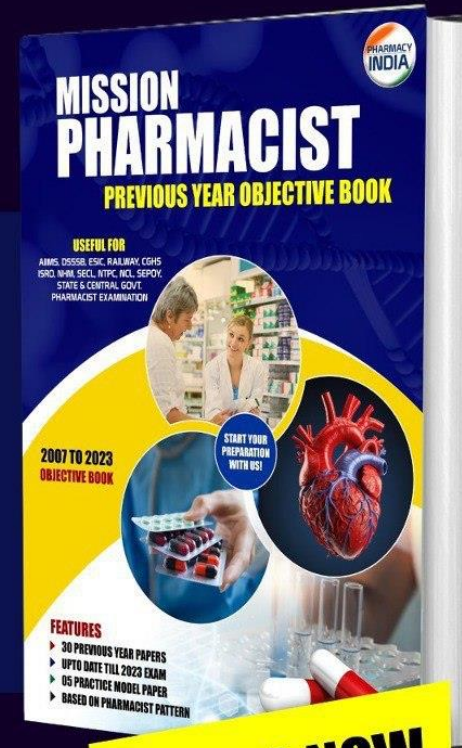
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9. Drugs that are obtained if prescribed are known

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OVER THE COUNTER DRUGS	PRESCRIPTION DRUGS
These drugs can be sold to a patient without the need for a doctor's prescription	These are drugs which can be obtained only upon producing the prescription of a RPM.
e.g., Paracetamol, antacids etc.	e.g., antibiotics, antipsychotics etc.

10 . Hypodermic injections are administered into

- (a) The skin between epidermal and dermal layer
- (b) Into the tissue of relaxed muscle
- (c) Into loose connective and adipose tissue immediately beneath the dermal skin layer
- (d) Into the cardiac muscle

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(b) Into the tissue of relaxed muscle

(c) Into loose connective and adipose tissue immediately beneath the dermal skin layer

(d) Into the cardiac muscle

- **Hypodermic injections** are administered into loose connective and adipose tissue immediately beneath the dermal skin layer.
- **Intradermal** - The skin between epidermal and dermal layer.
- **Intramuscular** – Inj. given into the tissue of relaxed muscle.
- **Intracardiac** – Inj. given into the cardiac muscle.

11. Which of the following is a disadvantage of the parenteral route

- (a) Rapid action
- (b) Inconvenient and painful
- (c) Can be given to unconscious patient
- (d) Drug absorption in gut is bypassed

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11. Which of the following is a disadvantage of the parenteral route

(a) Rapid action

(b) Inconvenient and painful

(c) Can be given to unconscious patient

(d) Drug absorption in gut is bypassed

Disadvantages of parenteral routes are—

- the preparation has to be sterilized and is costlier,
- the technique is invasive and painful,
- assistance of another person is mostly needed (though self injection is possible, e.g. insulin by diabetics),
- there are chances of local tissue injury and,
- in general, parenteral route is more risky than oral.

12. Route of administration for Heparin and Warfarin

- (a) I.V. and oral
- (b) S.C. and L.M.
- (c) Oral and I.V.
- (d) None of these

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12. Route of administration for Heparin and Warfarin

- (a) I.V. and oral
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- (c) Oral and I.V.
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Classification

Used in-vivo	Drugs
Parenteral Anticoagulants	
Indirect thrombin inhibitors	Heparin, Low molecular weight heparins, Fondaparinux, Danaparoid
Direct thrombin inhibitors	Lepirudin, Bivalirudin, Argatroban
Oral anticoagulants	
Coumarin derivatives	Bishydroxycoumarin (dicumarol), Warfarin sod, Acenocoumarol (Nicoumalone), Ethylbiscoumacetate
Indandione derivative	Phenindione
Direct factor Xa inhibitors	Rivaroxaban
Oral direct thrombin inhibitor:	Dabigatran etexilate
Used in-vivo	Heparin, Sodium citrate

13. Hyperpyrexia is a state of

- (a) High blood pressure
- (b) Low body temperature
- (c) High body temperature
- (d) Low blood pressure

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- (a) High blood pressure
- (b) Low body temperature
- (c) High body temperature**
- (d) Low blood pressure

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Hyperpyrexia

Hyperpyrexia is a condition where the body temperature goes above 106.7 degrees Fahrenheit (41.5 degrees Celsius) due to changes in the hypothalamus — the organ in the brain that regulates temperature.

14. Which route of drug administration is most likely to undergo first-pass effect

- (a) Intramuscular
- (b) Intravenous
- (c) Oral
- (d) Sublingual

14. Which route of drug administration is most likely to undergo first-pass effect

- (a) Intramuscular
- (b) Intravenous
- (c) Oral**
- (d) Sublingual

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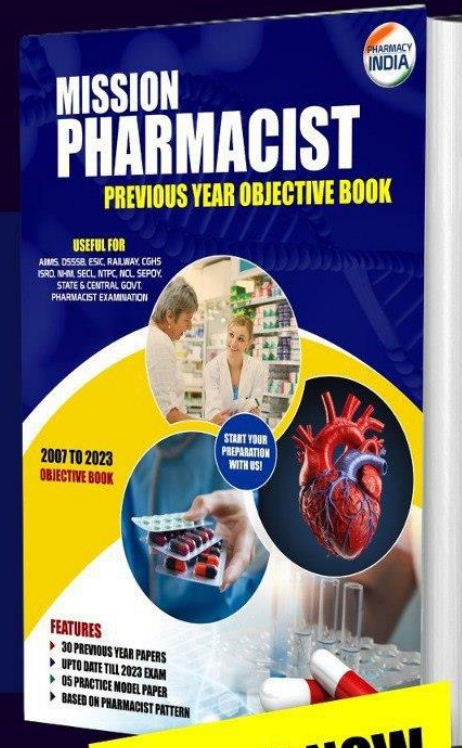
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Oral route

- ✓ It is safer and economical
- ✓ Several drugs are not effective by this route because of high first pass metabolism in the liver and intestinal wall (e.g. nitrates, lignocaine, propranolol, pethidine).

15. The most common route of administration for Insulin

- (a) Subcutaneous
- (b) Intramuscular
- (c) Intravenous
- (d) All of these

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15. The most common route of administration for Insulin

- (a) Subcutaneous
- (b) Intramuscular
- (c) Intravenous
- (d) All of these

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Subcutaneous:-

- Only non-irritant drug are given absorption can be enhanced by enzyme Hyaluridanase S. C. drug implants can act as depot therapy. E.g.:- steroid hormones, Insulin.
- In children saline is injected in large quantities – Hypodermoclysis.
- Self-injection is possible because deep penetration is not needed.



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16. Inert substance given in the grab of medicine is called

- (a) Placebo
- (b) Vaccine
- (c) Toxoid
- (d) Multivitamin

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16. Inert substance given in the grab of medicine is called

- (a) Placebo**
- (b) Vaccine
- (c) Toxoid
- (d) Multivitamin

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Placebo

- A placebo is a "physiologically inert substance or sham intervention (psychological, physical or mechanical) which produces beneficial effects independent of any direct therapeutic effects". The positive effects occur as a result of a patient's expectations rather than as a result of a causative ingredient.

17. The injection inserted in the midline between the first and second cervical vertebrae are known as _____ injections

- (a) Intracisternal
- (b) Hypodermic
- (c) Intrabursal
- (d) Epidural

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17. The injection inserted in the midline between the first and second cervical vertebrae are known as _____ injections

- (a) Intracisternal
- (b) Hypodermic
- (c) Intrabursal
- (d) Epidural**

Deeper Tissues for Drug Administration

- ✓ **Intra-arterial injections:** - Only used for diagnostic studies. E.g.:- Angiograms, embolism therapy.
- ✓ **Intrathecal injections:** - Spinal anaesthetics in to subarachinoid space. E.g. Lidocaine
- ✓ **Intramedullary injections:** - Drug introduced to Bone marrow.
- ✓ **Intraarticular & Intratensional injections:** - Drug administered into joints. E.g.:- Hydrocortisone acetate in rheumatoid arthritis.
- ✓ **Retrobulbar injections:** - Injections behind the eye ball. E.g. Hydrocortisone
- ✓ **Epidural** - The injection inserted in the midline between the first and second cervical vertebrae.

18. The route of administration of Ceftriaxone is

- (a) Oral
- (b) Suspension
- (c) Sublingual
- (d) Parenteral

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18. The route of administration of Ceftriaxone is

- (a) Oral
- (b) Suspension
- (c) Sublingual
- (d) Parenteral**

Ceftriaxone

- ✓ **Ceftriaxone injection comes as a powder to be mixed with liquid, or as a premixed product, to be injected intravenously (into a vein) over a period of 30 or 60 minutes. Ceftriaxone injection can also be given intramuscularly (into a muscle).**

19. Enema is administered through

- (a) Body surface
- (b) Rectum
- (c) Oral
- (d) Sublingual

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19. Enema is administered through

(a) Body surface

(b) Rectum

(c) Oral

(d) Sublingual

Rectal Route

- Certain irritant and unpleasant drugs can be put into rectum as suppositories or retention enema for systemic effect.
- This route can also be used when the patient is having recurrent vomiting or is unconscious.
- E.g. Diazepam, indomethacin, paracetamol, ergotamine etc.



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20. The drug given from _____ route has 100% bioavailability

- (a) S.C
- (b) Oral
- (c) Topical
- (d) I.V.

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A vertical smartphone mockup with a white background. At the top is the Pharmacy India logo. Below it is a banner with the Pharmacy India logo and the text "PHARMACY INDIA Pharma Success Mantra" and "GPIAT • NIPER • DRUG INSPECTOR • PHARMACIST". Underneath is a cloud icon with a downward arrow. Below that is the "GET IT ON Google Play" logo. At the bottom, it says "Download PHARMACY INDIA App from play store" in purple and black text.

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20. The drug given from _____ route has 100% bioavailability

- (a) S.C
- (b) Oral
- (c) Topical
- (d) I.V.**

Intravenous (i.v.):

- ✓ The drug is injected as a bolus (Greek: bolos–lump) or infused slowly over hours in one of the superficial veins.
100% bioavailability.

21. Which of the following is NOT used sublingually

- (a) Isosorbide dinitrate
- (b) Nifedipine
- (c) Nitrofurantoin
- (d) Nitro-glycerin

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21. Which of the following is NOT used sublingually

(a) Isosorbide dinitrate

(b) Nifedipine

(c) Nitrofurantoin

(d) Nitro-glycerin

Sublingual (S.L.) or buccal –

- The tablet or pellet containing the drug is placed under the tongue or crushed in the mouth and spread over the buccal mucosa.
- Only lipid soluble and non-irritating drugs can be so administered.
- E.g. GTN, buprenorphine, desamino-oxytocin.

22. Which of the following can be marketed under generic name

- (a) Analgin
- (b) Meprobamate
- (c) Glutethimide
- (d) Barbital

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22. Which of the following can be marketed under generic name

(a) Analgin

(b) Meprobamate

(c) Glutethimide

(d) Barbital



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Analgin

- Analgin is generic name of Metamizole sodium.
- Analgin is an analgesic and antipyretic, in which the analgesic effect is considered the leading.

23. Through which route Ipratropium bromide is administered

- (a) Subcutaneous
- (b) Topical application
- (c) Oral
- (d) Inhalation

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23. Through which route Ipratropium bromide is administered

- (a) Subcutaneous
- (b) Topical application
- (c) Oral
- (d) Inhalation**

Inhalational route

- Absorption takes place from alveoli.
- E.g. General anaesthetics, Ipratropium bromide.

Nasal route

- Mucous membrane of the nose absorb many drugs.
- E.g. GnRH agonist, Calcitonin, Desmopressin.

24. All of the following are examples of irrational drug use EXCEPT

- (a) Using drugs in a cost-effective way
- (b) Unnecessary prescribing for self-limiting conditions
- (c) Overdosing and underdosing
- (d) Prescribing drugs of no value

24. All of the following are examples of irrational drug use EXCEPT

- (a) Using drugs in a cost-effective way**
- (b) Unnecessary prescribing for self-limiting conditions
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- (d) Prescribing drugs of no value

Examples of irrational use of medicines include:

- **use of too many medicines per patient ("poly-pharmacy")**
- **inappropriate use of antimicrobials**
- **often in inadequate dosage**
- **for non-bacterial infections**
- **over-use of injections when oral formulations would be more appropriate**

25. Irritant drugs are NOT given by

- (a) Intramuscularly
- (b) Topically
- (c) Subcutaneously
- (d) Intravenously

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25. Irritant drugs are NOT given by

(a) Intramuscularly

(b) Topically

(c) Subcutaneously

(d) Intravenously

Topical route

- ✓ This refers to external application of the drug to the surface for localized action.
- ✓ It is often more convenient as well as encouraging to the patient.
- ✓ Drugs can be efficiently delivered to the localized lesions on skin, oropharyngeal/ nasal mucosa, eyes, ear canal, anal canal or vagina in the form of lotion, ointment, cream, powder, rinse, paints, drops, spray, lozenges, suppositories or pessaries.

26. Drug obtained from plant source

- (a) Reserpine
- (b) Penicillin
- (c) Ethanol
- (d) Sulfamethoxazole

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26. Drug obtained from plant source

(a) Reserpine

(b) Penicillin

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Different sources of drugs are:

Plants

Morphine, atropine
Digoxin, quinine,
reserpine etc.

Animals

Insulin, heparin

Minerals

Ferrous sulphate,
magnesium
sulphate

Microorganism

Penicillin
,streptomycin

Semisynthetic

Hydromorphone,
hydrocodon

Synthetic

Aspirin,
Paracetamol

27. The drug is placed under the tongue and allow to dissolve, this process is called as

- (a) Parenteral administration
- (b) Oral administration
- (c) Sublingual administration
- (d) Intradermal administration

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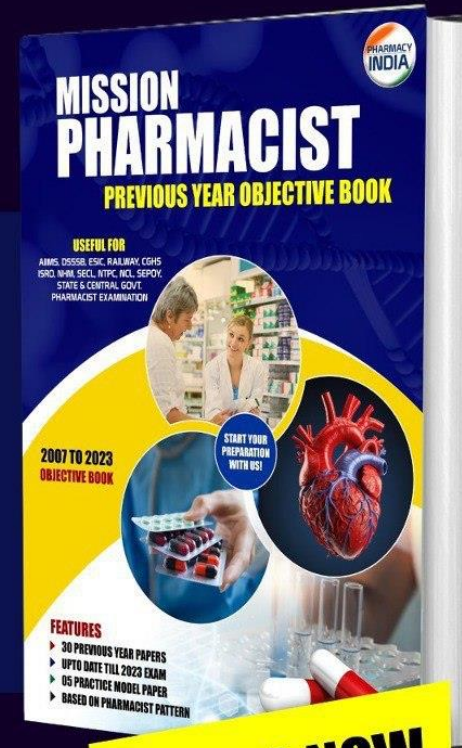
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Sublingual (S.L.) or buccal –

- The tablet or pellet containing the drug is placed under the tongue or crushed in the mouth and spread over the buccal mucosa.
- Only lipid soluble and non-irritating drugs can be so administered.
- E.g. GTN, buprenorphine, desamino-oxytocin.

28. Which type of force act in drug receptor interaction

- (a) Covalent
- (b) Electrostatic administration
- (c) Hydrophobic
- (d) All of these

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28. Which type of force act in drug receptor interaction

- (a) Covalent
- (b) Electrostatic administration
- (c) Hydrophobic
- (d) All of these**

Drugs interact with receptors through chemical bonds, including electrostatic, covalent, and hydrophobic bonds:

- **Electrostatic interactions:** These are strong between oppositely charged ionized molecules, but weak for hydrogen bonds and van der Waals forces.
- **Covalent bonds:** These are very strong and often irreversible under biological conditions.
- **Hydrophobic effect:** This is a weak interaction that occurs when drugs interact with the internal hydrophobic pockets of receptors and exclude water molecules.

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29. Which of the following drug is commonly administered by intranasal route

- (a) Insulin
- (b) Adrenaline
- (c) Desmopressin
- (d) Ganirelix

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29. Which of the following drug is commonly administered by intranasal route

(a) Insulin

(b) Adrenaline

(c) Desmopressin

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Inhalational route

- Absorption takes place from alveoli.
- E.g. General anaesthetics, Ipratropium bromide.

Nasal route

- Mucous membrane of the nose absorb many drugs.
- E.g. GnRH agonist, Calcitonin, Desmopressin.



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30. Major mechanism of transport of drugs across biological membranes is by

- (a) Passive diffusion
- (b) Active transport
- (c) Endocytosis
- (d) Facilitated diffusion

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Passive Diffusion

- ✓ It is a bidirectional process.
- ✓ Also called nonionic diffusion, it is the major process for absorption of more than 90% of the drugs.
- ✓ Passive diffusion is best expressed by Fick's first law of diffusion, which states that the drug molecules diffuse from a region of higher concentration to one of lower concentration until equilibrium is attained and that the rate of diffusion is directly proportional to the concentration · gradient across the membrane.
- ✓ Lipid-soluble drugs are transported across the membrane by passive diffusion.
- ✓ It does not require energy.

31. Facilitated diffusion of Glucose takes place sites

EXCEPT

- (a) Skeletal muscle
- (b) Adipose tissue
- (c) Insulin dependent tissues
- (d) Renal tubules

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Facilitated Diffusion of Glucose

- ✓ In skeletal muscle and adipose tissue, insulin promotes membrane trafficking of the glucose transporter GLUT4 from GLUT4 storage vesicles to the plasma membrane, thereby facilitating the uptake of glucose from the circulation.

32. Most variable absorption is seen with which route

- (a) Oral
- (b) Intramuscular
- (c) Intravenous
- (d) Rectal

32. Most variable absorption is seen with which route

- (a) Oral**
- (b) Intramuscular
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- (d) Rectal

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Oral route

- ✓ It is safer and economical
- ✓ Several drugs are not effective by this route because of high first pass metabolism in the liver and intestinal wall (e.g. nitrates, lignocaine, propranolol, pethidine).
- ✓ Variable absorption is seen in this route.

33. The route of administration of vaccine BCG is

- (a) Oral
- (b) Intra-muscular
- (c) Intravenous
- (d) Intra-dermal

33. The route of administration of vaccine BCG is

- (a) Oral
- (b) Intra-muscular
- (c) Intravenous
- (d) Intra-dermal**

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The BCG vaccine is administered intradermally, which means it's injected into the top layer of the skin. The injection site is usually the deltoid region of the left upper arm.

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34. 'Depot therapy' is possible with which route of administration

- (a) Oral
- (b) Topical
- (c) Intravenous
- (d) Intramuscular

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- (a) Oral
- (b) Topical
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Depot therapy

Depot injections provide longer duration drug action through slow absorption into the bloodstream. They are usually administered in the muscle, into the skin, or under the skin. The injected medication slowly releases the medication into the bloodstream.

35. Polio vaccine can be administered by

- (a) IM
- (b) SC
- (C) Topical
- (D) Oral

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35. Polio vaccine can be administered by

(a) IM

(b) SC

(C) Topical

(D) Oral

Polio vaccine administration

A trained health worker can administer the polio vaccine by intramuscular or intradermal injection.

The injection site depends on the person's age, but the CDC recommends the anterolateral aspect of the thigh for infants and small children. The needle length should be appropriate for the person's age and size.

36. Effect of injecting hypotonic saline intravenously

- (a) Damage to venous walls
- (b) Raise in the blood pressure
- (c) Hemolysis
- (d) Diuresis

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36. Effect of injecting hypotonic saline intravenously

(a) Damage to venous walls

(b) Raise in the blood pressure

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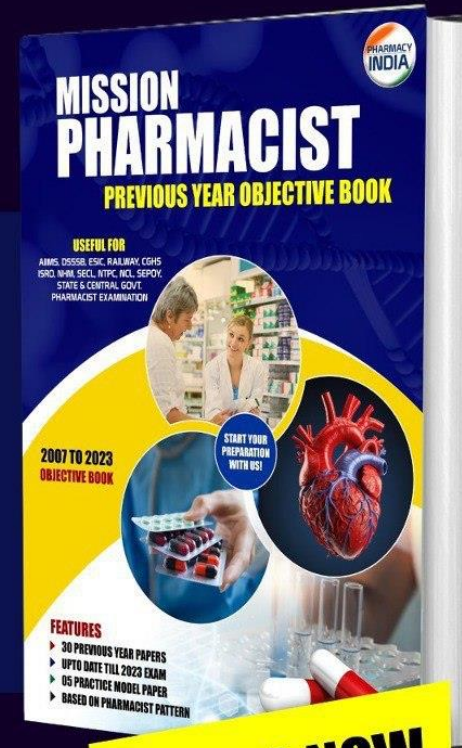
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Hypotonic saline IV

When hypotonic IV solutions are infused, it results in a decreased concentration of dissolved solutes in the blood as compared to the intracellular space.

This imbalance causes osmotic movement of water from the intravascular compartment into the intracellular space.

Increases the BP.

36. Effect of injecting hypotonic saline intravenously

- (a) Damage to venous walls
- (b) Raise in the blood pressure
- (c) Hemolysis
- (d) Diuresis

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37. Which are chemical substances produced by microorganisms

- (a) Antibiotics
- (b) Local Anaesthetics
- (c) Antihypertensive drugs
- (d) Antihistaminic agents

37. Which are chemical substances produced by microorganisms

(a) Antibiotics

(b) Local Anaesthetics

(c) Antihypertensive drugs

(d) Antihistaminic agents

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Different sources of drugs are:

Plants

Morphine, atropine
Digoxin, quinine,
reserpine etc.

Animals

Insulin, heparin

Minerals

Ferrous sulphate,
magnesium
sulphate

Microorganism

Penicillin
,streptomycin

Semisynthetic

Hydromorphone,
hydrocodon

Synthetic

Aspirin,
Paracetamol

38. Uses of isotonic saline do NOT include

- (a) I.V. injection
- (b) Intra-cutaneous injection
- (c) Sub-cutaneous injection
- (d) Injection into varicose veins

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Uses of isotonic saline include

- I.V. injection
- Sub-cutaneous injection
- Injection into varicose veins

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39. The drug which do not have an active metabolite is

- (a) Morphine
- (b) Neostigmine
- (c) Diazepam
- (d) Digitoxin

39. The drug which do not have an active metabolite is

(a) Morphine

(b) Neostigmine

(c) Diazepam

(d) Digitoxin

Active Drug	Active Metabolite
Amitriptyline	Nortriptyline
Codeine	Morphine
Diazepam	Oxazepam
Digitoxin	Digoxin
Imipramine	Desipramine
Phenacetin	Paracetamol
Primidone	Phenobarbitone
Sipronolactone	Canrenone
Allopurinol	Alloxanthine
Morphine	Morphine-6-glucuronide

Inactive Drug (Prodrug)	Active Metabolite
Proguanil	Cycloguanil
Levodopa	Dopamine
Enalapril	Enalaprilat
Dipivefrine	Epinephrine
Sulindac	Sulfide metabolite
Prednisone	Prednisolone
Bacampicillin	Ampicillin
Sulfasalazine	5-Amino salicylic acid
Acyclovir	Acyclovir triphosphate
Cyclophosphamide	Aldophosphamide, Acrolein

40. Which of the following routes of drug administration is not parenteral

- (a) IV
- (b) SC
- (c) ID
- (d) SL

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40. Which of the following routes of drug administration is not parenteral

- (a) IV
- (b) SC
- (c) ID**
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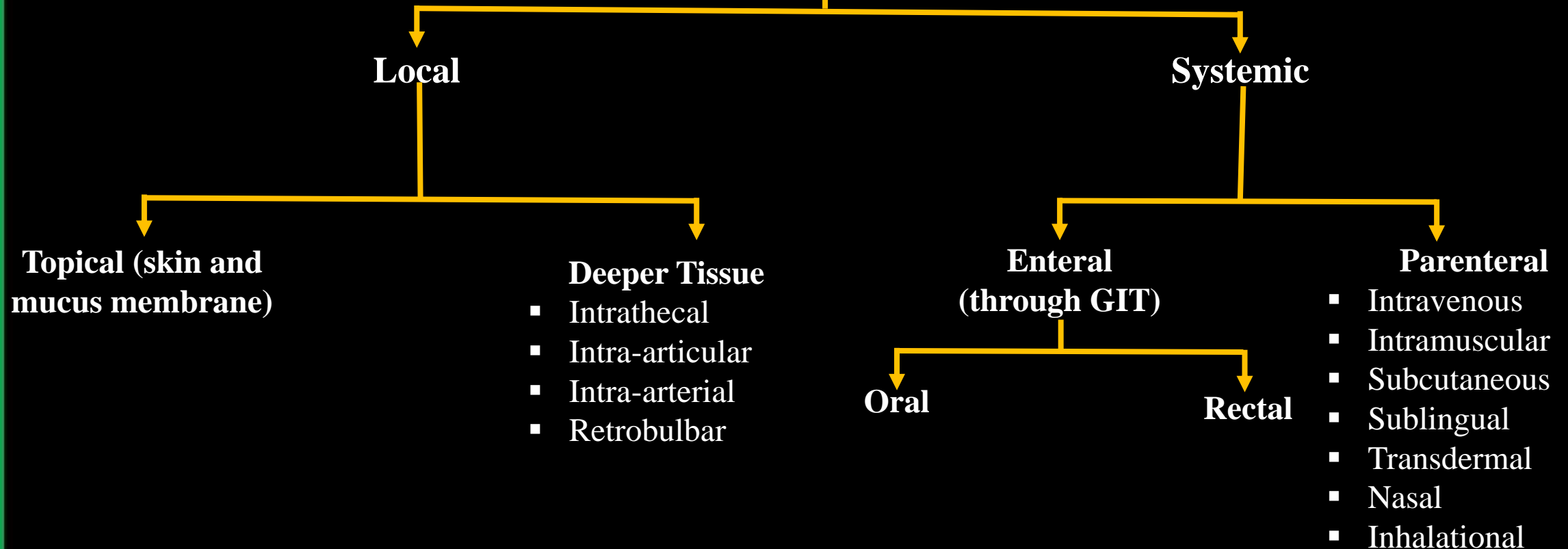
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Routes of Drug Administration

Different Routes



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