Mid Semester Exam - 2018
Sub : Pharmacology-I Dr. Surendra kumar

V th Sem.

Q1. Explain Neurohumoral Transmission.

⇒ Neurohumoral transmission may be defined as transmission of nerve impluse across the synapses and neuroeffector junction by release of humoral (chemical) messanger.

Steps of Neurohumoral transmission :-

(i) Impluse Conduction
(ii) Release of transmission
(iii) Transmitter action on postjunctional membrane.
(iv) Postjunctional activity.
(v) Termination of transmitter action.

i) Impluse Conduction :-

→ RMP (-70 mV) is achived by unequal distribution of ion (high permeability of K^+ & low permeability of Na^+) in extracellular fluid & cytosol. Stimulation of electrical impluse cause certain (↑)se in Na^+ conductance ⟶ and depolarisation occures.

→ And K^+ ion moves out towards their concentration gradient and repolarisation occurs.

→ The ionic distribution is normalized during refactory period by activation of $Na^+ - K^+$ pump.

→ And then action potential generate local circuit current which activate next excitable part of membrane and A.P propagated without decrement.

ii) Release of Transmission :-

→ Neurotransmitter (both excitory & inhibitory) are stored in presynaptic nerve ending within synaptic vesicles.

→ They are released by fusion of vasicular membrane through entry of Ca^{2+} which fluidized membrane and then all contents of vesicles are released in synaptic cleft by exocytosis.

~~iii) Transmission~~ of

(iii) Transmitter action on post-junctional membrane :-

→ The release of N.T binds with its specific receptor on post junctional membrane and depending upon its nature induces Excitatory post synaptic potential (EPSP) and inhibitory post synaptic potential (IPSP).

EPSP → (↑)se permeability of cation.
IPSP → (↑)se permeability of anion.

(iv) Post-junctional activity :-

→ A superthreshold EPSP generates a postjunctional action potential which results in
- nerve impluse (in neuron)
- secretion (in gland)
- Contration (in muscle)

→ The IPSP stabilize postjunctional membrane and depolarisation.

v.) Termination of transmitter action :-

→ After binding with its specific receptor, the neurotransmitter is either locally degraded or is drawn back to parasympathetic neuron by specific transpatter like
- NA transpatter (N
- dopamine ,, (DT
- seratonin ,, (SE

2.) Define Pharmacokinetics and its steps involved.

→ Pharmacokinetics is derived from two greek word pharmacon means "drug" and kinesis means "movement".

→ It is defined as the movement of drug in and alteration of drug by body.

→ It includes the ADME with their relationship pharmacological or toxicological or therapeutic response in man & animals.

→ In other word it is the study of what the body does to drug or fate of drug.

eg → Paracetamol → orally absorbed in 30-60 mint.
→ 25% bound to plasma protein and distributed throughout the body (volume of distribution ~ 1L/kg)
→ Metabolised through in liver
→ Excreted through urine.

Steps

(1) Absorption :-

→ The main factor which relates to absorption of drug is route of administration.
→ Physiological consideration in absorption are blood flow, total surface area, time of arrival of drug and

time of drug at absorption site.
→ other consideration for absorption are solubility, chemical stability & how soluble the drug.

(II) Distribution :-

→ Drugs are distributed into major body fluid e.g. plasma
→ specific tissue may take up certain drug. e.g. → Iodine is taken up by thyroid gland.
→ It is affected by the extent that drug binds to plasma protein
→ Drug distribution is affected by barrier. eg :- Placenta & BBB.

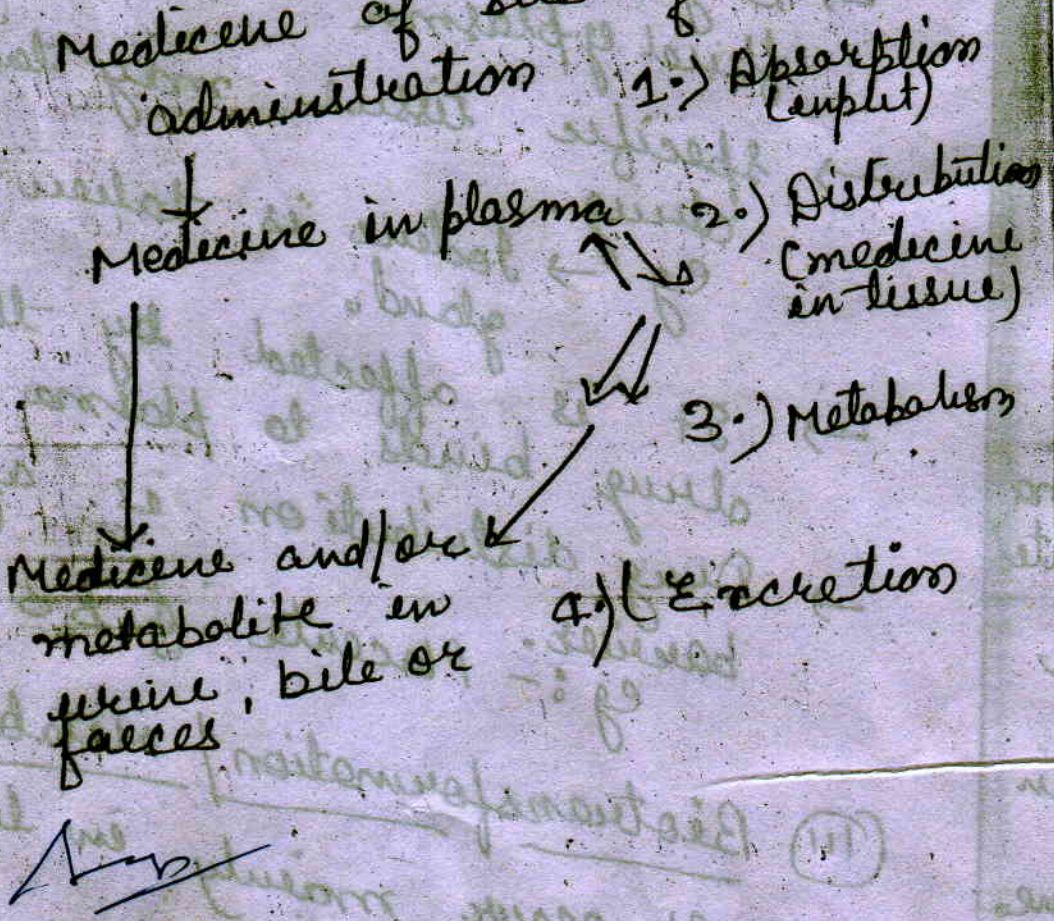
(III) Biotransformation / Metabolism :-

→ It occur mainly in liver & so called hepatic metabolism.
→ Drug metabolism is split into two phase in liver.
Example of Phase I → Oxidation
" Phase II → Conjugation

(iii) Excretion :-

→ It includes renal elimination and fecal elimination.

→ Drug can also be eliminated from the body bile & removed in feces.



Q 3. Define Pharmacodynamics with example.

→ It is derived from two greek word "pharmacon — drug" & "dynamis - power".

→ It is defined as the effect of drug on what the drug does to the body

eg:- Non-adrenaline raises Blood pressure

↓

Adrenaline

- stimulation of cardiac muscl
- hepatic glycogenolysis
- hyperglycaemia & etc.

Q.4 Define Pharmacology:-

→ It is defined as the study of drugs, their sources, nature and property.

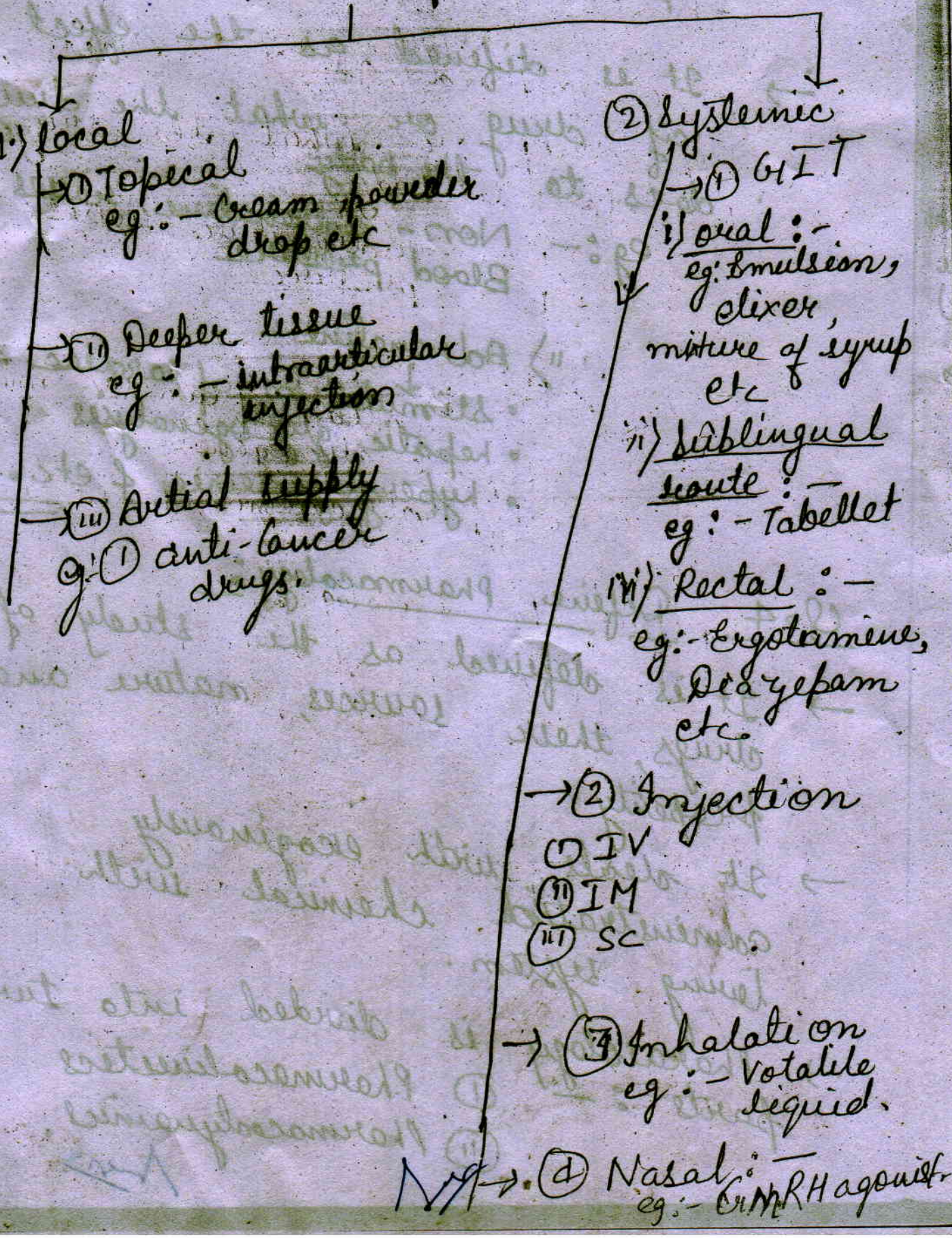
→ It deals with exoginously administrated chemical with living system.

→ Pharacology is divided into two parts:- (i) Pharmacokinetics
(ii) Pharmacodynamics.

(8)

Q5. What are Routes of administration Give its examples.

Routes of administration



Q) Define General Anaesthesia:

→ GAs are the drug that have the ability to bring about a reversible loss of consciousness, immobility and muscle relaxation sleep amnesia (memory loss).

Classification

Inhalation

i) Gas : N2O (Nitrous Oxide)

ii) Volatile liquid :-
eg :- ether →
Dimethylether
Divinyl ether

(iii) Halogenated Hydrocarbon
eg :- Chloroform,
Halothane

(iv) Halogenated Ether
eg - Enflurane,
Isoflurane,
Desflurane.

Intravenous

(i) Inducing agent:
eg :- Thiopentone sodium,
Methohexitone,
Sodium,
propofol,
Etomidate.

(ii) Slower acting agent :-
Benzodiazepines
eg :- Diazepam,
Midazolam.

(iii) Opoid Analgesia
Fentanyl.

(iv) Dissociative anaesthesia → ketamine

Q8.) Define Adverse drug reaction & its types :-

→ "Undesirable clinical manifestation".

→ A/c to WHO, it is results of undesirable or unintended consequences of drug administration

→ All drugs are able to produce adverse drug effect. The effects may be trival or some time fetal.

→ ADR's may developed promptly or only after prolonged medication or even after stoppage of drug.

Type of adverse drug Rxn.

i) Side effect
ii) Secondary effect
iii) Toxic effect
iv) Idosyncrasy
v) Intolerance
vi) Hepersensitivity (Drug allery.
vii) Photosensitivity
viii) Drug dependence or Drug addiction
ix) Drug withdrawal
x) Tetrogenocity

xi) Mutagenicity or (carcinogenicity)

xii) Drug induced disease