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Q No. 2,

Drug Receptors:

Many drug usually do not bind directly with enzymes channels, transporters or structured proteins, but act through specific macromolecules.

Different Receptors:

Internal receptors.

Cell-Surface receptors

Ion channel-linked receptors

G-Protein linked Receptors

Enzyme-linked Receptors.

Ligand-gated ion channels.

The first receptor family compromise ligand-gated ion channels that are responsible for regulation of the flow of the ions across cell membrane the activity of these channel is regulated by the binding of a ligand to the channel. Response to these receptor is very rapid having duration of a few milliseconds.

Example:
Nicotinic receptors.
GABA receptors.

Enzyme linked receptor.

Binding of ligand to extracellular domain activates or inhabits this cytosolic enzyme activity. Most common enzyme linked receptor are
Epidermal growth factors
Platelets derived growth factors
Insulin and others.

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Q No. (2)

Drug interactions :-

A drug interaction is a change in the action or side effects of a drug caused by concomitant administration with a food beverage supplement or another drug.

Different types of drug interaction :-

1. Pharmaceutical interaction
2. Pharmacokinetic interaction
3. Pharmacodynamic interaction

Pharmacokinetic :-

These occure when drugs alters the absorption distribution metabolism or excretion of another drug.

Absorptions:-

Antacide containing aluminum magnesium and calcium iron, etc interfere with the absorption of tetracyclines by forming.

unabsorbable complex with it

Some drug effect absorption of other drugs by altering gastrointestinal motility.

Metaclopramide increses the rate of gastric emptying and promites absorption of aspirin.

Distribution:-

Plasma Protein binding can cause displacement interaction more than one with lower affinity this result in increse in concentration of unbound drug Sulydates displace warfarin from binding sites resulting in

increased free warfarin levels and enhanced anticoagulant effect.

Metabolism:

This occure when metabolism and of the drugs is increased (enzyme induction or decreased enzyme inhibition) by another drug eg Carbamazepine induces Erythromycin inhibits the metabolizing enzyme of Carbamazepine and may increase it toxicity.

Q No. 3,

General Anesthesia:

General anesthesia is type of anesthesia that is used in major body system Surgeries that are needed to depress the whole body.
Surgeries that are need of general anesthesia such as heart transplant. brain Surgery.

Local Anesthesia:

Local anesthesia on th other hand is a type of anesthesia that is used in suppressing a part of the body only. when used other senses may not be affected such as consciousness. Hearing
Dental procedures like tooth extractions.

Different:-

Local anesthesia suppresses Pain in a Part of the body only while general anesthesia involves.

In general anesthesia there is greater risk of fatality compared to local anesthesia.

1, Stages of Analgesia:

→ Starts from beginning of anaesthetic inhalation and lasts up to the loss of consciousness.

→ Pain is progressively abolished.

→ Reflexes and respiration remain normal.

→ But it is difficult to maintain.

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II: Stage of Excitement:

Stage Starts from loss of Consciousness upto gain of rhythmical respiration

Respiration - irregular and large in volume.

Heart rate and BP raises.

III: Stage Surgical anaesthesia:

Extends from onset of regular respiration to cessation of spontaneous breathing.

As anaesthesia passes to deeper planes

Progressively - muscle tone decreases.

BP falls.

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IV: Stage of Medullary Paralysis:

There is cessation of breathing leading to failure of circulation and death.

Pupil is widely dilated

BP is very low.

Q No 2 (4)

Heart Failure:

Heart failure means that the heart is unable to pump blood around the body properly it usually occurs because the heart has become too weak or stiff. its sometimes called congestive heart failure although this name is not widely used nowadays.

Pathophysiology of heart failure

Pathophsiology.

In Heart failure the heart may not provide tissues with adequate blood for metabolic needs and cardiac related elevation of pulmonary or systemic venous pressures may result in organ congestion. This condition can result from abnormalities of systolic or diastolic function or commonly both.

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Q 4 Part (B)

Drug used for the treatment of Heart failure.

Statins - to lower LDL cholesterol..

ASPirin .. to Prevent blood clots..
clopidogrel - to Prevent blood clots.
warfarin - to Prevent blood clots..
Beta blockers - to treat heart attacks and heart failure and Sometimes used to lower blood Pressure.

Mechanism:
Heart failure begins after index event Produces an initial decline in Pumping Capacity of the heart.
After this intial decline in Pumping Capacity of.

Q No. (5)

Broad Spectrum :-

Broad Spectrum act against multiple strains and forms of different bacteria which share common structures and metabolic functions that can be attacked and affected to kill them.

Narrow Spectrum :-

Narrow Spectrum are more specific in their course and act against only certain bacteria as a more targeted approach.

Classification Antibiotics:

Antibiotics can be categorized by their Spectrum of activity namely whether they are narrow broad or extended Spectrum agents. Narrow Spectrum agent (e.g Penicillin G) affect Primarily gram-Positive bacteria.

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Q 5 (B),

many antiviral Compounds are nucleoside or nucleotide analogues whose mechanism of action is inhibition of viral nucleic acid synthesis. nucleoside analogues such as acyclovir and Penciclovir require phosphorylation to the monophosphate, which requires a thymidine kinase coded by herpes simplex virus and not present in uninfected cells, Cellular kinases phosphorylate acyclovir to the triphosphate moiety which inhibits the viral DNA

A novel mechanism of action inhibition of the helicase primase Complex is manifested by amenamevir.

Letermovir is an antiviral agent with activity agent cytomegalovirus,

Amantadine - M2 ion channel blocker

Rimantadine - weak NMDA receptor antagonist

Peramivir - inhibiting neuraminidase enzyme.

M-A-V-D.

	B- enfuvirtide	B- amantadine
viral attachment and entry	→ Penetration	uncoating → early Protein Synthesis
viral release	Packaging and assembly	= Late Protein synthesis and Processing → nucleic acid Synthesis.