3 Hours

Total Marks: 100

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labeled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculators** is **allowed**.

Q.1 a. Select the correct alternative: (Any Six) **06**

1. Name the enzyme which catalyzes the synthesis of the second messenger cAMP.
   a. adenylyl cyclase b. adenylyl synthase
   c.adenylyl synthetase d. guanylyl cyclase
2. The term used for the drug concentration which gives lethal effects in half the number of subjects in a study population is_____.
   a. LD_{50} b. ED_{50}
   c. PD_{50} d. LD_{99}
3. The resting potential of a postsynaptic membrane is _____
   a. -80mV b. -70mV
   c. -75mV d. -85mV
4. The dose-response curve in which the effect of the drug is all or none is called _____
   a. graded response curve b. quantal response curve
   c.both d. neither
5. _____ is the feature of a drug that depends on affinity and efficacy
   a. intrinsic activity b. potency
   c. lethality d. protectivity
6. Which of the following would correctly measure the 'protective index'?
   a. ratio of LD50 / ED50
   b. ratio of ED50 / LD50
   c. ratio of ED50 (undesirable side effects)/ ED50(desirable effect)
   d. ratio of ED50 (desirable effect)/ ED50(undesirable side effects)
7. Which natural agonist binds to the nicotinic receptor on the skeletal muscle fiber ?
   a.acetylcholine b. dopamine c. morphine d. 5 HT
8. Nicotinic ACh receptors involve the movement of which ions across the membrane?
   a. Mg b. Fe
   c. K d. Ca
9. A drug that has the same effect on a receptor as the endogenous chemical messenger is known as_____
   a.agonist b. antagonist
   c. partial agonist d. inhibitor

Q.1 b. **Answer the following questions: (Any Two)** **14**

1. Explain competitive and non – competitive antagonism.
2. Describe the second messenger system and G proteins.
3. Define therapeutic index and protective index. How will you calculate the therapeutic index?

Q.2 a. **Select the correct alternative: (Any Six)** **06**

1. The rate at which a drug reaches its site of action depends on absorption and _____.
   a.Distribution b.Metabolism
   c. Excretion d.Storage
2. The smaller the fraction of the total drug molecules ionized, the _____the electrolyte.
   a. Stronger b.Larger
   c. Weaker c.Smaller
3. The time of onset of drug action after its administration is known as _____.
   a.Partition coefficient b. Active Diffusion
   c. Latent period d.Bulk flow
4. The driving force for facilitated transport is the _____.
   a.Neutral ion pair complex b.Intercellular pores
   c. Concentration gradient
   d.Coadministration of other compounds
5. The epithelial lining of the small intestine is composed of a single layer of cells called _____.
   a.Monocytes b.Enterocytes
   c. Oocytes d. Alveoli
6. Which of the following is a pharmacological factor influences the increase in the gastric emptying rate?
   a.Narcotic analgesics b.Labour of childbirth
   c.Guanethidine d.Gastric distention
7. Rectal dosage forms include solutions and _____.
   a.Tablets b.Solids
   c.Suppositories d.Lipids
8. _____ forms a barrier against the rapid penetration of most drugs through the skin.
   a.Stratum corneum b.Stratum lucidum
   c.Stratum spinosum d. Stratum basale

9. Several drugs like Chlorpromazine have an affinity for the retinal pigment _____ and thus may accumulate in the eye.
a.Chlorophyll b.Xanthophyll
c.Melanin d.Metallothionein

Q.2 b. Answer the following questions: (Any Two) 14

1. Describe how the drugs are absorbed in the stomach and small intestine from the alimentary canal.
2. Explain a role of metabolism and Efflux transporters as factors affecting rate of gastrointestinal absorption.
3. Elaborate on selective accumulation of drugs in body tissues.

Q.3 a. Select the correct alternative: (Any Six) 06

1. Allergies can best be described as
a.Sneezing, itching, watery eyes, scratchy throat
b.An overreaction from the immune system to a foreign substance
c.The onset of a cold during spring months
d.A reaction to the influenza virus during spring months

2. Which one of the following agents or factors causes malformation of an embryo?
a.Teratogen b.lipids
c. protein d. heptain

3. _____ implies an inherent qualitative abnormal reaction to a drug, usually due to genetic abnormality.
a.Primary effects b.Intolerance
c. Idiosyncrasy d. secondary effects

4. State the effects of Psychotropic drugs.
a.Effect on behavior, mood, thoughts , perceptions.
b. painkiller effect c.wound healer effect
d. antibiotics

5. Give the name of any one chelating agent used in cases of poisoning by arsenic.
a.hemoglobin b.heme group
c.heme protein d.Dimercaprol

6. The ability of a drug to damage cells at high drug dose is called as ___.
a.good-effects b.Toxicity
c.harmless-effects d.Allergies

7. The process in which activated charcoal binds to, and thus inactivates, a wide variety of compounds in the gut is called as _____.
   a.gut poisoning b.gut contamination
   c.gut decontamination d.gut infection

8. Long term pesticide exposure has been linked to the development of Parkinson's disease. **(True/ False)**

9. Which of the following is not a sign of heavy metal poisoning?
   a. Abdominal pain b. Cardiomyopathy
   c. Numbness d. Farsightedness

Q.3 b. Discuss the following: (Any Two) **14**

1. The term overdose of medicinal drugs. Elaborate on its adverse effects on reproduction.

2. Specific poisoning. Add note on hydrocarbons and heavy metals Poisoning.

3. The principles of clinical manifestation of allergic reactions.

Q.4 a. Select the correct alternative: (Any Six) **06**

1. The two cerebral hemispheres are connected by the _____
   a. Cerebral cortex b. Blood brain barrier
   c. corpus callosum d. medulla oblongata
2. Increased intake of the Na+ ions in the neuron causes _____.
   a. Depolarization b. Polarization
   c. Deactivation d. Inhibition
3. Immediately after the Na+ pores open as a result of membrane depolarization; it causes the opening of _____ ion channels.
   a. Ca+ b. K+
   c. Cl- d. Zn+
4. _____is an integral membrane protein, involved in synaptic vesicle cycle.
   a. Syntaxin b. Connexins
   c. G proteins d. Po

5. _____ is one of the steps involved in synaptic vesicle cycle for the release of the neurotransmitters in synapse.
   a. Deactivation of the vesicles
   b. Docking of the vesicles on the membrane of the synaptic knob
   c. Locking of the vesicles on the membrane of the synaptic knob
   d. Removal of the vesicles from the synaptic knob
6. Cholinergic receptors are activated by the binding of _____.
   a. Atropine b. Acetylcholine.
   c. Glycine d.Decamethonium
7. _____ toxins block the Na+ ion channels.
   a. Scorpion b. black widow spider
   c. Saxitoxin d. Cro
8. Accumulation of _____ causes the brain to rest.
   a. Serotonin b. Adrenaline
   c. L-DOPA d. Acetylcholine
9. _____ proteins make up Gap junctions.
   a. Connexins b. Adhesins
   c. Plasmodesmata d.Basal laminae

Q.4 b. Give an account of the following questions: (Any Two) 14

1. Structure, working and function of K+ ion channels.
2. Synaptic vesicle cycle.
3. Catecholamines as neurotransmitters.

Q.5 Write Short notes on the following: (Any Four) 20

a. Quantal dose response.

b. Any two physiological barriers to drug distribution

c. Insecticides poisoning

d. Incapacitated Agents

e. Synapse

f. Cerebellum

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