Roll No.							

25-PC-43

M.Sc. IV SEMESTER [MAIN/ATKT] EXAMINATION
MAY - JUNE 2025

PHARMACEUTICAL CHEMISTRY

Paper - III

[Pharmacology]

[Max. Marks : 75] *[Time : 3:00 Hrs.]* *[Min. Marks : 26]*

Note : Candidate should write his/her Roll Number at the prescribed space on the question paper.
Student should not write anything on question paper.
Attempt all five questions. Each question carries an internal choice.
Each question carries **15 marks.**

Q. 1 a) How does the release of neurotransmitters at the synapse differ in excitatory and synapses?

b) What role does acetylcholine play in neurohumoral transmission within the CNS, and how does it contribute to both excitatory and inhibitory signals in various neural circuits?

OR

a) How do cholinergic receptors mediate the effects of acetylcholine, and what are the consequences of acetylcholine dysregulation in neurodegenerative diseases?

b) Describe the roles of serotonin, dopamine, and GABA in regulating mood, cognition, and motor control. How do disruptions in these neurotransmitters contribute to psychiatric and neurological disorders?

Q. 2 a) What are the primary mechanisms of action of typical antipsychotics in the treatment of schizophrenia, and how do they differ in terms of side effects and efficacy?

b) How does dopamine receptor blockade contribute to the therapeutic effects and adverse effects seen with antipsychotic medications?

OR

a) How do different classes of antidepressants (SSRIs, SNRIs, TCAs, and MAOIs) exert their effects on neurotransmitter systems, and what are the common side effects associated with each class?

b) How do anti- anxiety medications like benzodiazepines modulate GABAergic activity to reduce anxiety, and what are the potential risks of long – term use, including dependence and withdrawal?

Q. 3 a) How do antacids work in neutralizing stomach acid, and what are the differences between antacid types (e.g. aluminum hydroxide, magnesium hydroxide, calcium carbonate) in terms of efficacy and side effects?

b) What is the mechanism of action of proton pump inhibitors (PPIs) and H2 receptor antagonists in the treatment of gastric ulcers and gastroesophageal reflux diseases (GERD), and how do they compare in terms of clinical outcomes?

OR

a) What are the different classes of laxatives (e.g. bulk – forming agents, osmotic laxatives, stimulant laxatives) and how do they differ in their mechanism of action, onset of action, and side effects?

b) What are the mechanisms of action of emetic drugs like apomorphine and ipecac syrup, and in what clinical situations are they typically used for inducting vomiting?

Q. 4 a) What are the primary types of hematinic agents (e.g. iron supplements, folic acid, vitamin B12), and how do they help in the treatment of anemia? How do their mechanisms of action differ in terms of improving red blood cell production?

b) What are the common side effects of iron supplementation, and how is iron deficiency anemia treated differently from folate or vitamin B12 deficiency anemia?

OR

a) What are the clinical indications and potential side effects of hemostatic agents such as desmopressin and tranexamic acid in the management of bleeding disorders ?

b) What are the blood and plasma volume expanders (e.g. crystalloids, colloids, blood transfusion), and how do they differ in their mechanisms of action in increasing circulating blood volume and restoring hemodynamic stability in patients with shock or hypovolemia ?

Q. 5 a) What is the role of histamine of in the body, and how does it contribute to allergic reactions ?

b) Explain the mechanism of action of antihistamines in treating allergic conditions. How do first generation antihistamines differ from second – generation antihistamines in terms of side effects ?

OR

a) How do NSAID's reduce inflammation and pain, and what are the potential side effects of long term use of NSAIDs ?

b) What is the difference between antipyretics and analgesics, and how do they work to reduce fever and pain, respectively ? Can you provide examples of common drugs in both categories ?

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