

# UKA TARSADIA UNIVERSITY

M.Pharm. (Pharmacology) (1st Semester)

Subject :040050102 - Cellular and Molecular Pharmacology

Duration: 3 Hours

Max. Marks: 70.

## Instructions:

1. Attempt all questions.
2. Write each section in a separate answer book.
3. Make suitable assumptions wherever necessary.
4. Figures to the right indicate full marks allocated to that question.
5. Draw diagrams/figures whenever necessary.

## Section-1

### Q-1 (A) Do as directed.

[07]

- I) Explain the term Constitutive receptor activation.
- II) What do you understand by allosteric interaction?
- III) Explain the term PD<sub>2</sub>.
- IV) What are lipid rafts in a biological membrane?
- V) Describe the phenomenon of Receptor Desensitization.
- VI) What are orphan receptors?
- VII) Give a few examples of purines used in therapeutics.

### Q-1 (B) Answer the following in brief. (Any 4)

[08]

- I) Differentiate between active and passive transport mechanisms.
- II) Describe occupation theory of receptor.
- III) Describe the various types and approaches of gene therapy citing suitable examples.
- IV) Explain the role of Cytokine in inflammation.
- V) Describe various signalling molecules affected during brain ageing.
- VI) Explain the role of nitric oxide in Angina.

### Q-2 Answer the following.

[10]

- A) Describe briefly the use dependent and voltage dependent nature of ion channels, giving suitable examples.

OR

- A) Write a short note on receptor regulation  
B) Describe the components and types of cell communication.

OR

- B) Explain the Receptor aggregation theory giving suitable example.

### Q-3 Answer the following in detail. (Any 2)

[10]

- Explain giving examples of various diseases resulting from receptor
- A) malfunction involving mutations in genes encoding receptors and protein involved in signal transduction.
  - B) Describe radioligand binding techniques.
  - C) Describe the theory of drug receptor interaction providing a distinction between drug binding and receptor activation.

## Section-2

**Q-4 (A) Do as directed.** [07]

- I) What are receptors?
- II) What are molecular switches?
- III) Enlist various types of stress.
- IV) What do you understand by receptor internalization?
- V) Give one example of physiological antagonism.
- VI) What are inverse agonists?
- VII) Explain the term therapeutic window.

**Q-4 (B) Answer the following in brief. (Any 4)** [08]

- I) Explain various factors responsible for stability and flexibility of cell membrane.
- II) Describe various component of nuclear receptor, emphasizing on their function.
- III) How GABA plays role in inhibitory post synaptic potential? How these Actions can be modulated?
- IV) Comment on "Peptides are bad drugs".
- V) Describe the role of various types of vectors in gene therapy.
- VI) Classify various types of calcium channels and describe their functions.

**Q-5 Answer the following.** [10]

- A) Give brief note on Cholinergic receptors- location, type, signal transduction and agonist-antagonists.

OR

Describe the following terminologies using dose response curve.

- (a) Drug selectivity
  - (b) Risk-benefit ratio
  - (c) Drug potency
  - (d) Drug efficacy
- B) Describe various types of receptor effector linkages

OR

- B) Explain the role of nitric oxide in various physiological processes.

**Q-6 Answer the following in detail. (Any 2)** [10]

- A) Describe various channelopathies associated with potassium channel.
- B) Explain the adaptive cellular and molecular responses in brain ageing and enlist the antiaging drugs.
- C) Describe various Apoptotic pathways with emphasis on Stress activated pathways.