



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.PHARM(N)/SEM-5/PT-503/2012-13**

**2012**

**PHARMACEUTICAL CHEMISTRY  
(MEDICINAL CHEMISTRY)**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

i) Which one of the following G-protein increases adenylyl cyclase activity and increases Ca-21 currents ?

- |       |        |
|-------|--------|
| a) Gs | b) Gi  |
| c) Gq | d) Go. |

ii) Which of the following ganglionic blockers contains quaternary ammonium groups ?

- |                 |                 |
|-----------------|-----------------|
| a) Pempidine    | b) Nicotine     |
| c) Mecamylamine | d) Pentolinium. |

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- iii) Which one of the following is the prodrug of Epinephrine, which is particularly useful for open angle glaucoma ?
- a) Phenylephrine
  - b) Norepinephrine
  - c) Dipivefrin
  - d) Oxidative metabolite of epinephrine.
- iv) Which of the following pairs is the starting materials for the synthesis of Propranolol ?
- a) Benzene with cyclohydrine
  - b) 1-naphthol with chlorohydrine
  - c) 1-naphthol with NaOH
  - d) 1-naphthol with epichlorohydrin.
- v) To synthesize diazonium salt the starting material required is
- a) primary amine
  - b) secondary amine
  - c) tertiary amine
  - d) any type of amine.



vi) In the case of nomenclature of heterocyclic compounds the preference is made on which of the following basis ?

- a) P > O > S > N > Si      b) O > N > S > P > S  
c) O > S > N > P > Si      d) O > Si > P > N > S.

vii) Intracellular storage house of calcium ion is

- a) endoplasmic reticulum  
b) sarcoplasmic reticulum  
c) golgi apparatus  
d) none of these.

viii) *g*-protein coupled receptor is known as

- a) 7-transmembrane receptor  
b) metabotropic receptor  
c) both (a) and (b)  
d) nuclear receptor.

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- ix) Synthetically phenoxybenzamine can be prepared from
- a) Phenol and propylene oxide
  - b) Phenol and *p*-chlorobenzyl chloride
  - c) Phenol and trichloropropane
  - d) Phenol and 2-chloro-1-methyl propane.
- x) Which one of the following drugs is used for the organophosphate toxicity ?
- a) 2-pyridine aldoxime methyl chloride
  - b) 2-pyridine aldoxamine methyl chloride
  - c) 2-piperidine aldoxime methyl chloride
  - d) 2-pyrimidine aldoxime methyl chloride.
- xi) Thiazole ring containing H<sub>2</sub> blocker is
- a) Ranitidine
  - b) Nizatidine
  - c) Cimetidine
  - d) Burimamide.

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xii) The starting material in the biosynthesis of Histamine is

- a) Histidine
- b) 5-Hydroxy tryptamine
- c) Homocystaine
- d) Homovaline.

xiii) Ergot alkaloid contains which of the following heterocycles ?

- a) Indene
- b) Indoline
- c) Indole
- d) none of these.

**GROUP – B**

**( Short Answer Type Questions )**

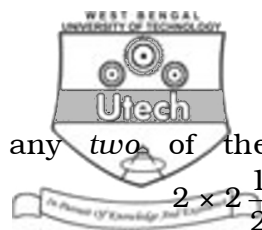
Answer any *three* of the following.  $3 \times 5 = 15$

2. a) What is the mechanism of action of  $H_1$  receptor antagonists ?  
b) What are the major side effects and use of  $H_1$  receptor antagonists ?  
c) Give the synthesis of any one  $H_1$  receptor antagonist.

2 + 1 + 2

3. What are irreversible acetyl cholinesterase inhibitors ? What is the significance of 2-PAM ?

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4. Give the structure and synthesis of any *two* of the following :
- a) Prazocin
- b) Indomethacin
- c) Atenolol
- d) Diphenhydramin
- e) Propanolol.
5. Explain the cyclooxygenase pathway.
6. Write a note on  $\beta$ -adrenergic blockers.

**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. a) Classify sympatholytic agents.
- b) Write down the SAR for adrenergic receptor agonist.
- c) Sketch the synthesis procedure on any *two* of the following drugs :
- (i) Clonidine
- (ii) Salbutamol
- (iii) Guanethidine
- (iv) Isoprenaline.  $4 + 5 + ( 2 \times 3 )$

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8. a) Describe Hansch analysis in brief.  
 b) Write down the methodology in molecular modelling for drug molecules.  
 c) Mention and discuss steps involved in QSAR based drug design. 5 + 5 + 5
9. a) Write down the chemical classification of NSAIDs.  
 b) Write down the SAR of anthranilic acid derivatives.  
 c) Write down the synthesis of any *two* of the following :  
 (i) Ibuprofen  
 (ii) Diclofenac sodium  
 (iii) Phenyl butazone. 3 + 6 + 6
10. a) Define drug potency.  
 b) With the help of dose-response curve explain the dose-response relationship with example.  
 c) Derive the Hill-Langmuir equation to establish the drug-receptor relationship. 2 + 5 + 8
11. a) Write down the metabolic pathway of catecholamines and identify the major metabolite.  
 b) Explain the depolarizing blocking mechanism of (+) tubocurarine with its structure.  
 c) Briefly explain the transducer mechanism for IP3 DAG pathway of GPCR. 5 + 5 + 5