Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.PHARM/SEM-6/PT-603/2010

2010

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 : $10 \times 1 = 10$

i) Which one of the following functional groups is useful for the local anaesthetic activity ?
   a) Amide b) Aldehyde
   c) Ketone d) Carboxylic acid.

ii) Openauer oxidation is a specific reaction for
   a) benzodiazepine nucleus preparation
   b) sex hormone preparation
   c) sulphonamide preparation
   d) iso-oxazole moiety preparation.

iii) The reaction between hydrazine hydrate and ammonium thiocyanate yields
   a) 1, 2 bis-thiocarbamoyl hydrazine
   b) 1-thiocarbamoyl hydrazine
   c) 2-thiocarbamoyl hydrazine
   d) 2, 3-bis-thiocarbamoyl hydrazine.

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iv) How many carbon atoms are present in the structure of the steroidal nucleus androstane ?

a) 27 b) 24

c) 19 d) 18.

v) The antidepressant activity of tricyclic compounds depends on

a) the tricyclic nucleus

b) lateral chain

c) nature of the basic amino group

d) all of these.

vi) Chemically alprazolam is

a) 1, 3-annelated-1, 4-benzodiazepine derivative

b) 1, 2-annelated-1, 4-benzodiazepine derivative

c) 1, 5-annelated-1, 4-benzodiazepine derivative

d) 1, 4-annelated-1, 4-benzodiazepine derivative.

vii) Which of the following calcium channel blockers is chemically dihydropyridine derivative ?

a) Verapamil b) Diltiazem

c) Nifedipine d) Hydralanine.

viii) α-naphthol derivative used as antihypertensive drug is

a) Atenolol b) Propranolol

c) Metoprolol d) Timolol.

ix) Hydrolytic reduction of glucose produce, an osmotic diuretics, is

a) Sorbitol b) Mannitol

c) Glycerol d) Isosorbide.

x) Acetaldehyde and formaldehyde are used as starting materials for the synthesis of

a) Nitroglycerine

b) Isosorbide dinitrate

c) Pentaerythritol tetranitrate

d) Erythrityl tetranitrate.

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xi) Alprazolam, a newer hypnotic is formed by annelating the 1, 2 bond of ring *B* of 1, 4 Benzodiazepine with which of the following rings ?

a) Triazole b) Pyrazole
c) Imidazole d) Pyrimidine.

xii) Which of the following drugs is used in doping ?

a) Estradiol b) Dihydrotestosterone
c) Nandrolone d) Cortisone.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What are calcium channnel lockers ? Give at least three examples of calcium channel blockers with the synthesis of at least one drug.
3. Write in detail about the SAR of Benzodiazepine.
4. Write down the biosynthetic pathway of corticosteroids from cholesterol.
5. Enumerate briefly about heparin as anticoagulant.
6. Outline the synthesis of any *two* of the following :
   i) Methohexital sodium
   ii) Haloperidol
   iii) Cocaine.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. Define steroid. Discuss in detail about the nomenclature and stereochemistry for steroidal nucleus. Outline the synthetic procedure for the preparation of any non-steroidal estrogen.

2 + (2 × 5) + 3

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8. a) Explain briefly the mode of action of osmotic diuretics and carbonic anhydrase inhibitors with examples.

   b) Discuss the SAR of thiazide diuretics.

   c) Write the synthetic route and uses of any *two* of the following compounds :

   Hydrochlorothiazide, Acetazolamide, Frusemide.

   5 + 4 + (2 × 3)

9. a) Define and classify local anaesthetic according to the chemical structure.

   b) What is the difference between anaesthetic and analgesic ?

   c) Write the SAR of Morphine as opioid analgesics. Show the structure wherever possible. 4 + 2 + 9

10. What do you mean by hypertension ? Classify antihypertensive drugs. Give the examples of β-adrenergic blockers and centrally acting drug and explain their MOA.

    2 + 3 + 5 + 5

11. a) Define atrial fibrillation and atrial flutter.

    b) What is angina pectoris ? Give a classification of antianginal drugs with necessary examples.

    c) Explain the mode of action of organic nitrate as antianginal drug.

    d) Write the MOA of IA antiarrythmics. Give two examples of this class. 4 + (1 + 3) + 4 + 3

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