*Name : .....*

*Roll No. : .....*

*Invigilator's Signature : .....*

**CS/B.Pharm (NEW)/SEM-6/PT-603/2013**

# 2013

# 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. The correct alternatives for any *ten* of the following questions : 10 × 1 = 10

   i) The appropriate group that is essential at position 7 in benzothiadiazine nucleus for diuretic activity is

      a) Free amino group

      b) Free carboxyl group

      c) Free sulphamoyl group

      d) Free methoxy group.

ii) The chemical name of Felodipine is

a) 3,5-pyridine dicarboxylic acid, 4-(2,4-dichlorophenyl)-1,4-dihydro-2,6 dimethyl-ethyl methyl ester

b) 3,5-pyridine dicarboxylic acid, 4-(2,3-dichlorophenyl)-1,4-dihydro-2,6 dimethyl-ethyl methyl ester

c) 3,5-pyridine dicarboxylic acid, 4-(2,5-dichlorophenyl)-1, 4-dihydro-2,6 dimethyl-ethy methyl ester

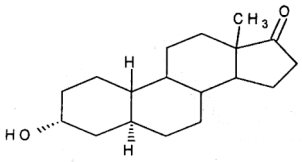
d) 3,5-pyridine dicarboxylic acid, 4-(2,6-dichlorophenyl)-1,4-dihydro-2,6 dimethyl-ethyl methyl ester

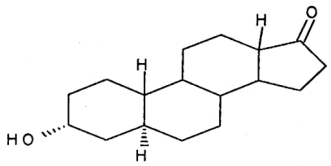
iii) The reagent used for the conversion of hydrocortisone acetate to cortisone acetate is

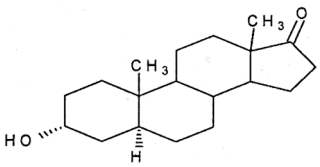
a) $CrO_3$ b) $SeO_3$

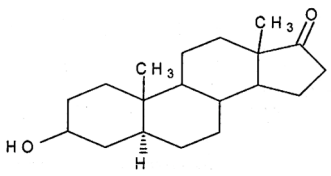
c) HOBr d) m-CPBA.

iv) The structure of 3 α-hydroxy-5α-androstan-17-one is

a) 

b) 

c) 

d) 

v) The common side chain in Propranolol and Atenolol is

a) Isopropyl aminopropan-2-ol

b) Dibutyl aminopropan-2-ol

c) Diethyl aminopropan-2-ol

d) Dimethyl aminopropan-2-ol.

vi) By adding a 17 α-alkyl group to testosterone, it can simultaneously

a) decrease androgenic activity

b) promote good progestational activity

c) have an orally active compound

d) all of these.

vii) The product obtained by treating 6-chloro-3, 5-diamino pyrazin-2-methyl carboxylate with guanidine is

a) Amiloride b) Hydrochlorothiazide

c) Triamterene d) Furosemide.

viii) Parachlorophenol, chloroform and acetone are used as starting materials for the synthesis of

a) Propafenone b) Clofibrate

c) Dipyridamole d) Verapamil.

ix) The basic ring present in Atorvastatin is

a) Indole b) Pyrrole

c) Naphthalene d) None of these.

x) Maximum antipsychotic activity is observed in phenothiazine when there is a ..... carbon spacing between the basic amino group and nitrogen of Phenothiazine.

a) 1 b) 2

c) 3 d) 4.

xi) M. Replacement of benzene ring with thiophene ring resulted in the development of another CNS depressant, namely

a) Brotizolam b) Flurazepam

c) Olanzepine d) Temezepam.

xii) Which one of the following combinations of halogens are present in Midazolam, a general anaesthetic ?

a) CI and F b) F and I

c) I and Br d) Br and F.

**GROUP – B**

**( Short Answer Type Questions )**

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

2. Describe the structure activity relationships of 1,4-dihyropyridine derivatives as antihypertensive agents.

3. Why are halogenated hydrocarbons more effective as general anesthetics than simple hydrocarbons ? Write down the SAR of inhale general anesthetics.

4. Write down the SAR of butyrophenone derivatives of antipsychotic drugs.

5. Write down the biosynthesis of Dopamine. Why are levodopa and carbidopa administered concomitantly ? $2\frac{1}{2} + 2\frac{1}{2}$

6. Classify anticoagulants and show the synthesis of any one oral anticoagulant.

## GROUP – C

### ( Long Answer Type Questions )

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

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

   b) Write the main structural requirement of local anesthetics.

   c) Write the synthetic scheme of any *three* of the following :

      (i) Procaine

      (ii) Lignocaine

      (iii) Mepivacaine

      (iv) Xylocaine. 4 + 5 + ( 3 × 2 )

8. Classify sedatives and hypnotics with proper example. Give at least one structure from each classes. Describe the structural requirements of barbiturates and benzodiazepine derivatives. Write down the possible structure wherever applicable. Write down the synthesis of any two of the following :

   (i) Phenobarbitone

   (ii) Amobarbitone

   (iii) Diazepam. 4 + 7 + ( 2 × 2 )

9. a) Define Alkaloid.

   b) Write in detail the structure elucidation process of Atropine.

   c) Write in short about various identification tests for alkaloids. 1 + 10 + 4

10. a) Write in brief about the nomenclature and stereochemistry of steroids.

    b) Synthesize testosterone from cholesterol.

    c) Write down the synthesis and uses of stilbestrol.

    5 + 5 + 5

11. a) Classify diuretic agents with proper examples. Write the SAR of thiazide diuretics.

    b) Outline the synthesis of any *two* of the following compounds : Acetazolamide, Chlorthiazide, Frusemide.

    c) Briefly describe the mode of action of spironolactone as diuretics. 6 + 6 + 3