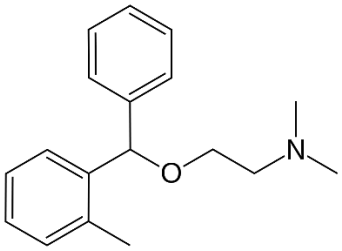
(3 Hours) [**Total Marks: 70]**

N.B. (1) All questions are **compulsory**

1. Answer the following questions. **15**

(i) Give the generic name and structure for drug acting on melatonin receptor. 1
(ii) Name any two MAOI's used as antidepressant drugs. 1
(iii) Give generic name and structure for spiro ring containing anxiolytic drug. 1
(iv) Identify the structure and the chemical class of following antiparkinsons drug. 1



(v) State one advantage of atypical antipsychotic over typical antipsychotic with one example (structure not needed). 1
(vi) Name any two groups in norepinephrine that interact with adrenergic receptor. 1
(vii) Name a reversible acetylcholine esterase inhibitor and its therapeutic use. 1
(viii) Give the structure and name of 4-(6-methoxy-2-napthene)-2-butanone. 1
(ix) Give the structure and name of a topical glucocorticoid. 1
(x) Name one triphenylethylene antiestrogen and its use. 1
(xi) Give name and structure of 1-methyl-2-mercaptoimidazole drug used as antithyroid drug. 1
(xii) Name the recombinant DNA protein used in osteoporosis. 1
(xiii) Give name structure and use of dual acting opioid compound. 1
(xiv) One of the metabolites of carbamazepine is suspected to produce idiosyncratic reaction *i.e*. aplastic anemia. Draw the structure of this metabolite. Also provide an alternative drug to avoid this. 2

2. A) Answer the following
a) Outline the synthesis of nitrazepam along with reaction conditions and necessary reagents 3
b) Benzodiazepines are preferred over barbiturates. True or false? Justify 1

B) Classify synthetic muscarinic antagonists drugs with suitable examples. 3

OR

B) Elaborate the essential structural features of antimuscarinic effect with examples

C) Predict the effect of the following structural changes on sympathomimetic activity of phenylethanolamines. Support your answer with relevant structures 4
a. Replacement of catechol by resorcinol moiety.
b. Replacement of one hydroxyl function with hydroxymethyl function.
c. Introduction of t-butyl group on amine nitrogen.
d. Substitution of methyl group at α carbon

3. A) Following are the chemical names of the drugs used for treatment of epilepsy. Draw their structures. 4

i) 5, 5-Diphenyl-imidazolidine-2, 4-dione
ii) 1,3-dihydro-7-Nitro-5-(2-chlorophenyl)-2H-1,4.benzodiazepin-2-one
iii) 5H-Dibenz(b, f)azepine-5-carboxamide
iv) 3, 5-Diamino-6-(2, 3-dichlorophenyl)-1, 2, 4-triazine

OR

A) Discuss the role of GABA modulators as anticonvulsant drugs with examples. 4

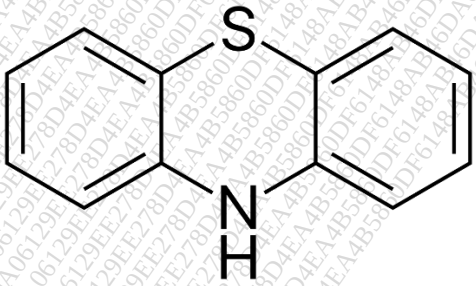
B) Write a note on aromatase inhibitors. 3

C) a. The steroid nucleus is not required for estrogenic activity. Explain. 2

b. Give name and structure of uracil derivative used as antithyroid drug. 1

c. Give an example of an androgen used for the treatment of postmenopausal osteoporosis. 1

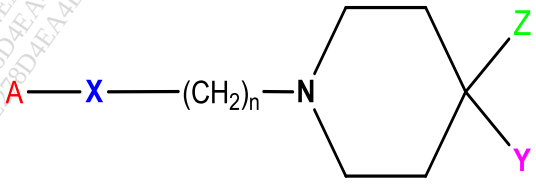
4. A) Answer the following with respect to the structure given below. 3



i) Name any one drug containing the above basic structure and give its therapeutic use.
ii) Indicate any one type of N-substitution that gives active compound.
iii) Indicate the substituent in the above structure which abolishes the activity.

OR

A) The following structure represents the fluorobutyrophenone class of antipsychotic agents. What should be the groups A, X, Y and Z for antipsychotic activity? Give examples 3



B) a. Predict any two phase I metabolites for propranolol. 2
b. Comment on therapeutic advantage of selective COX-II inhibitor with example. 2

C) a. Outline the synthesis of dextropropoxyphene or meperidine along with reaction conditions and necessary reagents 3

b. 3-Glucuronide metabolite of morphine is active. True or false? Justify 1

5. A) Explain why acetylcholine is a poor therapeutic agent. Outline the structural modifications in acetylcholine which resulted in therapeutically useful drugs with agonistic activity at muscarinic receptor. 3

OR

A) Discuss reversible acetylcholine esterase inhibitors. Support your answer with suitable structures. 3

B) a. Give mechanism of action of **any two** of following drugs. 3
1. Moclobemide 2. Fluoxetine 3. Amoxapine

b. Name the muscarinic antagonist used in Parkinson's disease. 1

C) a. Outline the unique features of the Beckett and Casy receptor model for opioids 2
b. Give any two examples of structural modifications in androgens. Comment on their activity. 2

6. A) Outline the structural modifications in norepinephrine that resulted in β_1 receptor antagonistic activity. 3

B) a. Outline the synthesis of diclofenac or piroxicam along with reaction conditions and necessary reagents. 3
b. Give structure and use of one xanthine oxidase inhibitor. 1

C)

a. Comment on unique structural features of amantadine and its advantages 2

b. Discuss with example how metabolism can change the pharmacological activity of a drug 2
