

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI

Second Semester 2022-2023

Comprehensive Examination

Course Name: Chemistry of Synthetic Drugs

Course No: PHA F416

Total Marks: 40

Date: 11-05-2023

Duration: 180 (min)

Note: Answer for all questions precisely with appropriate structures and reactions if necessary.

Give the answer for part-A and part-B separately.

Give the answer for all sub-parts together in one place.

Part-A (Closed Book)

(20 Marks)

1) Draw the structure of the following,

(5x0.5=2.5)

a) Indolizine b) 1,2-diazetidene c) Silole d) Azecine e) 2-oxaspiro[5.5]undecane

2) How will you synthesize the following,

(20x0.75=15)

a) 2,3-dimethyl aziridine from butane-2,3-diol

b) 3,3-dimethyl oxirane-2-ethyl carboxylate from ethyl-2-chloroacetate

c) 2,3-dimethyl thiirane from 3-chlorobutan-2-one

d) 1-methyl azetidene-2-methyl carboxylate from methyl-2,4-dibromobutanoate

e) 3-(methylsulfanyl)-2,2-diphenyloxetane from benzophenone

f) 3,3-dimethoxy thietane from 1,3-dibromo-2,2'-dimethoxypropane

g) 2,5-dimethyl-N-phenyl pyrrole from hexane-2,5-dione

h) 3,5-dimethyl-2-acetyl furan from trimethyl pyran

i) 4,5-dimethyl-3-hydroxy-2-acetyl thiophene from thioglycolic acid

j) Indole from phenyl hydrazine

k) Benzofuran from coumarin

l) Benzothiophene from thiophenol

m) 2-methyl pyridine from acetylene

n) Quinoline from o-amino benzaldehyde

o) 2-methyl quinoline from Isatin

p) 1-methyl isoquinoline from phenyl ethylamine

q) Isoquinoline from benzaldehyde

r) 2,3,4,6-tetramethyl-5-acetyl pyridine from 3-methyl pentane-2,4-dione

s) 2-methyl indole from N-(o-tolyl)acetamide

t) Benzothiophene from o-mercapto cinnamic acid

3) Write the therapeutic uses and heterocyclic nucleus present in the following,

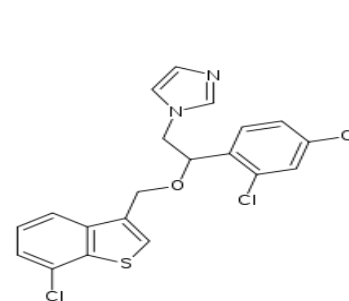
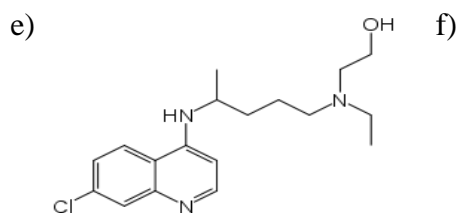
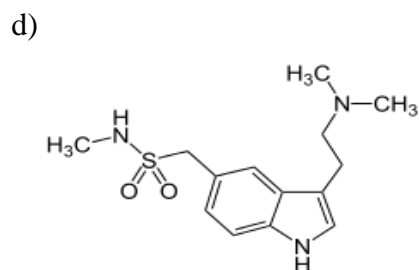
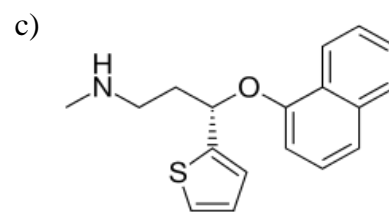
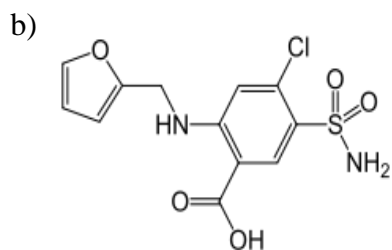
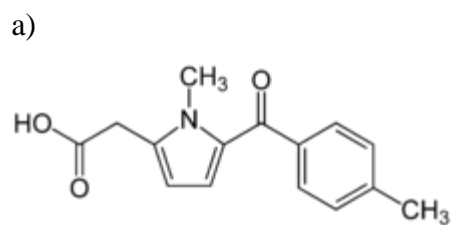
(5x0.5=2.5)

a) Captopril b) Glimepiride c) Atorvastatin d) Omeprazole e) Papaverine

Part-B (Open Book)

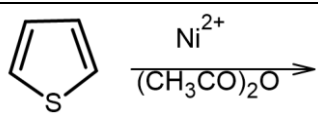
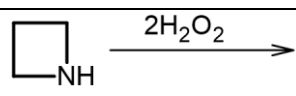
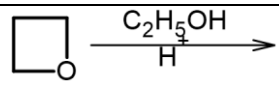
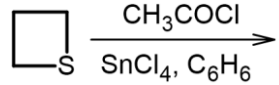
(20 Marks)

1) Write the appropriate synthetic steps involved in the following and its therapeutic uses **(6x2=12)**



2) Complete the following with most appropriate reaction product, **(12x0.5=6)**

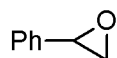
a)	
b)	
c)	
d)	
e)	
f)	
g)	
h)	

i)	
j)	
k)	
l)	

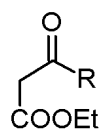
3) Write the appropriate Synthon for the following,

(4x0.5=2)

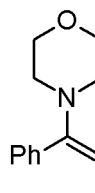
a)



b)



c)



d)