

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 <br> ( Multiple Choice Type Questions )

1. Choose the correct alternatives for any ten of the following :
$10 \times 1=10$
i) Aryl halides are compounds containing
a) carbon
b) halogen
c) nitrogen
d) iodine only.
ii) Nylon 6,6 may be prepared from which of the following heterocyclic compound ?
a) furan
b) pyrrole
c) thiophene
d) thiazole
iii) Identify the base component from the fused heterocycle :
a) indole
d) quinoline
c) pyrimidine
d) purine.
[ Turn over

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iv) The following compound should be named as
a) pyridine
b) pyrimidine
c) pyridazine
d) pyrazine.
v) In case of nomenclature of heterocyclic compounds the preference is made on which of the following basis?
a) $\mathrm{P}>\mathrm{P}>\mathrm{S}>\mathrm{N}>\mathrm{Si}$
b) $\mathrm{O}>\mathrm{N}>\mathrm{S}>\mathrm{P}>\mathrm{Si}$
c) $\mathrm{O}>\mathrm{S}>\mathrm{N}>\mathrm{P}>\mathrm{Si}$
d) $\mathrm{O}>\mathrm{Si}>\mathrm{P}>\mathrm{N}>\mathrm{S}$.
vi) Pall-Knorr synthesis is done for
a) pyridine
b) piperidine
c) pyrazine
d) pyrrole.
vii) Which one is corret for $\mathrm{SN}_{2}$ reation ?
a) Unimolecular two step reaction
b) Unimolecular one step reaction
c) Bimolecular one step reaction
d) Bimolecular two step reaction.
viii) Which one is stronger acid?
a) phenol
b) $p$-nitrophenol
c) $\quad p$-cresol
d) $p$-chlorophenol.
ix) Reducing sugar gives negative test with
a) Tollen's test
b) Benedict's test
c) Fehling's test
d) None of these.
x) $\quad \alpha-D$ and $\beta-D$ glucose are known as
a) isomers
b) anomers
c) polymers
d) tautomers.
xi) Amylose is a straight chain polysaccharide composed of
a) $L$-glucose
b) -glueose
c) $D$-fructose
d) $\quad L$-fructose.
xii) Indole is
a) 6,5 conjugated system
b) 6, 4 conjugated system
c) 6, 3 conjugated system
d) 6, 7 conjugated system.

## GROUP - B <br> ( Short Answer Type Questions ) <br> Answer any three of the following. $3 \times 5=15$

2. Write the Killiani-Fischer synthesis.
3. Draw the structures of the following with proper numbering : $\quad 5 \infty 1$
a) Pyrrole
b) Pyrazole
c) Pyridine
d) Pyrimidine
e) Pyridazine.
4. Explain with proper justification :
$p$-nitrophenal is having more boiling point and solubility in water than $O$-nitrophenol.
$2 \frac{1}{2}+2 \frac{1}{2}$

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5. Arrange according to acidity order of the followings with proper justification.
$p$-nitrophenal, $p$-chlorophenol, phenol, $p$-cresol.
6. Explain mutarotation with example.

GROUP - C
( Long Answer Type Guestions )
Answer any three of the following. $3 \times 15=45$
7. What do you mean by aryl halide ? Explain the structure of aryl and vinyl halides. Discuss in brief the reactivity of nucleophillic substitution reaction of aryl halide. $1+5+9$
8. Write a descriptive note on the chemistry of furans.
9. a) Explain why pyrrole is less basic than pyridine.
b) Write a short note on the chemistry of naphthalene.
c) Discuss about the nomenclature of fused ring heterocyclic systems. $4+7+4$
10. Define $D$-and $L$-configuration of glucose. Explain with reaction about the glucosazone formation. Write the chain lengthening and chain shortening reaction of aldopentoses.

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4+4+7
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11. What is nucleophilic substitution reaction. Differentiate between $\mathrm{SN}_{1}$ and $\mathrm{SN}_{2}$ reaction. Write down the mechanism for $\mathrm{SN}_{1}$ and $\mathrm{SN}_{2}$ reaction. $2+3+10$
