

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022  
(Sixth Semester)

Branch – CHEMISTRY

ORGANIC CHEMISTRY - II

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

1. Pyridine has a delocalized  $\pi$  molecular orbitals containing  
(i) 4 electrons (ii) 6 electrons  
(iii) 8 electrons (iv) 12 electrons
2. Which of the following reagent when treated with alkene gives a diol?  
(i)  $\text{OsO}_4$  (ii)  $\text{HIO}_4$   
(iii)  $(\text{CH}_3\text{COO})_4\text{Pb}$  (iv) All the three
3. Which among the following is a neutral amino acid?  
(i) Glycine (ii) Lysine  
(iii) Histidine (iv) Aspartic acid
4. Which base is present in RNA but not in DNA?  
(i) Cytosine (ii) Guanine  
(iii) Thymine (iv) Uracil
5. The conversion of  $\text{RCON}_3$  to  $\text{RNH}_2$  is known as  
(i) Hofmann rearrangement (ii) Beckmann rearrangement  
(iii) Curtius rearrangement (iv) Lossen rearrangement
6. Which of the following reagents is used in Oppenauer oxidation?  
(i)  $\text{SeO}_2$  (ii)  $\text{HIO}_4$   
(iii) Ozone (iv) Aluminium isopropoxide
7. In an  $\text{S}_\text{N}^2$  reaction there is:  
(i) Partial racemisation (ii) Complete racemisation  
(iii) Complete inversion (iv) None of these
8. In  $\text{E}_2$  reaction, the dihedral angle in synperiplanar conformation is  
(i)  $0^\circ$  (ii)  $90^\circ$  (iii)  $120^\circ$  (iv)  $180^\circ$
9. The order of stability of the different conformations of cyclohexane is  
(i) Chair form > Twist boat form > Boat form  
(ii) Twist boat form > Boat form > Chair form  
(iii) Chair form > Boat form > Twist boat form  
(iv) Boat form > Chair form > Twist boat form
10. The six conformers of butane are:  
(i) Four staggered and two eclipsed (ii) Two staggered and four eclipsed  
(iii) All six staggered (iv) Three staggered and three eclipsed

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 5 = 25)

- 11 a How is indole synthesized?. Give its synthetic application.

OR

- b Explain the uses of  $\text{SeO}_2$  and NBS in organic synthesis.

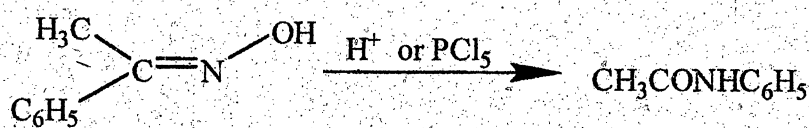
Cont...

12 a Discuss the classification of amino acids.

OR

b Write a note on peptide synthesis.

13 a Suggest a mechanism for the following conversion



OR

b Give synthetic applications of  $\text{NaBH}_4$ .

14 a Explain the mechanism of  $\text{E}_1$  reaction.

OR

b Explain: i) Hofmann rules ii) Saytzeff's rules

15 a Explain the Baeyer strain theory.

OR

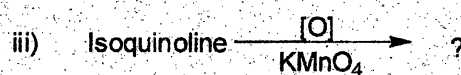
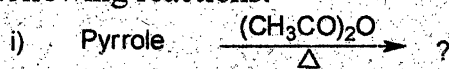
b Briefly explain about the possible conformations for dimethylcyclohexanes.

### SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

16 a Complete the following reactions:



OR

b Discuss any two synthetic uses of the following compounds in organic chemistry.  
i)  $\text{RMgBr}$  ii)  $\text{Pb}(\text{OAc})_4$  iii)  $\text{OSO}_4$  iv)  $\text{H}_5\text{IO}_6$

17 a Give the preparation and properties of amino acids.

OR

b Discuss about the structure of proteins.

18 a Explain the mechanism and salient features of Pinacol- Pinacolone rearrangement.

OR

b Explain the mechanism of

i) MPV Reduction

ii) Birch reduction

19 a Describe the mechanism of  $\text{SN}^1$  and  $\text{SN}^2$  reaction.

OR

b Explain the mechanism of  $\text{E}_2$  reaction

20 a Give the preparation and properties of cycloalkanes.

OR

b Write a short note on conformation analysis of cyclohexane.

Z-Z-Z

END