

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2018
(First Semester)

Branch – CHEMISTRY

ORGANIC CHEMISTRY - I



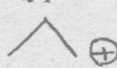

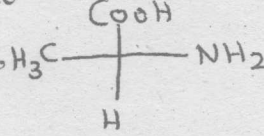
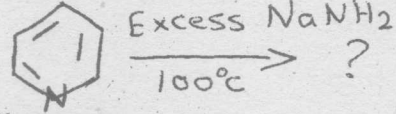
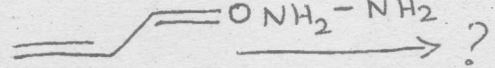
Time : Three Hours

Maximum : 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

- Identify the more stable carbocation by using hyperconjugation concept.
(i)  (ii)  (iii)  (iv) 
- Which hypothesis describes the geometrical structure of the transition state in an organic chemical reaction?
(i) Microscopic reversibility (ii) Taft equation
(iii) Hammett equation (iv) Hammond postulate
- Find the Rs. Notation of the following organic compound, 
(i) R (ii) S
(iii) Optically inactive (iv) Z
- What are stereospecific reactions?
(i) A reaction where one stereoisomer of a product is preferentially formed
(ii) A reaction that produces two enantiomers
(iii) A reaction in which starting material determines the stereochemistry of the product
(iv) A reaction in which stereogenic centre is introduced
- Which of the following is a best leaving group?
(i) F⁻ (ii) Cl⁻
(iii) Br⁻ (iv) I⁻
- Identify the product formed in the following reaction : 
(i) 3 - aminopyridine (ii) 2 - aminopyridine
(iii) 3, 5 - diaminopyridine (iv) 2, 6 - diaminopyridine
- What is the product formed when retinol undergoes ozonolysis?
(i) acetic acid (ii) formic acid
(iii) geronic acid (iv) succinic acid
- Which of the following saccharide has cross-linked structure?
(i) Starch (ii) Cellulose (iii) Maltose (iv) Sucrose
- What is / are the product(s) formed when cyanin chloride undergoes hydrolysis in the presence of KOH?
(i) Phloro glucinol (ii) Protocatechuic acid
(iii) both (i) and (ii) (iv) Phthalic acid
- Identify the product formed in the following reaction : 
(i) flavones (ii) pyrazoles
(iii) luteoline (iv) anthocyanins

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

- 12 a Illustrate the optical activity in biphenyl compounds.
OR
b Discuss the various chemical methods that are used to determine the configuration of a geometrical isomers.
- 13 a Illustrate the effect of substrate in aliphatic nucleophilic substitution reactions.
OR
b Sketch the mechanism of the following :
(i) Acid hydrolysis of ester (ii) Benzyne mechanism (2 ½ + 2 ½)
- 14 a Justify the structure of reserpine.
OR
b Explain the structural elucidation of sucrose.
- 15 a Discuss the structure and synthesis of flavones.
OR
b Discuss the synthesis and reactivity of oxazole.

SECTION -C (40 Marks)

Answer ALL questions

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

- 16 a Construct the Hammett equation and explain the application of σ and ρ .
OR
b Justify the uses of primary and secondary kinetic isotopic effects in determining the mechanism of organic reaction.
- 17 a Analyse the conformation of disubstituted cyclohexane and predict the stable isomers.
OR
b i) Compare the stereospecific and stereoselective synthesis.
ii) Construct any two chiral compounds using asymmetric synthesis.
- 18 a Justify the increase in the rate of organic reactions by using neighbouring group participation concept.
OR
b i) Design the mechanism of Zeigler alkylation reaction.
ii) Differentiate SN1 and SN2 aliphatic nucleophilic substitution reactions. (4+4)
- 19 a Elucidate the structure of Zingiberene.
OR
b Elucidate the structure of retinol.
- 20 a Justify the structure of luteoline.
OR
b i) Construct any two suitable synthesis for isoflavones. (4)
ii) Elucidate the structure of cyanin chloride. (4)