PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2018
(First Semester)

Branch - **CHEMISTRY**

ORGANIC CHEMSTRY -1

Time : Three Hours Maximum : 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** marks (1 0 x 1 = 10)

Identify the more stable carbocation by using hyperconjugation concept.

(i) (ii) y°\ (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

Coe Vi

Find the Rs. Notation of the following organic compound, **■ yov^2**
(i) R (ii) S
(iii) Optically inactive (iv) Z u

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-
On) Br' (iv) I"

Identify the product formed in the following reaction :  **£xc<e.SS IN a. N B 2** -T> ? I CSO°C
(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

8 W'hich of the following saccharide has cross-linked structure?
(i) Starch (ii) Cellulose (iii) Maltose (iv) Sucrose

9 What is / are the product(s) formed when cyanin chloride undergoes hydrolysis in the presence of KOH?
(i) Phloro glucinol (ii) Protocatechuicacid
(iii) both (i) and (ii) (iv) Phthalic acid

10 Identify the product formed in the following reaction : O NJVL -----> ?
(i) flavones (ii) pyrazoles
(iii) luteoline (iv) anthocyanins

SECTION - B (25 Marksl

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 5 = 2 5)

1 1 a Explain the factors that affect the strength of acids and bases.

OR

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 V_2 + 2 'A)

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 J

Answ'er **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 8 = 40)

16 a Construct the Hammett equation and explain the application of a and p .

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)

Z-Z-Z **END**