

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2018  
(Third Semester)

Branch - CHEMISTRY

ORGANIC CHEMISTRY - III

Time : Three Hours

Maximum : 75 Marks

Answer ALL questions

ALL questions carry EQUAL marks (5 x 15 = 75)

- 1 a Explain the aromaticity of heterocyclic compounds. (6)  
 b Explain the aromaticity of naphthalene and anthracene using Frost and Musulin diagram. (6)  
 c State Huckel's and Craig's rule. (3)  
 OR  
 d Explain the aromaticity in (i) ferrocene (ii) azulene and (iii) annulenes. (5+5+5)
- 2 a Draw Jablonski diagram and explain various modes of dissipation of energy. (5)  
 b Give an account on photo reduction. (5)  
 c Explain Norrish type-II reaction.  
 OR  
 d What is Paterno - Buchi reaction? Explain the mechanism using suitable example. (7)  
 e Explain the photolytic rearrangements of cyclohexadienone. (8)
- 3 a Discuss the mechanisms of the following rearrangements  
 (i) Beckman (ii) Favorski (iii) Curtius  
 OR  
 b Name the rearrangements and write the mechanism of the following :  
 (i)  $R-COCl + C_6H_5NH_2 \rightarrow RCOCH_2NH_2 \rightarrow RCH_2COOH$   
 (ii)  $RCONH_2 \rightarrow RNCO \rightarrow NH_2$  (10)  
 c Give the mechanism of Baeyer-Villiger oxidation. (5)
- 4 a What are Woodward -- Hoffmann rules? Analyse the stereochemical course of pericyclic reactions with the help of them. (10)  
 b Construct the correlation diagram for [2 + 2] cycloaddition and state the conditions under which the addition occurs. (5)  
 OR  
 c With the help of correlation diagram, discuss the disrotatory and conrotatory interconversion of cyclobutene - butadiene system. (10)  
 d Discuss the structure of penicillin. (5)
- 5 a Give the conversion of cholesterol into testosterone. \* (5)  
 b How will you prove (i) structure of ring system and (ii) position of -OH group in cholesterol? (10)  
 OR  
 C Write note on the conformation aspects of A/B cis and A/B trans