

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2023  
(Third Semester)

Branch – CHEMISTRY

PHOTOCHEMISTRY, PERICYCLIC REACTIONS AND  
NATURAL PRODUCTS

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Norrish type II reaction involve-----
  - i) Hydride on abstraction
  - ii) Proton abstraction
  - iii) Hydrogen abstraction
  - iv) Rearrangement without abstraction
- 2 Diel's Alder reaction is-----
  - i) [2+2]-Cycloaddition reaction
  - ii) [4+2]-Cycloaddition reaction
  - iii) [4+4]-Cycloaddition reaction
  - iv) [6+2]-Cycloaddition reaction
- 3 Alkaloids are ----- type of substances.
  - i) Acid
  - ii) Neutral
  - iii) Chemical
  - iv) Basic nitrogenous
- 4 Oxazole is ..... compound.
  - i) Homocyclic
  - ii) Heterocyclic
  - iii) aliphatic
  - iv) Saturated
- 5 All steroid hormones are derived from-----.
  - i) Carbohydrate
  - ii) Protein
  - iii) Cholesterol
  - iv) Vitamins

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Write a note on photo reduction reaction.  
OR  
b Explain the Norrish type I reactions.
- 7 a Give the differences between Thermal and photochemical reactions.  
OR  
b Write the Diels Alder reaction.
- 8 a Give the Structure and synthesis of quinine.  
OR  
b Write the synthesis of reserpine.
- 9 a Write the synthesis of flavones.  
OR  
b Sketch out the Chemistry of luteoline.
- 10 a Describe the stereochemistry of steroids.  
OR  
b Draw the structure, function and chemistry of ergosterol.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Discuss the following photochemical reactions. (3×2=6 Marks)  
(i) Barton reaction (ii) Di- $\pi$  methane rearrangement  
(iii) Paterno-Buchi reaction  
OR
- b Draw and explain the Jablonski diagram. Explain.
- 12 a Explain the following Sigmatropic rearrangements.  
(i) Cope rearrangement (ii) Claisen rearrangement  
OR
- b Explain the Woodward-Hoffman rules.
- 13 a Give the structural elucidation of zingiberene.  
OR
- b Elucidate the structure of Morphine.
- 14 a Give the synthesis and applications of Pyrazole.  
OR
- b Write a comprehensive note on Anthocyanins.
- 15 a Discuss the chemistry of cholesterol.  
OR
- b Brief in detail about male and female sex hormones.

Z-Z-Z

END