

This question paper contains 3 printed pages]

## **NEPWT—251—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (Second Year) (Third Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**(NEP-2020)**

**ORGANIC CHEMISTRY**

Paper—SCHEET-1502

(Applied Chemistry)

**(Tuesday, 17-12-2024)**

**Time : 2.00 p.m. to 5.00 p.m.**

*Time—Three Hours*

*Maximum Marks—80*

*N.B. :—* (i) Question No. 1 is compulsory.

(ii) Solve any *three* questions from remaining five questions.

(iii) Simple calculator and log table is allowed.

1. Solve the following :

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(a) Explain the following supramolecules with suitable example :

(i) Cryptands

(ii) Cyclophane.

(b) Explain piezoelectric and pyroelectric organic materials.

(c) Discuss Asphyxia and stress analysis.

(d) Explain analgesic and tranquilizer.

P.T.O.

2. Discuss the following : 20
- (a) Explain  $\pi$ - $\pi$  stacking interactions in supramolecular chemistry. Comment on  $\pi$ - $\pi$  stacking of porphyrin and nanocarbon.
- (b) Discuss collection and preservation of physical evidences and evidentiary documentation. Explain its significance.
3. Answer the following : 20
- (a) Explain photochromic organic materials and their classes.
- (b) Explain analysis of the following :
- (i) Analgesic poison
- (ii) Irritant poison
- (iii) Hypnotic poison
- (iv) Ant-histamine.
4. Explain the following : 20
- (a) Discuss the following terminology with suitable example :
- (i) Molecular channels and transport process
- (ii) Molecular device and nanotechnology.
- (b) Explain the following terms :
- (i) TTFTCNQ
- (ii) Molecular electronics and logic architecture.

5. Discuss the following : 20
- (a) How will you perform the following analysis ?
- (i) Liquor analysis
- (ii) Petroleum analysis
- (iii) Fire and Debris analysis.
- (b) Discuss importance of physiological test in forensic analysis. Comment on explosive analysis.
6. Write short notes on the following : 20
- (a) Molecular association of biological molecules
- (b) Organomagnets
- (c) Crime-scene investigation
- (d) Explosive and explosion residue analysis.