

# **SP-2190 (B)**

**M.Sc. (Final) EXAMINATION, 2015**

**CHEMISTRY**

**Group-B VIII-B**

**CH-506**

**Heterocycles and Natural Products**

*Time allowed : Three hours.*

*Maximum marks : 100*

*Attempt any five questions, selecting at least one question from each Unit. All questions carry equal marks.*

## **Unit - I**

1. (a) Define aromaticity. Explain aromaticity of heterocycles on the basis of bond length, ring current and  $^1\text{H}$  NMR chemical shift in molecules. 10
- (b) Explain the following by taking suitable examples
- (i) Delocalisation energy. 5
- (ii) Diamagnetic susceptibility. 5
2. (a) Give synthesis & reactions of the following :-
- (i) Oxiranes.

**P.T.O.**

- (ii) Azetidines.
- (b) Write explanatory note on the following :-
- (i) Cycloaddition reactions in heterocyclic systems 5
- (ii) Anomeric Effects. 5

### Unit - II

3. Give synthesis, reactions and medicinal applications of the following :-
- (i) Benzo thiophenes. 10
- (ii) Benzo pyrroles. 10
4. Synthesise the following heterocycles & give their reactions
- (i) Azepine
- (ii) Diazocines
- (iii) Dioxicines 7,7.6

### Unit - III

5. (a) Give synthesis and reactions of the following :- 5.5
- (i) Pyrrole
- (ii) Oxazole
- (b) Explain the following :-
- (i) Isoprene Rule 5
- (ii) General methods for structure determination of terpenoids. 5
6. Give two synthesis (for each) & uses of the following :-
- (a) Citral 7

- (b) Zingiberene 7
- (c) Santonin 6

#### Unit - IV

7. Explain the following :-

- (a) Isolation of alkaloids. 7
- (b) Role of alkaloids in plants. 7
- (c) General methods of structure elucidation in alkaloids. 6

8. Explain the following in detail :-

- (a) Synthesis & bio synthesis of Nicotine
- (b) Synthesis & role of  $\text{PGF}_2$

#### Unit - V

9. (a) Explain the following :-

- (i) Diels Hydrocarbon - Structure & Synthesis. 5
- (ii) Nomenclature of steroids. 5

(b) Establish the following :-

- (i) Size of ring 'A' in cholesterol 5
- (ii) Nature & point of attachment of side chain in cholesterol. 5

10. Give structure & synthesis of the following :-

- (i) Esterome 7
- (ii) Myrcetin 7
- (iii) Haemoglobin 6