

This question paper contains 5 printed pages]

AY—45—2018

FACULTY OF SCIENCE

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

MARCH/APRIL, 2018

CHEMISTRY

Paper CH-541/2

(Advanced Heterocyclic Chemistry)

(Tuesday, 10-4-2018)

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

Time—Three Hours

Maximum Marks—75

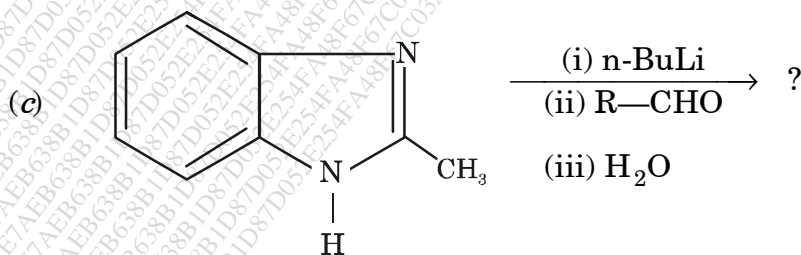
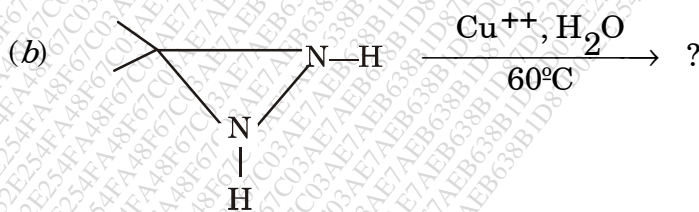
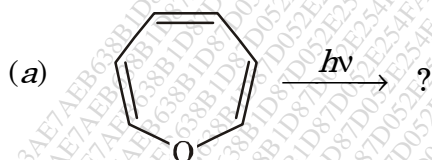
N.B. :— (i) Attempt All questions.

(ii) Figures to the right indicate full marks.

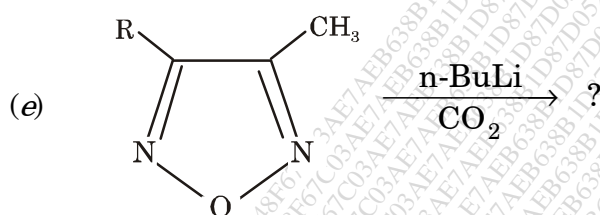
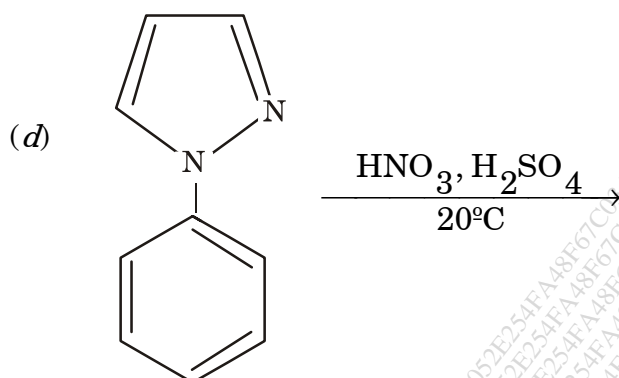
(iii) Multiple Choice Questions (MCQs) should be attempted only on page number three of the answer-book with complete answers.

1. Predict the products in any *three* of the following :

15

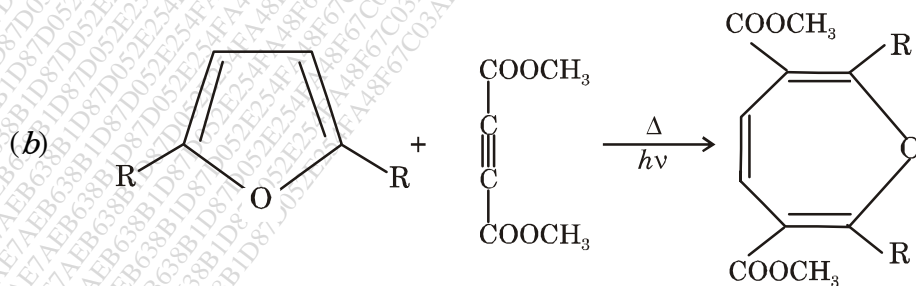
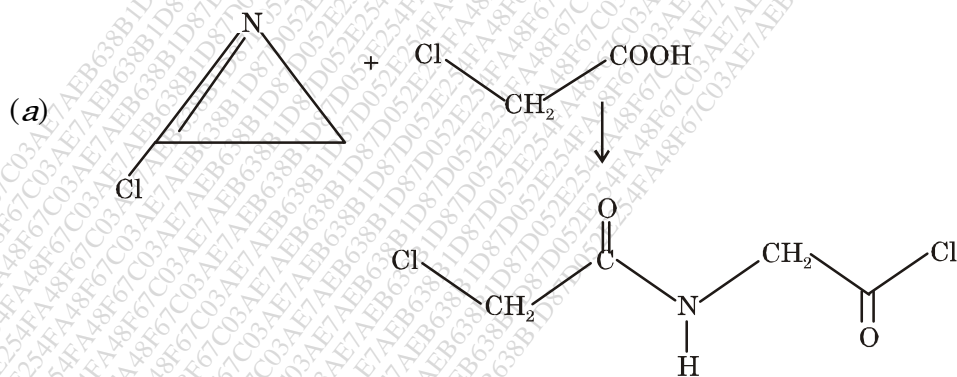


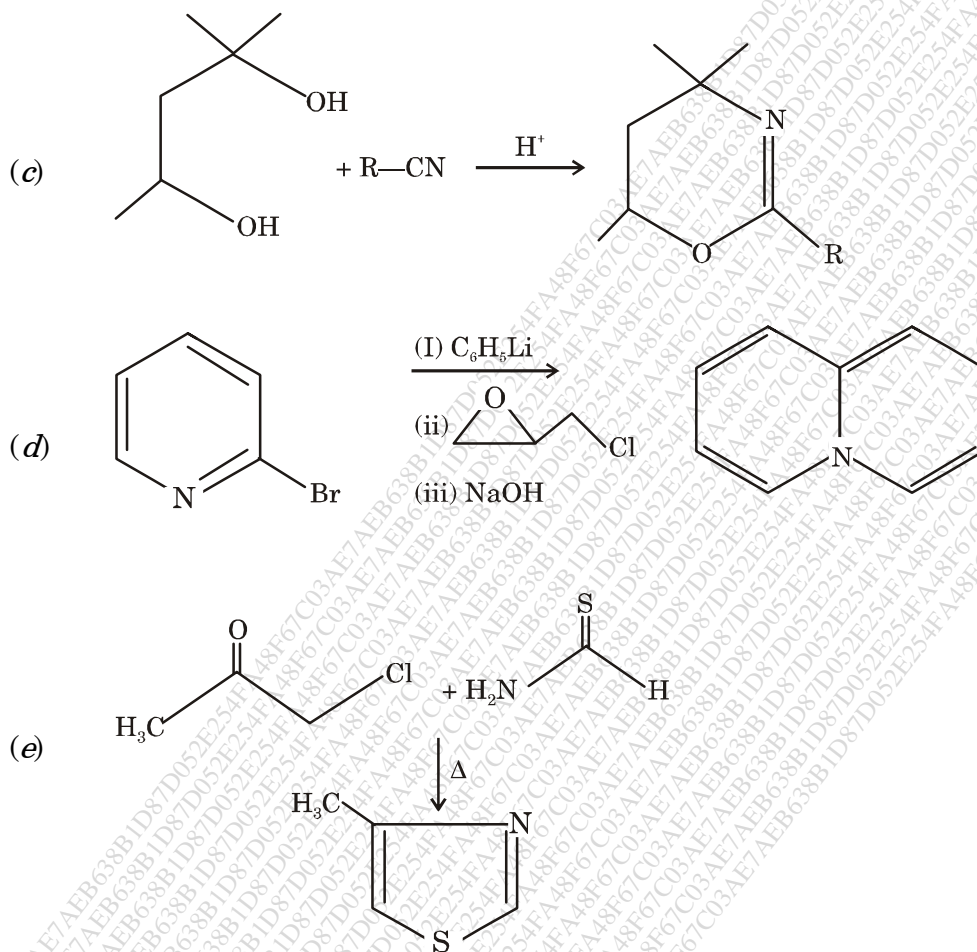
P.T.O.



2. Suggest the mechanism for any *three* of the following :

15





3. (A) Indicate how the following reagents can be useful for the synthesis of 1,2,4-Thiadiazoles : 8

- Thioamide
- Amidine and Thiocarboxylic ester
- Amidine and Thiocyanate.

Or

Explain the following chemical reactions of benzimidazole : 8

- Mannich reaction
- Reaction with *n*-butyl-lithium.

P.T.O.

(B) Explain the synthesis of diaziridines from : 7

- (i) Schiff's base
- (ii) Ketones.

Or

Synthesis of azepines :

- (i) by valence bond isomerization
- (ii) from azirines.

4. (A) How will you prepare imidazoles by : 8

- (i) The Radiszewski Synthesis and
- (ii) α -haloketones.

Or

How will you synthesize diazepine derivatives starting from : 8

- (i) Diazopenta-2,4-diene
- (ii) Pyridine-N-ylides
- (iii) Triphenyl Pyridinium salt.

(B) Explain Hantzsch-Widman nomenclature system for heterocyclic compounds. 7

Or

Explain the synthesis of quinolizinium ion from : 7

- (i) 2-cyano pyridine
- (ii) Condensation reaction.

5. (A) Select the correct alternatives from the following : 5

- (i) The stem irine may be used for rings containing only
- (a) N (b) S
- (c) O (d) Se

- (ii) Oxirenes are family of
- (a) Epoxide (b) Unsaturated epoxides
- (c) Cyclopropane (d) Cyclobutane
- (iii) Thiopines have number of π electrons.
- (a) 4 (b) 6
- (c) 8 (d) 10
- (iv) For 1,2,4-Thiadiazole attack of nucleophiles takes place at
- (a) 4th position (b) 2nd position
- (c) 5th position (d) 3rd position
- (v) The diaziridine is compound containing two Nitrogen atoms in a three membered ring.
- (a) Unsaturated (b) Saturated
- (c) Anionic (d) Cationic

(B) Write short notes on (any two) :

10

- (a) Azetidine
- (b) Oxazole
- (c) Triazine.