Ministry of Higher Education & Scientific Research Al-Muthanna University **College of Science Department of Chemistry**



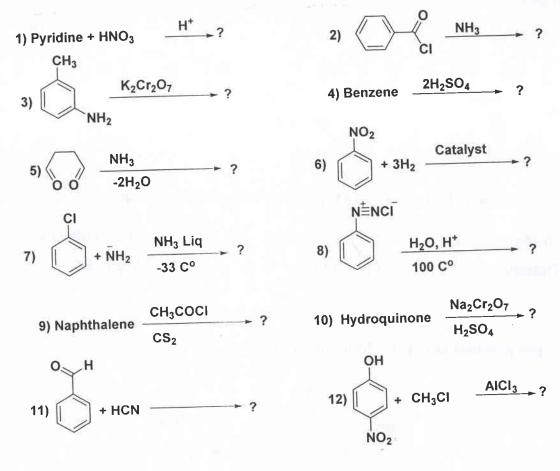
Subject: Organic Chem. II Stage: The Second

Date: / /201 Time: Three hours

((Final exam of the second semester))

Academic year 2016 -2017

Q1: Complete **TEN** of the following reactions.



(10 Marks)

45

Q2: Explain of the following scientific statements:

- 1- Chlorination of phenol gives a mixture of \dot{p} and o- chloro phenol while benzaldehyde gives only m-chlorobenzaldehyde.
- 2- Benzene is an aromatic compound but cyclohexane has not aromaticity properties.
- 3- The acidity of salicylic acid is less than benzoic acid while o-nitro benzoic acid has an acidity more than both.
- 4- Electrophilic substitution aromatic reactions of naphthalene occur readily at the 1position than the 2-position.

(6 Marks)