

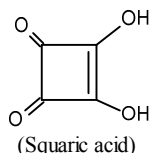
B.Sc.(Honours) Examination, 2019
Semester-II (CBCS)
Chemistry (Honours)
Core Course: CC-4
(Organic Chemistry)

Time: Three Hours

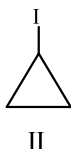
Full Marks: 40

Questions are of value as indicated in the margin.
 Answer **any four** questions.

1. Give explanations for the following (**any five**): 5x2
- The order of aromaticity: Benzene > Naphthalene > Anthracene.
 - The pK_1 of squaric acid is 1.5 while the pK_2 is 3.5.

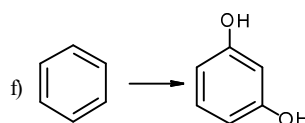
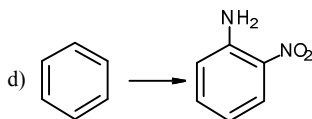
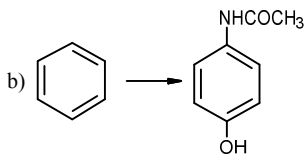
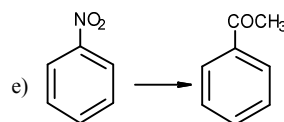
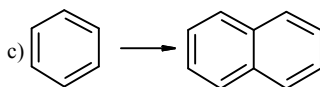
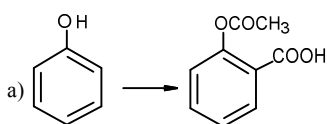


- Azulene shows extremely high dipole moment.
- The rate of hydrolysis of iodocyclopropene(I) is much faster than iodocyclopropane(II) in presence of Ag^{+1} and water



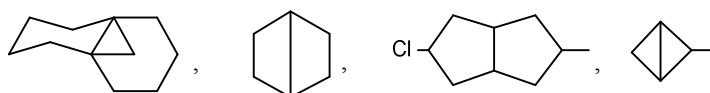
- O*-Bromoanisole produces *m*-aminoanisole as major product in presence of $NaNH_2$ in liq. NH_3 .
- Cyclobutene dication is aromatic.

2. Carry out the following conversions (**any five**): 5x2



- Presence of +R or +I groups in the aromatic ring favour o/p-substitution while -I or -R groups favour m-substitution. Explain. 2
 - To synthesize ethylbenzene from benzene, Clemmensen reduction is a better method than Friedel-Craft alkylation method. Explain. 2
 - Outline the synthesis of a six membered cycloalkane using diethylmalonate (DEM). 3
 - Arrange the following compounds in order of increasing rate of nitration and give reason: C_6H_6 , $C_6H_5CH_3$, C_6D_6 , $C_6H_5NO_2$, C_6H_5Cl . 3

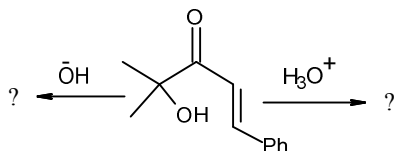
4. a) Name the following compounds according to the IUPAC system: 0.5x4



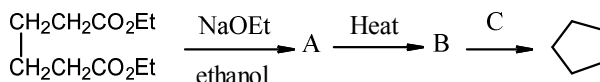
P.T.O.

(2)

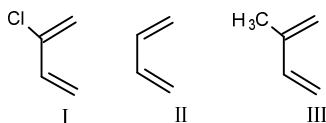
- b) Predict the possibility of the following reaction under acidic and alkaline reaction conditions with possible explanation using Baldwin's rule 1+2



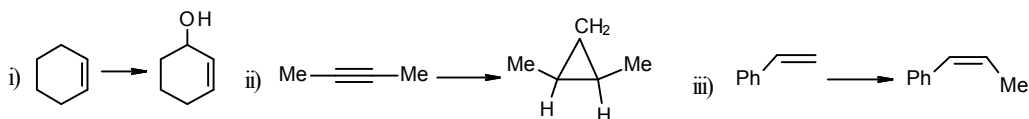
- c) Complete the reaction sequence as mentioned in the equation (A, B, C). 3



- d) Write down the all possible conformations (*cis* and *trans*) of 4-*t*-Butylmethyl cyclohexane and suggest the most stable conformation. 1.5+0.5
5. a) Explain the major advantages of oxymercuration-demercuration for hydration of alkene over the acid-catalyzed hydration. 2
- b) Arrange the following dienes according to their reactivity towards tetracyanomethylene as dienophile in the Diels-Alder reaction 2



- c) Carryout the following conversions and give plausible mechanisms of the reactions involved (*any two*): 3x2



6. Formulate the product(s) that you would expect from each of the following reactions. Show stereochemistry (if applicable) and intermediates: 2x5

