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R—36—2017

FACULTY OF SCIENCE

B.Sc. (First Year) (Second Semester) EXAMINATION

MARCH/APRIL, 2017

(CBCS/CGPA)

CHEMISTRY

Paper III

(Organic and Inorganic Chemistry)

(MCQ+Theory)

(Saturday, 25-3-2017)

Time : 10.00 a.m. to 12.00 noon

Time—Two Hours

Maximum Marks—40

N.B. :— (i) Attempt All questions.

(ii) All questions carry equal marks.

(iii) Use OMR sheet for Question No. 1.

(iv) Calculator is allowed.

(v) Only one answer sheet should be used for Sections A and B.

(MCQs)

1. Select the *correct* answer for each of the following multiple choice questions :

(i) Methylation of benzene gives

(a) Benzoyl chloride (b) Chlorobenzene

(c) Toluene (d) Nitrobenzene

(ii) Cyclobutadiene is compound.

(a) Aromatic (b) Non-aromatic

(c) Anti-aromatic (d) None of these

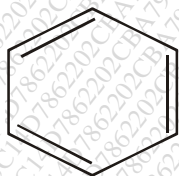
(iii) Which of the following substituents is meta director ?

(a) —CH₃ (b) —NO₂

(c) —OH (d) —Cl

P.T.O.

- (iv) Phenol on acetylation gives
- (a) *o*-acetyl phenol (b) *p*-acetyl phenol
 (c) both (a) and (b) (d) None of these
- (v) In Dow's process, phenol is obtained from
- (a) C_6H_5-Cl and $NaOH$ (b) C_6H_5-Cl and H_2O
 (c) C_6H_5-Cl and N_2 (d) C_6H_5-Cl and O_2
- (vi) Find A in the following reaction :
- $$A \xrightarrow{AgNO_2} CH_2 = CH-CH_2-NO_2 + AgI$$
- (a) Vinyl chloride (b) Allyl iodide
 (c) Chlorobenzene (d) Silver benzoate
- (vii) Find B :



- (a) Acetophenone (b) Benzophenone
 (c) Acetaldehyde (d) Benzaldehyde
- (viii) Which of the following halogen is most easily reduced :
- (a) F_2 (b) Cl_2
 (c) Br_2 (d) I_2
- (ix) Hg^{2+} is classified as
- (a) soft base (b) soft acid
 (c) hard acid (d) hard base
- (x) According to concept oxide ion donor is a base.
- (a) Lewis (b) Arrhenius
 (c) Lux-flood (d) Bronsted-Lowry

(Theory)

Section A

(Organic Chemistry)

2. Answer any *two* of the following :
- Explain Friedel-Craft alkylation reaction with mechanism.
 - What are phenols ? Give its classification with examples.
 - Explain Ullmann biphenyl synthesis with mechanism.
 - State Huckel rule. Explain aromaticity of the following compounds :
 - Benzene
 - Thiophene.
3. Answer any *two* of the following :
- Explain Birch reduction of benzene with mechanism.
 - Explain relative reactivity of alkyl halide Vs. Vinyl and aryl halides towards nucleophilic substitution reaction.
 - How will you prepare acetamide from :
 - Acetyl chloride and ammonia
 - Acetic anhydride and ammonia.
 - What is the action of the following on acetamide :
 - H_2O
 - NH_2O_2
 - $LiAlH_4$.
 - Explain acidic character of phenol.
 - How will you convert Ethyl acetate into :
 - Sodium acetate
 - N-methyl ethanamide.

P.T.O.

Section B**(Inorganic Chemistry)**

4. Answer any *two* of the following :

- (a) Explain the following properties of III A group elements :
- (i) Atomic radii
 - (ii) Basic character of hydroxides.
- (b) (i) Discuss the ionization potential and electron affinity properties of V-A group elements.
- (ii) Explain Bronsted-Lowry concept of acids and bases with example.
- (c) Give the characteristics of Hard and Soft Acids.
- (d) Discuss the following theories of hardness and softness of HSAB principle :
- (i) Electronic theory
 - (ii) Pi-bonding theory.