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AO—36—2018

FACULTY OF SCIENCE

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

MARCH/APRIL, 2018

(CBCS/CGPA)

CHEMISTRY

Paper-III

(Organic and Inorganic Chemistry)

(MCQ+Theory)

(Tuesday, 20-3-2018)

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 Section A and B.

MCQs

10

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

(i) Nitration of benzene is an example of

(a) Nucleophilic Substitution (b) Electrophilic Substitution

(c) Nucleophilic Addition (d) Electrophilic Addition

(ii) Which of the following shows aromaticity ?

(a) Benzene (b) Furan

(c) Pyridine (d) All of these

P.T.O.

- (iii) Which of the following is *m*-directing group ?
- (a) $-\text{NO}_2$ (b) $-\text{NH}_2$
(c) $-\text{OH}$ (d) $-\text{CH}_3$
- (iv) Resorcinol is an example of
- (a) Monohydric phenol (b) Dihydric phenol
(c) Trihydric phenol (d) None of these
- (v) Acid chlorides reacts ammonia to give
- (a) Amides (b) Acid anhydride
(c) Ethers (d) Esters
- (vi) Which of the following derivatives is more reactive ?
- (a) Acid chloride (b) Acid anhydride
(c) Ester (d) Amide
- (vii) Chlorobenzene is prepared from diazonium salt using reaction.
- (a) Balz-Schiemann (b) Gattermann
(c) Sandmeyer (d) Hunsdicker
- (viii) Which of the following acids possesses oxidizing, reducing and complex forming properties ?
- (a) HNO_3 (b) H_2SO_4
(c) HCl (d) HNO_2
- (ix) Which of the following is Lewis acid ?
- (a) CaO (b) CH_3NH_2
(c) SO_3 (d) None of these

(x) Which of the following is hard base ?



Theory

Section A

(Organic Chemistry)

2. Answer any *two* of the following :

(a) Explain Friedel-Craft acylation reaction with mechanism.

(b) Explain Kolbe's carboxylation reaction of phenol with mechanism.

(c) (i) Give the synthesis of vinyl chloride from :

(1) 1, 2-dichloroethane

(2) Ethene.

(ii) What is the action of the following on allyl iodide ?

(1) NaOH

(2) KCN

(3) NH_3

(d) State Huckel rule. Explain the aromaticity of the following :

(i) Naphthalene

(ii) Pyridine.

P.T.O.

3. Answer any *two* of the following :

- (a) Explain bromination of benzene with mechanism.
- (b) What are haloarenes ? Explain :
- (i) Hunsdicker reaction
- (ii) Balz-Schiemann reaction.
- (c) (i) How will you synthesize acetic anhydride from :
- (1) Acetic acid and acetyl chloride
- (2) Sodium acetate and acetyl chloride.
- (ii) What is the action of the following on acetic anhydride :
- (1) H_2O
- (2) $\text{C}_2\text{H}_5\text{OH}$
- (3) CH_3NH_2
- (d) (i) Explain Houben-Hoesch reaction of resorcinol.
- (ii) How will you convert acetamide into :
- (1) Acetic acid
- (2) Ethanamine.

Section B

(Inorganic Chemistry)

4. Answer any *two* of the following :

- (a) Explain the following properties of IV A group elements :
- (i) Ionization energy
- (ii) Melting and boiling points.

- (b) (i) Discuss the electronegativity and metallic character properties of VI A group elements.
- (ii) Classify the following as hard and soft acids :
- Cu^+ , Na^+ , Ti^{4+} , Ag^+ , Pb^{2+}
- (c) Give the characteristics of hard and soft bases.
- (d) Discuss the following acid-base theories :
- (i) Lux-Flood concept
- (ii) Usanovich concept.