D-003-001646 Seat No. _____

Third Year B. Sc. (CBCS) (Sem. VI) Examination

April / May – 2015

IC-P-601 : Industrial Chemistry

Faculty Code : 003
Subject Code : 001646

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All the questions are compulsory.
(2) Figures to the right indicate maximum marks.
(3) Draw labelled diagram wherever necessary.
(4) Assume suitable data.
(5) Question - 1 carries 20 marks MCQ & should be written in the same answer sheet.
(6) Question - 2 & 3 carries 25 marks each.

1 MCQ : **20**

(1) Disproportion is a type of _____ in addition polymerization.
(A) Initiation (C) Termination
(B) Propagation (D) None

(2) Which one of the following is polyamide ?
(A) Hexamethylene Diamine
(B) Nylon
(C) PF Resin
(D) ABS

(3) Which one is semi-crystalline in nature ?
(A) Isotactic Polymer (C) Atactic Polymer
(B) Syndiotactic Polymer (D) None

(4) Which one of the following is natural polymer ?

(A) PVC
(C) Cellulose
(B) SBR
(D) None

(5) Which one of the following is semi-synthetic polymer ?

(A) Vulcanised rubber
(C) Both (A) & (B)
(B) Cellulose-acetate
(D) None

(6) _____ is a part of polymer whose repetition would produce the complete chain.

(A) Carbon
(C) Heterocycle
(B) Repeating Unit
(D) None

(7) Isoprene can be called _____ and its monomer of _____.

(A) 2-Methyl-1,3-Butadiene, Acrolyne

(B) 2-Hexyle-1,3-Heptadiene, Acrolyne

(C) 2-Methly-1,3-Butadiene, Natural Rubber

(D) 2-Hexyle-1,3, Heptadiene, Natural Rubber.

(8) _____ is a form of polymerization where the ability of a growing polymer chain to terminate has been removed.

(A) Addition polymerization

(B) Living polymerization

(C) Condensation polymerization

(D) All

(9) Novolac is a polymer which can be manufactured by _____.

(A) Phenol
(B) Formaldehyde
(C) Both (A) & (B)
(D) None

(10) Ethane 1-2 diol is utilized in manufacturing of _____ polymer.

(A) Polyurethane
(B) PVC
(C) SBR
(D) None

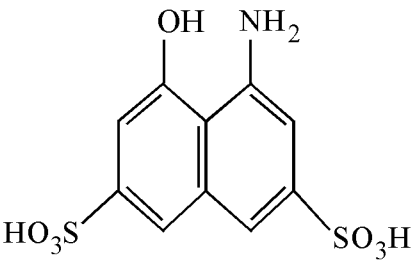
(11) R_f value depends upon ?

(A) Temperature
(B) Solvent employed
(C) Quality of the paper
(D) All of the above

(12) Which of the following is a sub category bis-azo dye ?

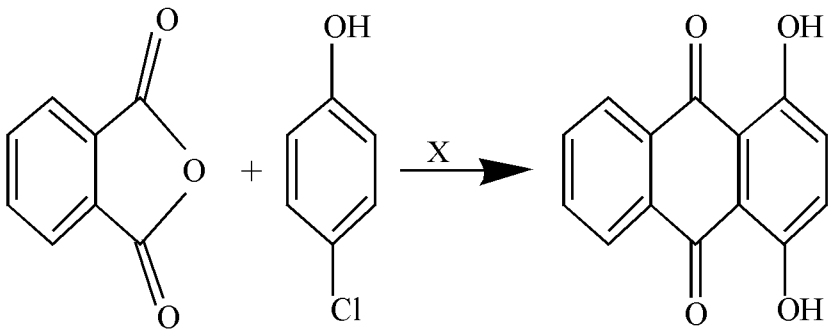
(A) $E \leftarrow D \rightarrow Z \leftarrow A$
(B) $A \rightarrow Z \rightarrow A'$
(C) $E \leftarrow D \rightarrow M \leftarrow E_1$
(D) $A \rightarrow M \rightarrow M_1 \rightarrow E$

(13)



Is known as ?

(A) J-acid
(B) R-acid
(C) H-acid
(D) K-acid

(14) 

(A) $K_2Cr_2O_7/Con \cdot H_2SO_4$, 160-210 °C

(B) $H_3BO_3/Con \cdot H_2SO_4$, 160-210 °C

(C) $KMnO_4/Con \cdot H_2SO_4$, 110-160 °C

(D) $H_3BO_3/Con \cdot HNO_3$, 260-310 °C

(15) J-acid is also known as -

(A) 6-Amino-1-naphthol-3-sulphonic acid

(B) 5-Amino-2-naphthol-3-sulphonic acid

(C) 6-Amino-2-naphthol-3-sulphonic acid

(D) 5-Amino-1-naphthol-3-sulphonic acid

(16) In the estimation of fluoride ion by SPADNS method which element is useful?

(A) Pt (C) Pd

(B) Zr (D) Th

(17) Which of the following is known as the Heart of the chromatographic sustem?

(A) Injector (C) Column

(B) Detector (D) Recorder

(18) The function of H_2SO_4 in the process of nitration is -

(A) To introduce - SO_3H functional group

(B) To produce Nitryl ion

(C) To remove water during nitration

(D) Both (B) & (C)

(19) Which of the following is a Basic Azo dye ?

(A) Aniline Yellow (C) Naphthol blue black 6B

(B) Metanil Yellow (D) All of the above

(20) Which of the following is related with the preparation of Chlorobenzene as an intermediate?

(A) H_2SO_4 is used as dehydrating agent

(B) Ferric chloride is used as catalyst

(C) HCl is produced as by-product

(D) All of the above

2 (a) Answer any **three :** **6**

(1) Define : (a) Monomer (b) Polymer.

(2) Explain Repeating Unit in brief.

(3) Write only components of Ziegler Natta catalyst.

(4) Explain in brief : Indirect determination of amine.

(5) Give preparation of Bromamine acid.

(6) Give the synthesis of p-Nitro aniline from aniline.

(b) Answer any **three** : **9**

(1) Enlist types of polymerization techniques. Give brief example of any one.

(2) Explain X-Ray diffraction method for determination of degree of crystallinity.

(3) Explain elastomer. Give structures of isomers of polyisoprene.

(4) Explain : Silver nitrate method for the estimation of chloride.

(5) Explain preparation of Tertrazine.

(6) Give the synthesis of Rosanthrene O.

(c) Answer any **two** : **10**

(1) Explain manufacturing of Nylon 6, 6 in detail.

(2) Explain classification of polymer in detail.

(3) Explain Glass Transition Temperature of polymer in detail.

(4) Explain : Manufacturing of H-acid in detail.

(5) Explain : Various methods of diazotization in detail.

3 (a) Answer any **three** : **6**

(1) Give formulae of monomers utilized in manufacturing of Bakelite.

(2) Explain Functionality in polymer.

(3) Explain Cross-linking in polymer.

(4) Describe superiorities of TLC over other chromatographic techniques.

(5) Give the synthesis of Butter yellow from Aniline.

(6) Give the synthesis of Chrysodine G from Aniline.

(b) Answer any three : **9**

(1) What is meant by co-polymer ? Give any two examples.

(2) Enlist methods of molecular weight determination of polymer. Give formula of any two methods.

(3) Give any four names of addition ploymer with their monomer structures.

(4) Give : Synthesis of Koch acid.

(5) Explain : Determination of α-Naphthol.

(6) Give the synthesis of Congo red.

(c) Answer any two : **10**

(1) Explain manufacturing of phenol-formaldehyde polymer in detail.

(2) Explain free radical mechanism of addition polymerization.

(3) Explain : Lunge Nitrometer in detail.

(4) Explain : Manufacturing of Direct Black EW in detail.

(5) Explain : TLC in detail.
