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AAG-003-001646 **Seat No. _____**

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

March / April - 2016

IC.P. - 601 : Dyes - 2 & Polymer Technology

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 labeled diagram wherever necessary.
(4) Assume suitable data.
(5) Question-1 carries 20 marks MCQ and should be written in the same answer sheet.
(6) Question-2 and 3 carries 25 marks each.

1 MCQ : **20**

(1) $\frac{\sum_i M_i^3 N_i}{\sum_i M_i^2 N_i}$ is an equation for _____

(A) Z average molar mass or M_z

(B) Number average molar mass or M_n

(C) Mass average molar mass or M_w

(D) None

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

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

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

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

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

(3) Benzoyl Peroxide can be utilized as a/an _____ in polymerization process.

(A) Catalyst (B) Initiator

(C) Propagator (D) Terminator

(4) lUPAC name of Melamine is _____

(A) 2,3,5-triazine-1,2,3-triamine

(B) 1,3,5-triazine-2,4,6-triamine

(C) 1,3,5-triazine-2,4,6-trianilin

(D) None

(5) For manufacturing nylon 4, 6 _____ is utilized as raw material.

(A) Hexamethylene Diamine

(B) Addipic acid

(C) Both (A) and (B)

(D) Decanedioic acid

(6) Which one of the following is polyamide?

(A) Hexamethylene Diamine

(B) Nylon

(C) PF Resin

(D) ABS

(7) When functionality of monomer is 2, _____ type polymer can be manufactured.

(A) Linear (B) Crosslinked

(C) Network (D) None

(8) 2,choloro 1-3 butadiene is utilized for the production of _____.

(A) Decron (B) Neoprene

(C) Isoprene (D) PVAc

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

(A) Phenol (B) Formaldehyde

(C) Both (A) and (B) (D) None

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

(A) PVC (B) SBR

(C) Cellulose (D) None

(11) In sub-classes of azo dye Z stands for?

(A) Second Component

(B) Coupling component with dual coupling position

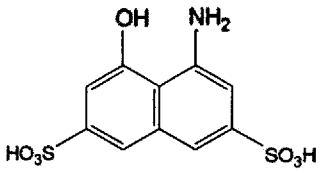
(C) Middle Component

(D) Aryl diamine,

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

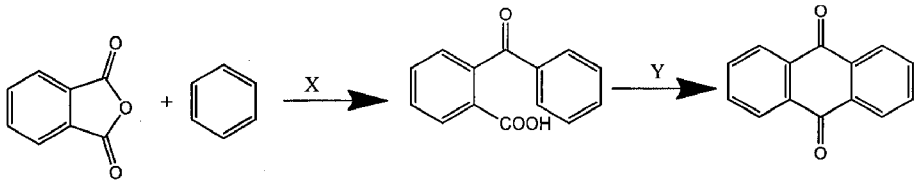
(A) $E \leftarrow D \rightarrow Z \leftarrow A$ (B) $A \rightarrow Z\text{-}L\text{-}Z \leftarrow A'$

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

(13)  is known as ?

(A) R-acid (B) G-acid

(C) H-acid (D) J-acid

(14) 

Reaction condition X and Y are?

(A) $AlCl_3$, 80°C/H_2SO_4, 150°C

(B) $FelCl_3$, 180°C/H_2SO_4, 50°C

(C) $AlCl_3$, 180°C/HNO_3, 150°C

(D) $FeCl_3$, 180°C/H_2SO_4, 50°C

(15) IUPAC name of Nevile and Winther's acid is?

(A) 1-naphthol-3-sulphonic acid

(B) 1-naphthol-4-sulphonic acid

(C) 2- naphthol-3-sulphonic acid

(D) 2-naphthol-4-sulphonic acid

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

(A) Pt (B) Zr

(C) Pd (D) Th

(17) TLC can be sub-classifying as which of the following chromatography technique?

(A) GSC (B) GLC

(C) HPLC (D) Planner

(18) Sulphonation of naphthalene at low temperature produce?

(A) Naphthalene α-sulphonic acid

(B) Naphthalene β-sulphonic acid

(C) Naphthalene γ-sulphonic acid

(D) All

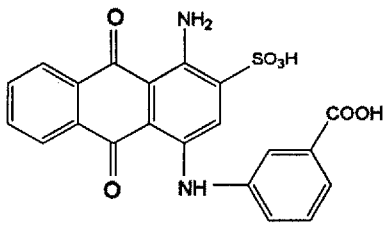
(19) Which of the following is an Acid Azo dye?

(A) Acid Orange II

(B) Acid Orange IV

(C) Naphthol blue black 6B

(D) Both (A) and (B)

(20)  Is the structure of?

(A) Alizarin Saphirol A

(B) Alizarin Direct Blue AZG

(C) Alizarin Pure Blue FFB

(D) None of the above

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

(1) Define :

(A) Monomer

(B) Degree of polymerization.

(2) Enlist any six homo polymers with their monomer structures.

(3) Give only reaction for manufacturing of Neoprene.

(4) Explain in brief: Direct determination amines.

(5) Give synthesis of Bromamine acid.

(6) Give synthesis of Brilliant yellow.

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

(1) Explain crystallinity of polymer and Crystallization mechanism.

(2) Explain X-Ray diffraction method for determination of crystallinity in polymer with diagram.

(3) Explain IR Spectrometry for characterization of polymer.

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

(5) Give two synthesis of Anthraquinone.

(6) Give the synthesis of Tartrazine.

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

(1) Explain SBR in detail with reaction.

(2) Explain Epoxy Resin in detail with reaction.

(3) Explain polyurethane in detail with reaction.

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

(5) Explain: Thin Layer Chromatography in detail.

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

(1) Enlist any six copolymers with their monomer structures.

(2) Give any two equations for molecular weight determination of polymer.

(3) Define :

(A) Thermo polymer

(B) Thermosetting polymer.

(4) Enlist superiorities of TLC over other chromatographic techniques (any six).

(5) Give synthesis of Quinizarin.

(6) Give synthesis of Metanil yellow.

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

(1) Explain in detail: Glass Transition Temperature and factors affecting it.

(2) Enlist methods of molecular weight determination technics of polymer.

(3) Explain functionality of polymer in detail.

(4) Explain: Sulphonation of Anthraquinone (Only reaction)

(5) Explain: Volumetric determination of dyes by Edmund Knecht Reduction method.

(6) Give the synthesis of Naphthol Blue Black 6B.

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

(1) Explain classification of polymer in detail.

(2) Explain free radical mechanism for manufacturing of Polystyrene.

(3) Explain: Manufacturing of Direct black EW in detail.

(4) Explain: Lunge Nitro meter in detail.

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