647510 **Msc2CheC0310** **Seat No :_____**

M.Sc.(Chem.) Semester - 2 (*CBCS*) Examination
May/June-2021 (OLD COURSE)
PHYSICAL CHEMISTRY(CORE)

Time: 1:30 Hours **Marks: 42**

Instructions:

1. Figure to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

Que-1(A) **Answer the following** (04)

1. Give the full form and write the repeat units of the following.
   PVC, Starch, Nylon-66.
2. Give examples each of bi and tri functional compounds.

Que-1(B) **Answer the following (Answer any two)** (10)

1. Explain anionic polymerization and its kinetics.
2. Describe kinetics of free radical polymerization.
3. Discuss about substitution and addition reaction.

Que-2(A) **Answer the following questions.** (04)

1. Discus the factors affecting free radical polymerization.
2. Explain: Thermoplastic and Thermosetting polymer?

Que-2(B) **Answer the following questions. (Answer any two)** (10)

1. Explain statistical of linear polycondensation.
2. Explain:
   (a). Stereo regular polymers.
   (b). Functionality and polymerization concept.
3. A polyester made with equimolar dibasic acid and a glycol is to be stabilized by methanol to obtain $\bar{X}_n = 150$. Calculate amount of methanol to be added.

Que-3(A) **Answer the following questions.** (04)

1. Define the term: telomerisation and solubility parameters.
2. Discuss vulcanization of rubbers.

Que-3(B) **Answer the following questions. (Answer any two)** (10)

1. Explain the evaluation of reactivity ratios.
2. Give in the brief importance of polymers.
3. Explain effect of monomer concentration and temperature on direction of polycondensation reaction.

Que-4(A) **Answer the following questions.** (04)

1. Explain nonlinear polycondensation
2. Explain polymer cyclization reaction.

Que-4(B) **Answer the following questions. (Answer any two)** (10)

1. Explain the reaction of various functional groups.
2. Explain factors affecting free radical polymerization.
3. Explain polymer fractionation by Gel Permeation Chromatography method.

Que-5(A) **Answer the following.** (04)

1. Explain gradient elution technique.
2. Discuss the reaction route of poly-functional compound.

Que-5(B) **Answer the following questions. (Answer any two)** (10)

1. Explain kinetics of chain transfer reaction and stepwise polymerization.
2. Write a note on
   a) Co-ordination polymerisation
   b) Kinetics of copolymerisation.
3. (a). Explain the methods of polycondensation.
   (b). In an experiment, kinetic chain length in presence (ν_{tr}) and in absence (ν_t) are evaluated at 50° C for vinyl acetate undergoing chain transfer with dimethyl ketone solvent.ν_{tr} is 92.5 and ν_t is 6672. The ratio of [S]/[M] is 0.582. Calculate the chain transfer constant for this reaction.

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