647510 MSC2CPcC103x Seat No :_____

M.Sc.(Chem.) Semester - 2 (*CBCS*) Examination
August/September -2020 [NEW COURSE]
Physical Chemistry (CORE)

Time: 2:00 Hours **Marks: 56**

Instructions:

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

Que-1(a) Answer the following: **(04)**

(1) Explain vulcanization reaction.

(2) Explain the reaction of $-NH_2$ and –CHO groups with suitable example.

Que-1(b) Answer any two questions out of three. **(10)**

(1) Describe block and graft co-polymers.

(2) Write a note on:

i. Classification of polymers.

ii. Functionality and polymerization concept for bi-functional and tri-functional compounds

(3) Explain:

i. Stereo regular polymers.

ii. Curing reaction.

Que-2(a) Answer the following: **(04)**

(1) Explain photochemical polymerisation

(2) Explain factors affecting free radical polymerisation.

Que-2(b) Answer any two questions out of three. **(10)**

(1) Write a note on co-ordination polymerisation.

(2) Explain chain transfer reaction and derive the Flory – Mayo relation for it.

(3) Kinetics of anionic and cationic polymerisation.

Que-3(a) Answer the following: **(04)**

(1) Discuss the molecular weight control in polycondensation reaction.

(2) Explain the effect of temperature on direction of polycondensatiopn reaction.

Que-3(b) Answer any two questions out of three. **(10)**

(1) Explain factors affecting the rate of polycondensation and molecular weight of the polymers.

(2) Explain

i. Kinetics of polycondensation reaction.

ii. Polycondensation equilibrium and molecular weight of polymer.

(3) Discuss statistics of linear polycondensation.

Que-4(a) Answer the following: **(04)**

(1) Define the term: CMC and Micellisation.

(2) Explain the lyophilic sols with example.

Que-4(b) Answer any two questions out of three. **(14)**

(1) Write a note on:

i. Surface active agent

ii. Electrokinetic potential

(2) Give a brief explanation about physisorption and chemisorption.

(3) Derive langmuirs adosorption isotherm.

Que-5(a) Answer the following: **(04)**

(1) Explain elimination of liquid junction potential.

(2) The EMF of the concentration cell is 0.0118 volt at 25°C Temp.

$Pb/PbSO_4/CuSO_4$ ($a_{\pm}$=0.022) : $CuSO_4$ ($a_{\pm}$=0.0064)/$PbSO_4$/Pb. Calculate the transference number of Cu^{+2}ion.

Que-5(b) Answer any two questions out of three. **(14)**

(1) What are concentration cells? Explain concentration cell without transference.

(2) Write a short note on

i. Ni-Fe accumulator.

ii. Decomposition voltage.

(3) Explain the term overvoltage. What are the application of this phenomenon? Explain hydrogen over potential

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