

Chemistry

M.Sc.

Semester-4

EC: 04

Physical chemistry (special)

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F.M. 70

Time: 03 hrs

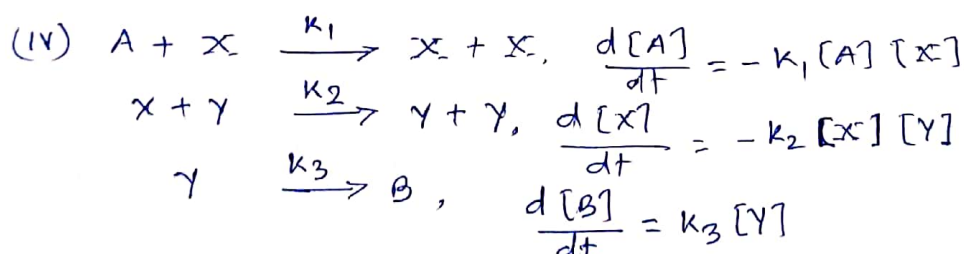
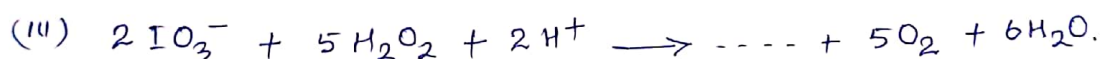
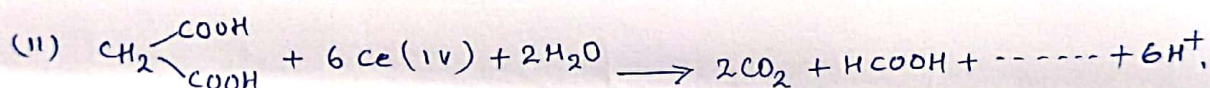
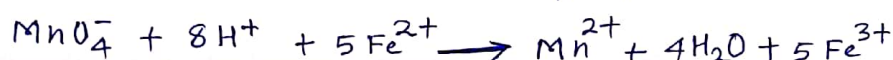
General instructions:

1. Question No. 01 is compulsory.
2. Answer any four (4) questions out of the Seven (7) questions.

1. Fill in the blanks:

10×1=10

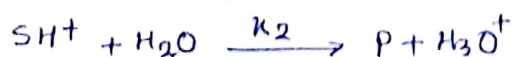
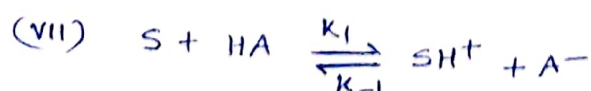
(i) Using this redox reaction Mn^{2+} acts as



Above reaction is known as mechanism.

(v) Corrosion is a electrochemical reaction.

(vi) For the reaction



The rate of appearance of Product is given by

$$\frac{d[P]}{dt} = k_2 [\dots]$$

(VIII) Ions are deflected in electrical and magnetic fields. The amount of deflection depends on the

(IX) EPR is useful for studying the reactions of short-lived ----- at low concentrations.

(X) If Activation energy is low then rate of reaction is

2. (a) Explain Relaxation technique for the study of fast reaction.

(b) How much NMR useful for the study of ^{fast} reaction? $10+5=15$

3. Derive Nernst equation:

(a) on thermodynamic consideration and

(b) by kinetic approach Tafel Plot. $8+7=15$

4. (a) Explain Electro catalysis in redox system.

(b) What do you mean by Over Potential? Explain $8+7=15$

5. (a) Compare electrocatalytic current and corrosion potential.

(b) Explain energy Barriers for multi steps reactions. $8+7=15$

6. (a) Explain Protogenic and Protophilic mechanism.

(b) Deduce Hammett equation. $8+7=15$

7. (a) Deduce Bronsted - Bjerrum equation. $8+7=15$

(b) Explain the kinetics of dipole-dipole and ion-dipole reaction.

8. (a) Explain potential energy curve for successive reaction.

(b) Deduce Activated state of three atom and four atom reaction $8+7=15$

===== X =====

1. (i) Auto catalyst.

(ii) 6Ce(III)

(iii) I_2

(iv) Lotka-volterra mechanism.

(v) Slow

(vi) $Z_A Z_B = -6$

(vii) SH^+

(viii) charge/mass ratio

(ix) Paramagnetic intermediates

1 free Radicals

(x) fast.

Sengupta
23/4/2020