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M.Sc.
16MCYC203

2nd Semester Back Examination 2017-18
PHYSICAL CHEMISTRY – II
BRANCH : M.Sc.(AC)
Time : 3 Hours
Max Marks : 70
Q.CODE : C806

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.
Answer all parts of a question at a place.

- Q1 Answer the following questions : (2 x 10)**
- a) What is parallel reaction?
 - b) What is the cause of explosion in complex reaction?
 - c) Explain isotope effect in solution kinetics.
 - d) Write the factors on which rate of reaction depend.
 - e) What is diffusion coefficient?
 - f) Write the Einstein-Smoluchowski-equation.
 - g) What do you mean by CMC?
 - h) What are the differences between fluorescence and phosphorescence?
 - i) Define surfactant.
 - j) What are the difference between inter system crossing and internal conversion?
- Q2 a) Explain the kinetics of opposing reaction. (5)**
b) Prove that the order of following reaction is 3/2 (5)
$$\text{H}_2(\text{g}) + \text{Br}_2(\text{g}) \rightarrow 2\text{HBr}(\text{g})$$
- Q3 a) Discuss the collision theory of reaction rate. (5)**
b) Correlate the terms E_c (minimum amount of energy required for reaction)and E_a (activation energy). (5)
- Q4 a) Explain the transition state theory using thermodynamics approach. (5)**
b) What is primary salt effect? (5)
- Q5 a) State and explain fick's first law. (5)**
b) What is krafft temperature? (5)
- Q6 a) Classify and discuss the different type surface active agent. (5)**
b) Discuss the factors affecting the CMC of surfactants. (5)
- Q7 Draw the Jablonski diagram and explain. (10)**
- Q8 Write short answer on any TWO : (5 x 2)**
- a) Exciplex
 - b) Franck-Condon Principle
 - c) Micellization
 - d) Laws of Photochemical Equivalence