Reg. No…….. Name…… **19U430**

B. Sc. DEGREE END SEMESTER EXAMINATION - MARCH 2019

SEMESTER – 4: CHEMISTRY (COMPLEMENTARY COURSE FOR PHYSICS)

COURSE: 15U4CPCHE4.1, ADVANCED PHYSICAL CHEMISTRY II

(Common for Regular 2017 admission and improvement 2016/ supplementary 2016/2015 admission)

Time: Three Hours Max. Marks: 60

SECTION A

*Answer **all** questions, Each question carries **1** mark*

1. Write two examples of chromophore.
2. What is the integrated rate equation for first order reaction?
3. Determine the half-life period of a first order reaction which take 5 hours for reactant concentration to become 25%.
4. What is the unit of molar conductivity?
5. State Franck-Condon principle
6. Distinguish between bending and stretching vibrations
7. What is electrochemical series?
8. Write the cell reaction involved in the $Zn/Zn^{2+}//Ag^{+}/Ag$ (1 x 8 = 8)

SECTION B

*Answer **any six** questions, Each question carries **2** marks*

9. What are the conditions for a vibration to be IR active?
10. Define molar extinction coefficient
11. Distinguish between flash photolysis and chemiluminiscence
12. Give two applications of conductance measurements.
13. State Beer-Lambert's law.
14. Determine the oxidation state of Cr in $Cr_2O_7^{2-}$ and Mn in MnO_4^-
15. Represent the cell in which the cell reaction is $Zn+Cu^{2+} \rightarrow Zn^{2+} + Cu$.
16. Write two applications of Kohlaraschus law. (2 x 6 = 12)

SECTION C

*Answer **any four** questions, Each question carries **5** marks*

17. Explain the principle of IR spectroscopy.
18. State and explain Faradays first and second law.
19. How will you determine the pH using glass electrode?
20. What are concentration cells? Explain
21. Explain the principle of fuel cells with example.
22. Why temperature increases the rate of the reaction? (5 x 4 = 20)

SECTION D

*Answer **any two** questions, Each question carries **10** marks*

23. Derive the integrated rate equation for a first order reaction.
24. Explain the principle and applications of potentiometric titrations
25. Write short notes on phosphorescence, fluorescence, photosensitized reactions.
26. Write a note on redox titrations. (10 x 2 = 20)