CARMEL COLLEGE OF ARTS, SCIENCE & COMMERCE FOR WOMEN

SEMESTER END EXAMINATION SEMESTER VI OF B.SC, AUGUST 2020

PHYSICAL CHEMISTRY (PAPER CHC108)

Time: 2 hours

Marks: 30

Date: 03 /08/2020

Instructions:

1. Answer the following Question Paper for the online exam and upload the **PDF** of the answer book strictly on Google Classroom.
2. Figures to the right indicate full marks.
3. Use of calculators is allowed.
4. Please avoid malpractices while answering .Its morally wrong.

Q1. ANSWER **ANY FIVE** OF THE FOLLOWING. (5x2=10 mks)

1. Why isn't there an explosion like an atomic bomb in nuclear reactors?
2. Explain in brief the reactions of acid storage battery.
3. What is shielding and deshielding of protons in NMR
4. What are the biological effects of radiation.
5. Calculate the second energy level for hydrogen atom.
6. Distinguish between Dissociation and pre-dissociation
7. Distinguish between Bonding and Anti-bonding orbitals.
8. Write the Schrodinger Equation and explain the terms involved
   (a) Hydrogen atom.
   (b) He atom

Q2. ANSWER **ANY FOUR** OF THE FOLLOWING: (4x5=20mks)

1. Draw and explain in brief the low resolution and high resolution spectra of a) $C_6H_5CH_2CH_2CH_3$ b) $CH_3CHBrCH_3$ (5mk)

2. a)What should be the molality of Na_2SO_4 in the solution of ionic strength 0.3. (3mk)
   b)Calculate the ionic strength of a solution containing $0.1m$ $Fe_2(SO_4)_3$ (2mk)

3. a)A buffer solution containing 0.05 mole sodium lactate and 0.01 mole lactic acid/ litre. Calculate the pH of the buffer solution. (2mk) Calculate the pH and pOH of 0.03 M solution of HCl at 25C. (3mk)

4. a) Draw and label the Jablonskii diagram and explain internal conversion and inter system (4mk) b)State the Frank- Condon principle. (1mk)

5. (a) Give the principle of ESR spectroscopy, give examples of ESR active (3mk) (b) Predict the electronic transitions in (a) Cl_2 and (b) acetone (2mk)

6. (a) What do you understand by the term Node? How many radial nodes are present in 3s and 2p orbital. (3mk)

(b) Why there is a need of approximate method for solution of Schrodinger Equation? (2mk)