DCT's
Dhempe College of Arts & Science
Miramar-Goa

The Department of Chemistry held a meeting to discuss the syllabi of Chemistry implemented in a phase-wise manner under Choice Based Credit System for the forthcoming academic year 2019-20.

Dr. Vrinda Borker and Mr. Vishnu Chari suggested that the Mathematical component should be included in the Semester V Core Paper of Physical Chemistry and same was conveyed to the University in the Board of Studies meeting.

The Recommendation was incorporated in the syllabus from the academic year 2019-20.

Minutes of the meeting and the updated syllabus copy is attached below.

DEPARTMENT OF CHEMISTRY

MINUTES OF THE MEETING (25-06-2018)

A meeting of the faculty members of the Department of Chemistry for the BSc Programme was convened by the HoD, Mrs. Varsha Virginkar on 25-06-2018 in the department staffroom.

AGENDA

Following was the **one-point agenda** of the meeting:

(1) Suggestions and inputs regarding the syllabi of Chemistry implemented in a phase-wise manner under Choice Based Credit System for the forthcoming academic year 2019-20.

MEMBERS ATTENDED

(i) Mrs. Varsha Virginkar
(ii) Dr. Vrinda Borker
(iii) Ms. Deepa Audi
(iv) Mr. Vishnu Chari
(v) Dr Digamber Porob
(vi) Mrs. Manisha Mhalsekar
(vii) Dr. Durga Kamat
(viii) Dr. Sonia Parsekar

The following points were discussed:

(1) Mrs. Varsha Virginkar put forth that the CBCS syllabi is being implemented in a phase-wise manner. Therefore, suggestions should be made so that the same can be conveyed to the Chairperson of the Board of Studies of Chemistry, Dr. Lina Talwadkar and sub-committee member Mrs. Deepa Audi.

(2) Dr. Vrinda Borker and Mr. Vishnu Chari suggested that the Mathematical component should be included in the Semester V Core Paper of Physical Chemistry since it was integral

to honing students' knowledge and skills. The basics of mathematical concepts are essential in understanding some concepts in quantum chemistry like sinusoidal wave function, Schrodinger equation in spherical polar co-ordinates and predicting the probability distribution curves.

(3) Along with gravimetric and inorganic preparations there was a necessity felt to include preparation of pigments since they can be put to varied uses in the field of Chemistry. In this regard, Mrs. Varsha Virginkar provided two procedures of experiments viz. Guignet's green (hydrated chromium oxide) and Cobalt blue (azure) to be included in the Semester V Inorganic Chemistry Core (Practical) Paper .

It was recommended that the inclusion of Mathematical component and procedures of experiments provided is to be pursued with BoS through Dr. Lina Talwadkar and Ms. Deepa Audi.

The Meeting concluded with thanks to the Chair.

Minutes of the Meeting compiled by Dr. Durga Kamat.

Minutes of the Meeting seconded by Mrs Manisha Mhalsekar.

Mrs. Varsha Virginkar

(Hod, Chemistry)

CBCS OLD VERSION(26/02/2019)

SEMESTER V CORE COURSE: CHC105
(PHYSICAL CHEMISTRY)
(06 Credits: Theory – 04, Practicals – 02)

Theory : 60 Hours (04 Credits)

SECTION B

3. Quantum Chemistry I (16 Hours)

Postulates of quantum mechanics, quantum mechanical operators and commutation rules, Schrodinger equation and its application to free particle and "particle in a box" (rigorous treatment) quantisation of energy levels, zero – point energy and Heisenberg Uncertainity principle, wave functions, probability distribution functions, nodal properites, Extension to two and three dimensional boxes, seperation of variables, degeneracy. Angular momentum, Rigid rotator model of rotation of diatomic molecule. Schrodinger equation in Catesian and spherical polar (derivation not required). Seperation of variables, 3 Spherical harmonics, Discussion of solution (Qualitative) required and their limitations, Refinement of two approaches (configuration interaction for MO, ionic terms in terms of VB), qualitative description of LCAO-MO treatment of homonuclear and heteronuclear diatomic molecules. (HF, LiF).

CBCS REVISED(21/01/2020)

B. Sc. CHEMISTRY(Honours)
SEMESTER V (06 Credits: Theory – 04, Practicals – 02)
CHC105: PHYSICAL CHEMISTRY
Theory : 60 Hours (04 Credits)

SECTION B

3. Quantum Chemistry I (16 Hours)

Mathematical Concepts: Derivatives and integrations, trignometric functions, exponential functions, second derivatives of the functions.

De-Broglie hypothesis, Heisenberg Uncertainity principle, sinusoidal wave function, terms involved in Quantum mechanics: Normalisation, orthogonality, observables, operators, stationary states and variables. Schrodinger equation and its application to free particle and "particle in a box" (rigorous treatment) quantisation of energy levels, zero – point energy, Schrodinger equation in Cartesian and spherical polar (derivation not required), Extension to two and three dimensional boxes,

separation of variables, degeneracy. Operators (Hermetian, non-Hermetian), eigen value and eigen functions,physical significance of wave function, examples of operators, Hamiltonian operators, Quantum mechanical operators and commutation rules

Postulates of quantum mechanics, wave functions, probability distribution functions, nodal properties.

SEMESTER V
CHEMISTRY- LAB
CORE COURSE: CHC106
(INORGANIC CHEMISTRY)

Practicals: 60 Hours (02 Credits)

Gravimetric Estimations

1. To estimate the amount of Al as Al_2O_3 in the given solution of aluminium sulphate.
2. To estimate the amount of Fe as Fe_2O_3 in the given solution of ferric chloride containing barium chloride and free HCl.
3. To estimate the amount of nickel as Ni-DMG in the solution of nickel chloride containing copper chloride and free HCl.
4. To estimate the amount of barium as $BaCrO_4$ in the solution of barium chloride containing ferric chloride and free HCl.
5. To estimate the amount of Zinc as $Zn_2P_2O_7$ in the given solution of zinc sulphate containing copper sulphate and free H_2SO_4.

Inorganic Preparations

(Percentage yield expected)

6. Preparation Potassium trioxalatoferrate (III).
7. Preparation of potassium trioxalatoaluminate(III).
8. Preparation of Tristhioureacopper(I) sulphate
9. Guignet's green *(hydrated chromium oxide)*
10. Cobalt blue *(azure)*

[Note : Pre-sessions are expected to explain the principle, procedure and calculations of each experiment]

Text book: