

Assignment

Guideline for assignment

1. It should be hand written
2. There should be a Name page. It should contain: Assignment Topic, Subject name, Subject code, Roll Number, Year, Semester.
3. Number of pages should be 3-4 (including Figures, table etc), excluding the name page.

1st year Semester II

Course Code	Course name	Assignment Topic
Organic Chemistry-I	CHMUGCC03	1. Draw different s, p and d orbital. 2. Pictorially explain sp, sp ² and sp ³ hybridization of carbon. 3. Pictorially Explain the resonance with suitable example. 4. Use the concept of resonance to explain the stability of radicals and carbocations with suitable examples.
Physical Chemistry-II	CHMUGCC04	Write short notes on (a) Work done in adiabatic reversible expansion (b) Concept of heat and work (c) Heat of reaction (d) Laws of thermochemistry.
Subsidiary Chemistry-I	CHMUGGE01	Write short notes on (a) Thermodynamic processes (b) Enthalpy of system (c) Reversible and irreversible process (d) Intensive and extensive variables.
Engineering Chemistry	CHMUGBS01	
Engineering Chemistry Lab	CHMUGBS02	

2nd year, Semester IV

Course Code	Course name	Assignment Topic
Inorganic Chemistry-III	CHMUGCC08	1. Comment on the magnetic moments of homonuclear diatomic molecules in terms molecular orbital theory 2. Write a note on redox titration and its uses
Organic Chemistry-III	CHMUGCC09	Aromatic rings of anthracene are not equivalent
Physical Chemistry-IV	CHMUGCC10	See last page
Subsidiary Chemistry-II	CHMUGGE02	
Basic Analytical Chemistry	CHMUGSE04	1. Write short notes on (a) accuracy and precision (b) Determinate and indeterminate error (c) Instrumentation involved in UV-Visible Spectrometry (d) Mechanism of extraction process 2. Write a note on applications of chromatography

3rd year, Semester VI

Course Code	Course name	Assignment Topic
Inorganic Chemistry-IV	CHMUGCC13	1. Discuss the effect of Jahn-Teller distortion on electronic spectra 2. Write a note on applications of organometallic chemistry

Organic Chemistry-V	CHMUGCC14	Protein sequencing
Analytical Methods in Chemistry	CHMUGDS05	UV-Vis spectroscopic (Basic Principle and Instrumentations)

1st year, M.Sc Semester II

Course Title	Course Code	Assignment Topic
Biochemistry and Basic Immunology	CHMPGCCT05	Role of Enzyme in human body
Spectroscopy	CHMPGCCT06	1. Discuss the effect of Jahn-Teller distortion on electronic spectra 2. Comment on cis and trans coupling constants in the ^1H NMR spectroscopy of three, four, five and six member heterocyclic systems with examples. Explain with suitable tree diagram.
Medicinal Chemistry- I	CHMPGCCT07	Heterocyclic antibacterial drugs (Structures/ Years of development)
Chemistry of Natural Products	CHMPGCCT08	1. Biological activity of any natural product 2. Importance of any two flavonoids in our daily life

Semester X

Medicinal Specilization

Course Code	Course name	Assignment Topic
CH 502	Drug design and drug delivery	Role of polymers in drug delivery
CH 504	Industrial process and scale set-up technique	scale set-up technique
CH 506	Pharmacological screening and assay	Biological activity of betanin and lawsone

CH 508	Structures and functions of Biomolecules	DNA double stranded structure is essential for hereditary conservation justify in the light of DNA polymorphism and genetic code
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Organic Specilization

Course Code	Course name	Assignment Topic
CH 510	Pharmaceutical chemistry	Heterocyclic antiprotozoal drugs (Structures/ Years of development).
CH 512	Applied Organic Chemistry	Use of dyes in textile industry
CH 514	Bio-Organic Chemistry	Central dogma of life
CH 516	Organic Synthesis-II	1. Write a note on applications of supramolecular chemistry 2. Recent reports on light mediated synthesis and functionalization of heterocycles (Year 2022 with reference)

Assignment for 2nd year IV semester : Physical Chemistry-IV CHMUGCC10

Marks = 20

1.

a) What do you mean by a weak electrolyte? Define the dissociation constant (K_d) of it and express it in terms of degree of dissociation (α) and concentration (c).

b) Briefly outline how one can determine this K_d using conductivity measurement.

Mention clearly the quantities in your outline, to be obtained from experiments and the quantity to be used from text literature. Have you used any principle on migration of ions for the latter? State the principle.

c) Calculate K_d for a weak acid HA (0.40 M, 298 K) having molar conductivity of $8.59 \times 10^{-4} \text{ S m}^2 \text{ mol}^{-1}$.

Given: $\lambda^0(\text{H}^+) = 349.8$ and $\lambda^0(\text{A}^-) = 40.9$ (in $\text{S m}^2 \text{ mol}^{-1}$). **10**

2.

a) Derive the Nernst equation for EMF.

b) Differentiate between E and E^0 of a cell.

Mention how one can evaluate equilibrium constant of a cell reaction using EMF measurement.

c) Explain why copper does not dissolve (to form Cu^{2+}) in hydrochloric acid but dissolve in dilute nitric acid. [Answer the question from electrochemistry point of view].

d) For Weston cell, emf is 1.018 V at 293 K. Its temperature coefficient $\left(\frac{\partial E}{\partial T}\right)_p = -4.0 \times 10^{-5} \text{ V/K}$. Calculate ΔG , ΔS and ΔH for the cell reaction of the cell.

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