Dr. APJ Abdul Kalam University Indore

Scheme of Examination

B.Sc.

Semester-I

(w.e.f. July 2016 Onwards)

(Non Grading)

Course Name	Subject	Theory Max. Marks				Practical Max Marks		Total
		Internal		External		Max Marks	Min Marks	
		Max	Min	Max	Min			
Foundation Courses	HINDI+ ENGLISH **FCS 101 HE**	10+05=15	05	50+35=85	28	-	-	100
	E-SHIP **FCS 102 EP**	15	05	35	12	-	-	50
B.Sc. Pharma Chemistry	BOTANY **BSB 101 T**	15	05	85	28	50	17	100
	BOTANY **BSB 101 P**	-	-	-	-	50	17	50
	CHEMISTRY **BSC 102 T**	15	05	85	28	50	17	100
	CHEMISTRY **BSC 102 P**	-	-	-	-	50	17	50
	PHARMA CHEMISTRY **BSP104 T**	15	05	85	28	50	17	100
	PHARMA CHEMISTRY **BSP104 P**	-	-	-	-	50	17	50
Total								600

Dr. APJ Abdul Kalam University Indore

B.Sc. Under Graduate Semester wise Syllabus

(w.e.f. session 2016 onwards)

Class: - B.Sc.

Semester: - I Semester

Subject: - Botany (BSB101T)

Paper: - DIVERSITY OF MICROBES AND CRYPTOGAMS

Marks 85+15 CCE

Particulars

Unit-1 **Prokaryots:** characteristics of Viruses, general account of TMV and T4 bacteriophage. Bacterial structure, nutrition, reproduction and economic importance; General account of Mycoplasma Cynobacteria and Actinomycetes.

Unit-2 **Algae :** General characters, classification and economic importance. Important features and life history of Chlorophyceae- *Volvox, Oedogonium*, Charophyceae-

Chara Xanthophyceae - *Vaucheria*, Phaeophyceae - *Ectocarpus*, Rhodophyceae - *Polysiphonia.*

Unit-3 **Fungi:** General characters, classification and economic importance, Important features and life history of Mastigomycotina- *Phytophthora*, Zygomycotiana *Mucor*, Ascomycotina : *Aspergillus, Peziza*, Basibiomycotina - *Puccinia*, Deurteromycotina *Cercospora*. General account of Lichens.

Unit-4 **Bryophyta :** Classification, study of morphology, anatomy, reproduction of Hepaticopsida : *Riccia, Marchantia* ; Anthocerotopsida: *Anthoceros*, Bryopsida: *Polytrichum*

Unit-5 **Pteridophyta** : Important characters and classification. Stelar organization. Morphology and anatomy of Rhynia. Structure, anatomy and reproduction in Lycopodium, Selaginella, Equisetum and Marsilea.

Suggested Books:

i) G.M. Smith 1971 Cryptogamic Botany. Vol - I Algae & Fungi Tata McGrraw Hill Pub. Co. NewDelhi.

ii) G.M. Smith 1971 Cryptogamic Botany. Vol -II Bryophytes & Pteridophytes. Tata McGrraw Hill Pub. Co. New Delhi.

iii) O.P.Sharma,1992. Text book of Thallophyta McGrraw Hill Pub. Co.

iv) O.P.Sharma,1990. Text book of Pteridophyta McMillan india Ltd .

v) P.D.Sharma 1991. The Fungi. rastogi & Co. Meerut.

vi) H.C. Dubey.1990. an introduction of Fungi.Vikas Pub. house pvt.ltd.

vii) P.Puri 1980. Bryophyta Atma ram & Sons, Delhi.

viii) A.Clifton.1958. Introduction to the Bacteria. Mcgrew Hillpub. Co.New delhi.

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Class: - B.Sc.

Semester: - I Semester

Subject: - Botany (BSB101P)

Practical

Objectives:

i) To develop the skills of staining and observation of lower organism.

ii) To impart the skills of temporary and permanent slide preparations.

iii) To enhance ability to identify the lower organisms using microscope.

iv) To familiarize the students with diseases and their causative agents.

Scheme of practical examination

Time: 4 hrs **Marks: 50**

Algae / Fungi	05
Bryophyta	10
Pteridophyta	10
Plant disease	05
Spotting (1-5)	10
Viva	05
Sessional	05
Total :	**50**

Dr. APJ Abdul Kalam University Indore

B.Sc. Under Graduate Semester wise Syllabus
(W.e.f. session 2016 onwards)

Class: - B.Sc.

Semester: - I Semester

Subject: - Chemistry (BSC102T)

Marks 85+15 CCE

Unit- 1

A. Mathematical Concepts: Logarithmic relations, (rules and types), use of log table and antilog table in calculations, curves sketching, straight line and linear graphs, calculation of slopes, Differentiation of functions like Kx, ex, xn, sinx, logx; multiplication and division in differentiation, maxima and minima, partial differentiation and reciprocity relations. Integration of some useful/relevant functions; Factorials, Probability.

B. Gaseous States and Molecular Velocities: Critical phenomenon : PV isotherms of ideal gases, Andrew's experiment, continuity of states, the isotherms of van der Waals equations, relationship between critical constants and Vander Waals constants, Root mean square, average and most probable velocities. Qualitative discussion of the Maxwell's distribution of molecular velocities, collision numbers, mean free path and collision diameter.

Unit-2

A. Liquid State: Intermolecular forces, structure of Liquids (a qualitative description) Liquid crystals: Difference between liquid crystal, solid and liquid. Classification, structure of nematic and cholestric phases. Thermography and seven segment cell.

B. Solid State: Definition of space lattice, Unit cell, Laws of crystallography - (i) Law of constancy of interfacial angles (ii) Law of rationality of indices (iii) Laws of symmetry, Symmetry elements in crystals. Ionic solid structures, radius ratio, radius ratio effect and coordination number, limitations of radius rule, lattice defects.

Unit-3

A. Elementary Quantum Mechanics: Schrodinger wave equation, significance of _ and _2, radial and angular wave functions and probability distribution curves, effective nuclear charge.
B. Periodic Properties : Definition, application and periodicity of Atomic and ionic radii, ionization energy, electron affinity and electronegativity

C. Chemical Bonding: Covalent bonding as applied to valence bond theory and its limitations, directional characteristic of covalent bond. Hybridization and shapes of simple molecules and ions, Valence Shell Electron Pair Repulsion (VSEPR) theory to NH3, SF4, CIF3, ICI2, H2O.

Unit-4

A. s-Block Elements: Comparative study, diagonal relationship, salient features of hydrides, solvation and complexation tendencies including their, function in bio systems an introduction to alkyls and aryl complexes.
B. p-Block Elements : Comparative study (including diagonal relationship) of groups 13-17 elements, compounds like hydrides, oxides, oxyacids and halides of groups 13-16. Hydrides of boron-diborane and higher boranes. Borazine, borohydrides.

Unit-5

A. Bond Parameters Bond lengths and bond angles, bond energy: Localized and delocalized chemical bond, Vander Waal interactions, with reference to supra molecular chemistry, resonance, hyperconjugation, inductive and field effects, hydrogen bonding.

B. Types of Reagents: Electrophiles and nucleophiles. Types of organic reactions. Energy consideration. Hemolytic and heterolytic cleavage Reactive intermediatescarbocations, carbanions, free radicals and carbenes\ benzynes.
C. Stereochemistry: Concept of Stereoisomerism, types of Stereoisomerism, elements of symmetry Chiral and achiral compounds. Fischer projection formulae; optical isomerism of lactic and tartaric acids, enantiomerism and diastereoisomerism; configuration (relative and absolute); conformations of ethane and n-butane and cyclohexane.
D, L-and R, S-notations of compounds containing chiral centers; projection formulae – Fischer, Newman and Sawhorse of compounds containing two adjacent chiral centers; meso and dl-isomers, erythro and threo isomers; racemization and resolution; geometrical isomers ; E and Z notations.

Suggested book

1. Physical Chemistry-Puri, Sharma and Pathania, Vikas Publications, New Delhi
2. Physical Chemistry -G.M. Barrow, International Student Edition, McGraw Hill.
3. The Elements of Physical Chemistry, P.W. Atkins, Oxford Un iv e r s i t y Press
4. Physical Chemistry, R.A. Alberty, Wiley Eastern Ltd.
5. Physical Chemistry Through problems, S.K. Dogra and S. Dogra, Wiley Eastern
6. Organic Chemistry, Morrison and Boyd, Prentice Hall.
7. Organic Chemistry, L.G. Wade Jr. Prentice Hall
8. Fundamentals of Organic Chemistry Solomons, John Wiley.
9. Organic Chemistry, Vol. I, IL IIL S.M. Mukherji, S.P. Singh and R.P. Kapoor,
10. Organic Chemistry, F.A. Carey, McGraw-Hill Inc.
11. Introduction to Organic Chemistry, Streitwiesser, Heathcock and Kosover, Macmillan.
12. Vogel's Qualitative & quantitative Analysis Vol- 1, 2, 3, ELBS.
13. Advanced Organic chemistry, I. L. Finar, ELBS.
14. Basic Concepts of Analytical chemistry, S M Khopker, New Age International Publishers.
15. Analytical Chemistry, R.M. Verma, CBS Publication.
16. Analytical Chemistry, Skoog & West, Wiley International.
17. Essentials of Physical Chemistry, B.S. Bahl, Arun Bahl & G.D. Tuli, S. Chand & Company Ltd.
18. Atomic structure and Molecular spectroscopy, Manas Chanda, New Age International Publishers.
19. Molecular Spectroscopy, Sukumar, MJP Publishers.

20. Organic Chemistry, Mac Murrey, Pearson Education.
21. Inorganic Chemistry – J.D. Lee, John Wiley
22. Inorganic Chemistry – Cotton and Wilkinson, John Wiley
23. Inorganic Chemistry – Huheey, Harper Collins Pub. USA
24. Inorganic Polymer – G.R. Chhatwal, Himalaya Pub.House
25 मध्य प्रदेष हिन्दी ग्रन्थ अकादमी भोपाल द्वारा प्रकाषित रसायन विज्ञान की पाठ्यपुस्तक।
26 मध्य प्रदेष हिन्दी ग्रन्थ अकादमी भोपाल द्वारा प्रकाषित प्रायोगिक रसायन की पाठ्यपुस्तक।

Dr. APJ Abdul Kalam University Indore

Class: - B.Sc.

Semester: - I Semester

Subject: - Chemistry (BSC102P)

Max Marks: 50

Duration of practical during the semester examination: 4 hours

Physical Chemistry

(A).Any one experiment **12 Marks**

1. Calibration of thermometer
2. Determination of melting point
3. Determination of boiling point
4. Preparation of solutions of various concentrations, NaOH, HCl, H_2SO_4.

(B).Any one experiment **12 Marks**

1. Determination of surface tension/percentage composition of given organic mixture using surface tension method
2. Determination of viscosity / percentage composition of given organic mixture using viscosity method.

Organic chemistry **12 Marks**

1. Distillation
2. Crystallization
3. Decolourisation and crystallization using charcoal
4. Sublimation
5. Detection of elements and functional groups
6. Organic molecules through models with special reference to optical and Geometrical isomerism.

Viva : 6 marks

Records: 8 mar

Dr. APJ Abdul Kalam University Indore

Dr. A.P.J. Abdul Kalam University, Indore

B.Sc. Under Graduate Semester wise Syllabus

(w.e.f. session 2016 onwards)

Class: B.Sc. Pharma Chemistry

Semester: I

Subject: Pharmaceutical Chemistry-I (BSP104T)

Title of paper: **Introduction to pharmaceutical chemistry**

Marks: 85+15 CCE

UNIT -I

Pharmacy and pharmaceutical chemistry as a career.
Important aspects of pharmaceutical chemistry.
Importance of chemistry in pharmacy.
History of pharmacopoeia.

Drug: Classification and Sources
Classification of drugs.
Sources and uses of Natural drug products –Biological (plants, animals and microbes) Geographical , Marine and Mineral Sources.

UNIT-II: Drug Action

Introduction to biological defenses.
Theories of drug action: surface active agents, metabolic antagonism, enzyme neutralizers. Mechanism of drug action.

Drug Receptors
Introduction to drug receptors
Nature of drug receptors
Different bonding involved in drug-receptor interactions. Drug receptor theories.

UNIT-III
Drug Absorption
Route of Drug Administration.
Mechanism of Absorption of Drugs and factors affecting Absorption.

Physiology of Biomolecules
Classification and Physiological Functions of Carbohydrates, Lipids and Proteins.
Digestion and biological oxidation of Carbohydrates, Fats, Proteins

UNIT-IV

Medicinal System

Introduction and different types of medicinal Systems.

Study of liquid solutions such as Aromatic waters, Solutions, Lotions and Creams.

Extraction Methods: Extraction methods: Percolation, maceration and infusion. Manufacturing procedures of crude extracts such as Tinctures and infusions.

UNIT-V

Dispensing Pharmacy: System of weights and measures in pharmacy. Dilution and concentration of formulation. Calculation by Alligation medial and Alligation alternate.

Pharmaceutical Dosage: Meaning of pharmaceutical Dose and Dosage Formulae. Factors affecting Pharmaceutical Dose. Types of drug-drug Antagonism.

Dr. APJ Abdul Kalam University Indore

Class: B.Sc. Pharmaceutical chemistry

Semester-I

Title of paper: Practical

Examination: 4 hours

I. Preparation of Pharmaceutical compounds: **12 Marks**

(a) Aspirin (b)Acetanilide (c) Chrome alum (d) Potash alum (e) Mohr"s Salt (f) Salicylic acid (g) Zinc oxide (h) p-bromoacetanilide (i) Anthraquinone from anthracene (j) Reduction of Nitro Benzene.

II. Volumetric estimation: **12 Marks**

Acid –base titration.

(a) Strong acid with strong base.
(b) Weak acid with strong base.
(c) Weak base with strong acid.

III. Paper Chromatography: **12 Marks**

(a) Separation of Amino acids.
(b) Separation of Plant pigments.

IV. Viva **06 Marks**

V. Practical record **08 Marks**