NSEC/BES/COVID/2019-20/005
Date: 14/05/2020

NETAJI SUBHASH ENGINEERING COLLEGE
DEPARTMENT OF BASIC ENGINEERING SCIENCES

SYLLABUS OF ONLINE UNIT TEST

CHEMISTRY (BS-CH 201)
SECTION: A, B, C, D, E

(Teachers: Dr. Narayan Ch. Biswas; Dr. Chayan Guha, Dr. Arjama Kundu; Dr. Gourkrishna Dasmahapatra; Dr. Debashree Das)

Unit -1: Quantum Chemistry, Atomic and Molecular structure, Aromaticity, Crystal field theory

Unit-2: Spectroscopy; Microwave, IR, UV and NMR spectroscopy,

Unit-3: Inter molecular Forces: excluded

Unit-4: Periodic properties (effective nuclear charge, electronic configuration, atomic radii, Ionization potential, electronegativity, electron affinity, polarizability, HSAB and molecular geometry)

Unit-5: Use of free energy in chemical equilibria (thermodynamics, electrochemistry, acid base, oxidation reduction, solubility equilibria, water chemistry and corrosion)

Unit-6: Stereochemistry: priority of ligands, drawing of different projection, R/S nomenclature up to two carbon center, newman projection, conformational analysis and comparison, Elements of symmetry (symmetry axis, symmetry palne, inversion center), Homomer, enantiomer, diastereomer, Optical activity, meso compound, racemic mixture etc.

Unit-7: Substitution, Aromatic Electrophilic Substitution, Addition, Elimination, Oxidation, Reduction, Ring opening, Cyclisation, synthesis of drug molecule.

(Syllabus Coverage: 100%)

ENGLISH (HM – HU 201)

(Teachers: Deepashree Dhar, Abira Chaudhuri, Hriya Banerjee, Argha Basu, Titir chakraborty)

1. Vocabulary Building

1.1 The concept of Word Formation: Compounding, Backformation, Clipping, Blending.
1.2 Root words from foreign languages and their use in English
1.3 Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives.
1.4 Synonyms, antonyms, and standard abbreviations: Acronyms

2. Basic Writing Skills

2.1 Sentence Structures & Types: Simple, Compound, Complex
2.2 Use of phrases and clauses in sentences: Transformation of sentences, active, passive, narration
2.3 Importance of proper punctuation
2.4 Creating coherence: Arranging paragraphs & Sentences in logical order
2.5 Creating Cohesion: Organizing principles of paragraphs in documents
2.6 Techniques for writing precisely

3. Identifying Common Errors in Writing

3.1 Subject-verb agreement
3.2 Noun-pronoun agreement
3.3 Misplaced modifiers
3.4 Articles
3.5 Prepositions
3.6 Redundancies
3.7 Clichés

4. Nature and Style of sensible Writing

4.1 Describing
4.2 Defining
4.3 Classifying
4.4 Providing examples or evidence
4.5 Writing introduction and conclusion

5. Writing Practices

5.1 Comprehension
5.2 Précis Writing
5.3 Essay Writing
5.4 Business Letter, Cover Letter & CV; E-mail
5.5. Notice, Agenda, Minutes

6. Fundamentals of Theory of technical Communication

6.1 Communication cycle
6.2 Barriers
6.3 types
6.4 7 Cs

***The highlighted sections demand additional emphasis. ***

(Syllabus Coverage: 100%)

MATHEMATICS IIA (BS-M 201)
SECTION: A, B, C

Teacher's Name	Syllabus for UT	Percentage of Syllabus Covered up to 13th May, 2020
Saswati Das	1. Basic Probability 2. Sums related probability 3. Discrete probability Distribution 4. Continuous probability Distribution 5. Sum related probability Distribution 6. Bivariate Distribution 7. Statistics	70%

MATHEMATICS IIB (BS-M 202)
SECTION: D, E, F, G, H, I, J

Teacher's Name	Syllabus for UT	Percentage of Syllabus Covered up to 13th May, 2020
Dr. Payel Das	1. Conformal mappings, Mobius transformations and their properties. 2. Multiple Integration: Double integrals (Cartesian), change of order of integration in double integrals, change of variables (Cartesian to Polar), Applications: Areas and volumes, Center of mass and Gravity. 3. Triple integrals (Cartesian).	100%
Amrita De	1. First order but not first degree differential	100%

	equation (a) Equation solvable for x (b) Equation solvable for y (c) Equation solvable for p (d) Clairaut's Form 2. First order first degree differential equation (a) Exact equation (b) Non exact equation (c) Linear form (d) Homogenous equation (e) I. F using chart 3.Higher order linear differential (a) with constant coefficient (b) with variable coefficient (c) Variation of parameters 4.Power series Solution 5. Legendre Polynomial 6.Bessel's Function 7.Line and Surface Integral, Green's Theorem 8.Gauss Divergence Theorem, Stoke's Theorem	

PHYSICS I (BS-PH 201)
SECTION: F, G, H

TEACHER	MODULE	TOPICS	PERCENTAGE OF SYLLABUS COMPLETED
Dr. Sabyasachi Bagchi	1	1.Mechanics: Part A: Vector Calculus; PartB: Classical Mechanics 2. Oscillations	100%
	3	1. Maxwell's Equations 2. Magnetic Properties of	

		Materials	
Dr. Sreya Pal	2	1.Diffraction: Distinction between interference and diffraction, Fraunhofer and Fresnel diffraction, Fraunhofer diffraction at single slit, double slit, and multiple slits (only the expressions for maxima ; minima & intensity and qualitative discussion of fringes); diffraction grating(resolution formula only), characteristics of diffration grating and its applications. 2. Polarisation: Introduction, polarisation by reflection, polarisation by double reflection, scattering of light, circular and elliptical polarisation, optical activity.	100%
Dr. Subrata Kr. Kabiraj	4	Quantum Mechanics: Introduction to Quantum Physics, Black Body Radiation,	100%

		Explanation using he Photon concept, Compton effect, de Broglie hypothesis, Wave-particle duality, verification of matter waves, Uncertainty principle, Schrodinger wave equation, Particle in a box, Quantum Harmonic oscillator, Hydrogen atom.	

PHYSICS I (BS-PH 201)
SECTION: I, J

(Teachers: Dr. Krishnendu Bhattacharyya; Dr. Ajanta Kundu)

(Syllabus Coverage: 100%)

Module 2 (Optics): Interference, distinction between interference and diffraction, Fraunhofer and Fresnel diffraction, Fraunhofer diffraction in single slit, double slit, multiple slits (only the expression of maxim, minima and intensity and qualatitive description of fringes); diffraction grating (resolution formulae only), characteristics of diffraction grating and its applications.

Introduction to polarization, polarization by reflection, polarization by double reflection, Malu's law, Wave plates, Brewster's law. Working principle and application of LASER.

Module 3 (Magnetic Properties of materials): Magnetization, permeability and susceptibility, classification of magnetic materials, diamagnetism, Para magnetism, ferromagnetism, magnetic domains and hysteresis, applications.

Module 4 (Quantum Mechanics): de-Broglie hypothesis and Uncertainty principle, Schrodinger wave equation, Particle in a box.

Module 5 (Statistical Mechanics): Qualitative treatment of Fermi-Dirac and Bose-Einstein Statistics and their applications.

Programming for Problem Solving

(ES – CS 201)

Entire syllabus as prescribed by MAKAUT

Sd-

HOD, BES