SYLLABUS FOR ANIMAL HUSBANDRY AND DAIRY TECHNOLOGY DIPLOMA ENTRANCE TEST (ADDET) – 2024

पाठ्यक्रम (SYLLABUS)

(A) Physics

Unit and dimensions, dimensional analysis, S.I. Units, Motion in two dimensions

Cases of uniform velocity and uniform acceleration, General relation between

position and velocity, Uniform circular motion, Force and inertia Newton's Laws of

motion Conservation of momentum and energy. Static and kinetic friction. Work

energy and power collisions, potential energy, gravitational potential energy and its

angular conversion to kinetic energy. Potential energy of a spring, Rigid Body rotation

and conservation of its momentum. Moment of inertia, theorems of Parallel and

perpendicular axis. (Moment of inertia of uniform rings, disc, hin rod and cylinder

only).

Acceleration due to gravity and its variation, Universal law of gravitation,

geostationary satellites,26escape velocity.

 Hooke's law, Young's modular shear and bulk modulus, surface energy and surface tension, kinetic theory of gases, gas laws, kinetic energy and temperature. Specific heats at constant volume and constant pressure, mechanical equivalent of heat, isothermal and adiabatic processes.

Heat conduction in one dimension, convection and radiation, Stefan's Law and

Newton's law of cooling, Periodic motion, simple harmonic motion, Oscillations due

to spring, Wave motion, principle of superposition; Progressive and stationary waves,

Beats and Doppler effect.

Wave nature of light, Interference, Young's double slit Experiment, Velocity of light and Doppler's effect in light. Reflection, refraction, total internal reflection, curved mirrors, Lenses, mirror and26lens formulae. Dispersion in prism, absorption and emission spectra.

The human eye, defects of vision, magnification and resolving power of telescope and

microscope "e" and "e/m" for an electron, Einstein's photoelectric equation,

photocells.

Bohr model of the atom, Hydrogen spectrum, Composition of nucleus, atomic masses

and isotopes, radioactivity, laws of radioactive decay, decay constant,26half life and

mean life,.

Mass-energy relation, fission. X-Ray: Properties and uses.

Elementary ideas of conductor, semi-conductor and insulator, intrinsic and extrinsic

semi conductors, pn Junction as a rectifier.

Bar magnet, lines of force, torque on a bar magnet due to magnetic field, earth's magnetic field, tangent galvanometer, vibration magnetometer.

Coulomb's law of electrostatic, dielectric constant, electric field and potential due to a point charge, dipole, dipole field, Gauss's law in a simple geometrics.

Electrostatic potential, capacitance, parallel plate and spherical capacitors, capacitors

in series and parallel, energy of a capacitor.

Electric current, Ohm's law, Kirchhoff's laws, resistances in series and parallel temperature dependence of resistance. Wheatstone bridge, potentiometer. Measurement of voltages and currents.

Electric power, heating effects of currents, chemical effects and law of electrolysis,

thermoelectricity. Biot Savart law.

Magnetic fields due to a straight wire circular loop and solenoid.

Force on a moving charge in a manetic field (Lorentz force), Magnetic moment of

a current loop, effect of a uniform magnetic field of a current loop, forces between two

currents, moving coil, galvanometer, ammeter and voltmeter.

Electromagnetic induction induced emf, Faraday's law, Lenz's law, self and mutual

inductance alternating currents, impedence and reactance growth and decay of current

in L-R circuit, elementary idea of dynamo and transformer.

(B) Chemistry

General and Physical Chemistry

Structure of Atom : Constitution of nucleus : Bohr's atom model : quantum numbers

Aufbau principle, electronic configuration of elements (upto-Kr) : de-Broglie relation,

shapes of orbitals.

Chemical Bond : Electrovalent, covalent and coordinate bonds, hybridization (sp) :

hydrogen bond: shapes of molecules (VSERR theory) : bond polarity, resonance,

Elements of VBT MOT.

Solutions: Modes of expressing concentrations of solutions: Types of solutions,

Raoult's law of colligative properties, non-ideal solution, abnormal molecular weights.

Solid State: Crystal lattices, unit cells, Structure of ionic compounds: close packed structure ionic radii, imperfections (Point defects): Properties of solids.

Nuclear Chemistry: Radioactive radiations: half-life, radioactive decay, group displacement structure and properties of nucleus: Nuclear reaction, disintegration series, artificial transmutation: isotopes and their uses, Radio carbon dating.

Chemical Equilibrium: Chemical equilibrium, Law of mass action: KP and KC: Le Chatelier principle and its application.

Ionic Equilibria in solutions, Solubility product, common ion effect, theories of acids and base hydrolysis of salts: pH : buffers.

Thermochemistry and Thermodynamics: Energy changes during a chemical reaction: intrinsic energy enthalpy, first law of thermodynamics: Hess's law, Heats of reactions: Second law of thermodynamics: entropy: free energy; spontaneity of a chemical reaction; free energy change and chemical equilibrium; free energy as energy available for useful work.

Chemical kinetics, Rate of a reaction, factors affecting the rate, rate constant, rate expression, order of reaction, first order rate constant expression and characteristics, Arrhenous equation.

Electrochemistry: Oxidation, Oxidation number and ion-electron methods.

Electrolytic conduction. Faraday's laws; voltaic cell, electrode potentials, electromotive force, Gibb's energy and cell potentials. Nornest equation, commercial cells, fuel cell, electrochemical theory of corrosion.

Surface chemistry, Colloids and Catalysis; Adsorption, Colloids (types preparation and properties), Emulsions, Micelles, Catalysis: Types and characteristics.

Inorganic Chemistry:

Principles of metallurgical-operations : Furnaces, ore concentration, extraction, purification metallurgies of Na, Al, Fe, Cu, Ag, Zn and Pb and their properties.

Chemical periodicity : s, p, d and f-block elements, periodic Table: periodicity : atomic and ionic radii valency, ionization energy, electron affinity electronegativity,

metallic character.

Comparative study of elements: Comparative study of the following families of elements: (i) alkali metals (ii) Alkaline earth metals (iii) Nitrogen family (iv) Oxygen family (v) Halogens (vi)Noble gases.

Transition metals: Electronic configuration of 3d-metal ions, oxidation states, other general characteristic properties, Potassium permanganate, Potassium dichromate.

Co-ordination compounds: Simple nomenclature, bounding and stability,

Classification and bonding in organometallics.

Chemical analysis: Chemistry involved is simple inorganic qualitative analysis:

calculations based on acid-base titrimetry.

Organic Chemistry :

Calculation of empirical and molecular formula of organic compounds, Nomenclature of organic compounds common functional groups isomerism structure and shapes of alkanes and benzene.

Preparation properties and uses of alkynes, alkyl, benzene, petroleum, cracking octane number, gasoline additives.

Nomenclautre, Physical chemical properties, correlation of physical properties with structure properties and uses of haloalkanes, halobenzenes, alcohols and phenols: General ideas of some polyhalogen compounds viz., dichlorothanes, dichloroethers, chloroform, carbon tetrachloride D.D.T., benzene hexachloride.

Nomenclature, methods of preparation, Chemical propoerties, correlations of physical propoerties with structure and uses of ethers, aldehydes, ketones, carboxylic acids and their derivatives.

Brief account of the chemistry of cyanides, isocyanides, amines and nitrogen compounds.

Polymers: Classification: Preparation and uses of common natural and synthetic polymers.

Biomolecules: Classification, Structure and biological importance of carbohydrates, amino acids, peptides, proteins and enzymes, nucleic acids and lipids.

C. GENERAL STUDIES (20 Question)

1. General Science and Environment

2. Geography, History, Sport and Culture of M.P.

3. Information and Communication Technology

Note:- Up to the level of 11th & 12th