APPLIED SCIENCES

PART - I

PHYSICS AND CHEMISTRY

1. The nature of Science, Divisions of Science, and Scientific method.
2. The Measurement – Metric System, scientific notation, units of mass, length and volume.
3. Mechanics – Force, equation of motion, laws of motion.
4. Gravity – speed, velocity and acceleration, center of gravity, weight and mass.
5. Work, Power, Energy.
6. Simple machines – principles of machines, friction, levers.
7. Density, Specific gravity, Archimedes' Principle.
8. Pressure – Definition, pressure in hydrostatic fluids, pressure in flowing liquids.
9. Gas Laws – Boyle's and Charles laws, gas laws applicable to respiratory process, effects of changes in atmospheric pressure on physiology of the human body.
10. Heat – nature and measurement, effects of heat, methods of transfer.
11. Light – Transmission, reflection and refraction of light, lenses.
12. Sound – How it is produced, characteristic, transmission, reflection of sound, echoes, ultrasound.
13. Electricity – Atomic structure, free electrons, conductor and insulators, Definition of current, P.D., Resistance, Resistance laws, Ohm's law, circuit, series circuit, parallel circuit, Power and energy.
14. Magnets and Magnetism – Properties, magnetic field, magnetic lines of force, electromagnet, magnetic effect of electric current, Motor and generator effect of current, magnetic and electric induction, Transformer.
15. Charge – Coulomb's law, capacitor and capacitance, capacitor in series and in parallel.
16. A.C. Definition, RMS value, Peak value Sine wave.
17. Electromagnetic Radiation – Spectrum, ionization, excitation, Inverse Square law, frequency, wave length, terms and their definitions.
18. Composition of Substance – Atoms and molecules, symbols, formulae, Elements and compounds, chemical formula.
19. Chemical Reactions and Equations.
20. Water – physical and chemical properties, Deliquescent, efflorescent, hygroscopic substances, solvent properties, Hydrolysis, Water cycle, impurities, hard and soft water.
21. Solutions – Terms, Solubility, Concentrations, dilutions, properties of solution.
22. Acid, Bases, and salts.
23. pH Scale and buffer system.
24. Electrolytes and electrolysis.
25. Amines and amides
26. Proteins – compositions, properties of amino acids, classifications.
27. Carbohydrates
28. Lipids

Practical Chemistry

1. How fitting up a wash bottle is prepared?
2. To pacify the given sample of impose naphthalene crystallization.
3. To pacify the given sample of naphthalene by sublimation.
4. To determine the melting & boiling point of organic compound.
5. To prepare the standard solution of acid or Base.
6. To prepare a standard solution of exotic acid and with its help standardize a solution of NaoH.
7. To prepare approximates N/10 solution of H_2SO_4 determine its exact normality by titrating it against standard N/10 NaoH?
8. To standardize a given solution by direct method.
9. To standardize a given solution by indirect method.

Practical Physics

a. To find the unknown force.
b. To find the center of gravity of an irregular shape.
c. To verify the law of reflection.
d. To find the path of light passing through a prism.
e. To find the focal point of a lens.
f. Determine the critical angle of glass using a glass prism.
g. Determine the focal length of convex lens.
h. To find the reflective index of a liquid using a concave mirror.
i. Determine the speed of sound at a room temperature.