Annexure 'C'

Syllabus for Junior Scientific Assistant

Qualification Prescribed: *Bachelor's Degree in Science from a recognized University with the stream of Physics, Chemistry and Biology having at least 60 % marks in aggregate.*

A) Physics:-

- Thermal Physics, Solid State Physics, Mathematical Physics, Quantum Mechanics and application, fundamental concepts such as force, motion, gravity and electricity, work and energy, properties of matter, kinetic theory of gases, key concepts of thermal physics, thynodynamic systems, atmosphere and properties, Fission and Fusion. Oscillators, Amplifiers and operation amplifiers, Electricity and Magnetism, Waves and Optics, Electromagnetic induction.

B) Chemistry:-

- Classification of elements, chemical speciation. Particles, ions and radicals in the atmosphere. Chemical processes for formation of inorganic and organic particulate matter. Thermochemical and photochemical reactions in the atmosphere. Chemistry of air pollutants, Photochemical smog.
- Various Methods for detection of pollutants in Air, Water and Soil.
- Chemistry of water: concept of DO, BOD, COD, sedimentation, coagulation, filtration.
- Inorganic and organic components of soil, Nitrogen pathways and NPK in soils.
- Pesticides in water, Biochemical aspects of Arsenic, Cadmium, Lead, Mercury, Carbon Monoxide and Pesticides, Insecticides, MIC, carcinogens in the air.
- Analytical Methods: Kjeldahl, Colourimetry, Spectrophotometry, Chromatography.
- Industrial Chemistry, Polymer chemistry, Pharmaceutical Chemistry.
- Green Crackers and banned chemicals in fire crackers.

C) Biology:-

- Unit of life, cell- tissue, origin and evolution of life, diversity of life.
- Molecular Biology, Animal Biology, Microbiology, Genetics, Biotechnology, Natural Resource Management, Biochemical Techniques.
- Ecology and Environment, bio-geo-chemical cycles, energy flow in an eco-system, food chain.
- Photo-synthesis, respiration, photo respiration.
- Global warming and climate change.
- Ozone depletion.
- Bio fuels, bio fertilizers, tissue culture techniques and biotechnology applications.

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