PAPER: GENERAL SCIENCE & ABILITY (100 MARKS)

Part-I (General Science) 60 Marks

I. Physical Sciences

- **Constituents and Structure**:-Universe, Galaxy, Light Year, Solar System, Sun, Earth, Astronomical System of Units.
- **Process of Nature**: - Solar and Lunar Eclipses, Rotation and Revolution, Weather Variables (Global Temperature, Pressure, Circulation, Precipitation, Humidity) and Weather Variations.
- **Natural Hazards and Disasters**: - Earth Quake, Volcanic Eruption, Tsunami, Floods, Avalanche, Travelling Cyclone (Tropical Cyclone, Middle Latitude Cyclone and Tornadoes), Drought, Wildfire, Urban Fire. Disaster Risk Management.
- **Energy Resources**: - Sources of Energy (Renewable i.e. LED Energy, Solar Energy, Wind Energy and Non-Renewable Energy conservation and its sustainable use.
- **Atomic Structure**, Chemical Bonding, Electromagnetic Radiations.
- **Modern Materials/Chemicals**: - Ceramics, Plastics, Semiconductors. Antibiotics, Vaccines, Fertilizers, Pesticides.

II. Biological Sciences

- **The Basis of Life**: - Cell Structures and Functions (Subcellular Organelles such as Nucleus, Mitochondria and Ribosomes).
- **Biomolecules**: - Proteins, Lipids, Carbohydrates and Enzymes.
- **Plant and Animal Kingdom**: - A brief survey of plant and animal kingdom to pinpoint similarities and diversities in nature.
- **A Brief Account of Human Physiology**.
- **Common Diseases and Epidemics**: - Polio, Diarrhea, Malaria, Hepatitis, Dengue their Causes and Prevention.
- **New Model Concept of Producing BIO Fuel Method**

III. Environmental Science

- **Environment**: - The Atmosphere (Layered Structure and Composition), Hydrosphere (Water Cycle, Major Water Compartments), Biosphere (Major Biomes) and Lithosphere (Minerals and Rocks, Rock Types, Plate Tectonics).
- **Atmospheric Pollution**: - Types, Sources, Causes and effects of major air pollutants (COx, Particulate Matter, NOx, SOx, Tropospheric Ozone, Volatile Organic Compounds, Dioxins). Regional and Global air pollution issues (Acid-rain, Ozone Depletion, Greenhouse Effect and Global Warming). International agreements on air pollution control (Montreal Protocol and Kyoto Protocol).
- **Water Pollution**:- Types, sources, causes and effects of major water pollutants (Synthetic Organic Chemicals, Oxygen Demanding Wastes, Plant Nutrients, Thermal Pollution, Infectious Agents, Sediments, Radioactivity, Heavy Metals and Acids). Drinking water quality and standards.
- **Land Pollution**: - Solid waste management and disposal.

- Role of Remote Sensing and GIS in Environmental Science.
- Population Planning.

IV. Food Science

- **Concept of Balance Diet**: - Vitamins, Carbohydrates, Protein, Fats and oil, Minerals, Fiber.
- **Quality of Food**:- Bioavailability of Nutrients, Appearance, Texture, Flavor, Quality of Packed and Frozen Food, Food Additives, Preservatives and Antioxidants
- **Food Deterioration and its Control**: - Causes of Food Deterioration, Adulteration, Food Preservation.

V. Information Technology

- **Computer (Hardware & Software Fundamentals)**; I/O Processing and data storage, Networking & Internet Standards, Application and business Software, Social Media Websites. Information Systems. Fundamentals of artificial intelligence.
- **Telecommunications**: - Basics of Wireless Communication (Mobile, Satellite, Surveillance and GPS and Fiber Optic etc.

Part-II (General Ability) 40 Marks

VI. Quantitative Ability/Reasoning

- Basic Mathematical Skills.
- Concepts and ability to reasons quantitatively and solve problems in a quantitative setting.
- Basic Arithmetic, Algebra and Geometry (Average, Ratios, Rates, Percentage, Angles, Triangles, Sets, Remainders, Equations, Symbols, Rounding of Numbers
- Random Sampling

VII. Logical Reasoning and Analytical Reasoning/Ability

- **Logical Reasoning** includes the process of using a rational, systematic series of steps based on sound mathematical procedures and given statements to arrive at a conclusion
- **Analytical Reasoning/Ability** includes visualizing, articulating and solving both complex and uncomplicated problems and concepts and making decisions that are sensible based on available information, including demonstration of the ability to apply logical thinking to gathering and analyzing information.

VIII. Mental Abilities

- Mental Abilities Scales that measures specific constructs such as verbal, mechanical, numerical and social ability.

SUGGESTED READINGS

S. No.	Title	Authors
1.	Asimov's New Guide to Science 1993	Isaac Asimov
2.	Science Restated: Physics and Chemistry for the Non-Scientist 1970	Harold Gomes Cassidy
3.	Eminent Muslim Scientists 1991	S. Fakhre Alam Naqvi
4.	Exploring Life Science 1975	Walter A. Thurber, Robert E. Kilburn, Peter S. Howell
5.	Exploring Physical Science 1977	Walter A. Thurber, Robert E. Kilburn, Peter S. Howell
6.	Principles of Animal Biology 2011	Lancelot Hogben
7.	The Impact of Science on Society 2005	Isaac Asimov, A. S. a. N. A. S. a.
8.	Fundamentals of Forensic Science 2010	Max M. Houck, Jay A. Siegal
9.	Forensic Science Fundamentals & Investigation 2008	Anthony J. Bertino
10.	Physical Geography 2013	Harm J. de Blij, Peter O. Muller, James E. Burt, Joseph A. Mason
11.	Physical Geography-Science and Systems of the Human Environment 2009	Alan H. Strahler, Arthur N. Strallar.
12.	Introduction to Information Technology 2005	I. T. L. Education Solutions Limited, Itl.
13.	Management Information Systems 2014	Ken Sousa, Effy Oz
14.	Fundamentals of Telecommunications 2005	Roger L. Freeman
15.	Basics of Environmental Science 2002	Michael Allaby
16.	Food Science 1998	Norman N. Potter, Joseph H. Hotchkiss
17.	Environmental Science: Systems and Solutions. 5th ed. 2013	Michael L. McKinney, Robert Schoch and Logan Yonavjak
18.	Environmental Science: A Global Concern 2012	William P. Cunningham, Barbara Woodworth Saigo
Books for Logical Reasoning		
19.	Logical Reasoning	Rob P. Nederpelt, Farouz D. Kamareddine
20.	Elements of Logical Reasoning	Jan Von Plato
21.	Reasoning Builder for Admission and Standardized Test	Staff of Research Education
22.	Test of Reasoning	Thorpe
23.	Mental Ability	Dr. Lal & Jain
24.	The Brain Book: Know Your Own Mind and How to Use it	Edgar Thorpe