

तृतीय पत्र (Paper III) : Technical Subject

**Section A- 30 Marks**

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|---|----------------------------|
| <b>1. Properties of matter</b>  | <b>10</b>                  |
| 1.1 Vector, Motion, Torque.   |                            |
| 1.2 Circular motion, Simple harmonic motion   |                            |
| 1.3 Gravitation and Gravity   |                            |
| 1.4 Fluids at rest, Elasticity.   |                            |
| 1.5 Thermometry and Calorimetry   |                            |
| 1.6 Thermodynamics, Heat transfer.  |                            |
| <b>2. Light, Sound Electricity and magnetism</b>                                      | <b>10</b>                  |
| 2.1 Basic properties, Huygen's principle.   |                            |
| 2.2 Interference, Diffraction, Polarization of light,                                 | 2.3 Electromagnetic waves. |
| 2.4 Beats, Stationary waves, Waves in strings, Waves in pipes, Musical notes of sound |                            |
| 2.5 Charge, Current, Potential difference, Power                                      |                            |
| 2.6 Whetstone bridge, Potentiometer   |                            |
| 2.7 Magnetic effects of electric current  |                            |
| 2.8 Alternating currents  |                            |
| 2.9 Magnetic materials  |                            |
| 2.10 Semiconductor, Electronics   |                            |
| <b>3. Earth and Space Science</b>   | <b>10</b>                  |
| 3.1 Origin of Solar system  |                            |
| 3.2 Solar system and its members  |                            |
| 3.3 Eclipse, Satellites, Meteors, Comets, Galaxies                                    |                            |
| 3.4 Astronomical instruments  |                            |
| 3.5 Sun and Stars   |                            |
| 3.6 Earth quake: Meaning, Causes, nature, prevention measures                         |                            |
| 3.7 Mountains: Formation, advantages, disadvantages                                   |                            |
| 3.8 History of the Earth: Major division, size, functions of each part, Rocks, uses   |                            |

**Section B- 20 Marks**

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|---|-----------|
| <b>4. Atomic structure, Periodic Table and Chemical Bonding</b> | <b>10</b> |
| 4.1 Rutherford's, Bohr's model, drawbacks                       |           |
| 4.2 Quantum numbers, Orbitals                                   |           |
| 4.3 Pauli's & Aufbau's principle                                |           |
| 4.4 Hydrogen spectrum.  |           |
| 4.5 Classification, Hybridization                               |           |
| 4.6 Interpretation, properties of Chemical bondings             |           |
| 4.7 Vanderwaal force  |           |
| 4.8 Modern periodic table                                       |           |
| 4.9 Important periodic properties                               |           |
| 4.10 Bond energy Electron affinity, Atomic size, Ionic radius   |           |
| 4.11 Superiority and defectas of Long form of periodic table    |           |

- 5. Metals and metallurgy, man made materials, Organic compounds 10**
- 5.1 Extraction, properties, uses of Group I B and Group II B, Group VIII
  - 5.2 Preparation, properties and uses of Copper oxide, Cupric Sulphate, Cupric Carbonate, Silver chloride, Silver nitrate
  - 5.3 Plastics, Pesticides, Cement, Glass, Fibers, Soaps, Detergents, (nature preparation, properties, uses)
  - 5.4 Homologous series
  - 5.4.1 Alkenes, Alkenes, Alkynes
  - 5.5 Benzene
  - 5.5.1 Structure, preparation & properties
  - 5.6 Introduction, general methods of preparation, physical and chemical properties of Aromatic nitro compounds
  - 5.6.1 Amino compounds
  - 5.6.2 hydroxy compounds
  - 5.6.3 aldehyde, Ketone
  - 5.6.4 Carboxylic acids

### Section C- 20 Marks

- 6. General Biology and Evolution 10**
- 6.1 Algae, Fungi, Bryophyta, Pteridophyta: Habit, habitat, structure & lifecycle
  - 6.2 Classification of plants & animals
  - 6.3 Microbiology (bacteria): Symptoms, modes of transmission & control
  - 6.4 Plant Physiology & anatomy: Cell division, Mendel's law, gene and gene action, Evolution
- 7. Economic Biology and Environmental Science 10**
- 7.1 Economic plants: Distribution, Classification, economic importance of medicinal and vegetable plants
  - 7.2 Economic zoology :Bee, Sericulture, (silkworm), Pesiculture (fish)
  - 7.3 Ecosystem, biochemical cycle 7.4 Environmental pollution

### Section D- 30 Marks

- 8. Nature, Objectives and Psychology of learning 10**
- 8.1 Nature, Objectives of Science Teaching
  - 8.2 Psychology of learning in relation to science
  - 8.2.1 Piaget, Brunner, Gagne
- 9. Curriculum & Methods of Teaching 10**
- 9.1 Curriculum, Curriculum materials in science education
  - 9.2 Techniques of science teaching
  - 9.3 Use of environmental resources
  - 9.4 Facilities
  - 9.5 Some innovative science curriculum and projects
- 10. Planning Evaluation 10**
- 10.1 Planning
  - 10.2 Evaluating Student's learning
  - 10.3 Professional growth of Science Teacher/ personnel

प्रदेश लोक सेवा आयोग, प्रदेश नं.२  
शिक्षा सेवा, शिक्षा प्रशासन समूह, विज्ञान उपसमूहको अधिकृत सातौं तह पदको खुल्ला तथा अन्तर सेवा  
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र लिइने  
सामूहिक परीक्षण (Group Test) का लागि

**सामूहिक छलफल (Group Discussion)**

यस प्रयोजनको लागि गरिने परीक्षण १० पूर्णाङ्क र ३० मिनेट अवधिको हुनेछ जुन नेताविहिन सामूहिक छलफल (Leaderless Group Discussion) को रूपमा अवलम्बन गरिने छ । दिइएको प्रश्न वा Topic का विषयमा पालैपालोसँग निर्दिष्ट समयभित्र समूहबीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति (Individual Presentation) गर्नु पर्नेछ । यस परीक्षणमा मूल्याङ्कनको लागि ३ जना भन्दा बढीको समिति रहनेछ ।