

सहायक लेक्चरर (भौतिक शास्त्र)  
अधिकृतस्तर तृतीय श्रेणी प्राविधिक पदको  
खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

द्वितीय पत्र : सेवा सम्बन्धी प्राविधिक विषय

पूर्णाङ्क - १००

**1. MEASUREMENT**

**1.1. Laws of motion**

- 1.1.1. Newton's First, Second, Third Law of Motion
- 1.1.2. Law of Conservation of Momentum
- 1.1.3. Verification of Parallelogram Law of Forces, Triangle Law of Forces and Lami's Theorem
- 1.1.4. Centrifugal Force

**1.2. Gravity and Gravitation**

- 1.2.1. Motion of Falling Bodies
- 1.2.2. Laws of Falling Bodies
- 1.2.3. Kepler's Law of Planetary Motion and Derivation of the Law of Gravitation

**1.3. Work energy and power**

- 1.3.1. Potential and Kinetic Energy
- 1.3.2. Elastic and Collision
- 1.3.3. Principle of Conservation of Energy
- 1.3.4. Motion of a Simple Pendulum
- 1.3.5. Friction

**1.4. Machines**

- 1.4.1. Simple Machines
- 1.4.2. Principle of Work, Lever
- 1.4.3. Incline Plane, Wheel and Axle
- 1.4.4. Pulley- Fixed and Movable Pulley

**1.5. Elasticity, Surface Tension and Viscosity**

- 1.5.1. Hook's Law
- 1.5.2. Determination of Young's Modulus by Searle's Apparatus
- 1.5.3. Cohesive and Adhesive Forces
- 1.5.4. Surface Tension
- 1.5.5. Capillary, Viscosity. Osmosis

**2. HEAT**

**2.1. Thermometry**

- 2.1.1. Types of Thermometer
- 2.1.2. Relation between Celsius, Kelvin, Fahrenheit and Ranking Scale of Temperature

**2.2. Expansion**

- 2.2.1. Expansion of Solids
- 2.2.2. Gas Equations

**2.3. Change of State**

- 2.3.1. Latent Heat of Fusion, Laws of Fusion

**3. LIGHT**

**3.1. Propagation of light and Photometry**

- 3.1.1. Transmission of Light
- 3.1.2. Shadows
- 3.1.3. Photometry
- 3.1.4. Inverse Square Law
- 3.1.5. Lambert's Cosine Law

### **3.2. Reflection**

- 3.2.1. Deviation by reflection,
- 3.2.2. Spherical, Concave and Convex, Paraboloidal mirrors
- 3.2.3. Examples and verifications of reflection

### **3.3. Refraction**

- 3.3.1. Laws of refraction
- 3.3.2. Refraction through several media (prism, Lens)
- 3.3.3. Examples and verifications of refraction

### **3.4. Optical Instruments**

- 3.4.1. Photographic camera,
- 3.4.2. Periscope
- 3.4.3. Telescope (Galileo, Newton, Herschel, Coude)

## **4. SOUND**

### **4.1. Wave Motion and Velocity of Sound**

- 4.1.1. Simple Harmonic Motion
- 4.1.2. Transverse and Longitudinal Wave Motion
- 4.1.3. Relation between Frequency and Wavelength
- 4.1.4. LC Circuit
- 4.1.5. Velocity of Sound in Air, Water and Solids

## **5. ELECTROSTATICS**

### **5.1. Capacity and Condenser**

- 5.1.1. Capacity of conductor
- 5.1.2. Condenser in series and parallel
- 5.1.3. Mica and paper condenser

### **5.2. Electrostatic Machine and Atmospheric Electricity**

- 5.2.1. Van de Graff Generator
- 5.2.2. Atmospheric Electricity and Conditions of Earth

## **6. CURRENT ELECTRICITY**

### **6.1. Voltaic Cells**

- 6.1.1. Electric Current
- 6.1.2. Magnetic effect of Electric Current and Galvanometers
- 6.1.3. Electrical Measurements
- 6.1.4. Daniel, Leclanche, Dry and Standard Cells
- 6.1.5. High and low voltage Battery

### **6.2. Electrical Measurement**

- 6.2.1. Ohm's Law
- 6.2.2. Kirchhoff's Law
- 6.2.3. Cells in Series and Parallel

### **6.3. Chemical and heating Effect of Electric Current**

- 6.3.1. Faraday's Law of Electrolysis, verifications, experiments and its applications
- 6.3.2. Joule's Law of Heating Electric Current, verifications and its applications

### **6.4. Electromagnetic Induction**

- 6.4.1. Lenz's Law
- 6.4.2. Fleming Right Hand Rule
- 6.4.3. Method of Producing Induced EMF
- 6.4.4. DC Motor, AC Generator
- 6.4.5. AC circuits

## 7. ATOMIC PHYSICS ELECTRONIC AND RELATIVITY

### 7.1. Atomic Physics and Electronics

- 7.1.1. Cathode rays, Positive rays, X rays
- 7.1.2. Radioactivity, Photoelectric cell
- 7.1.3. Nuclear fusion and fission
- 7.1.4. Pauli's Exclusion Principle,
- 7.1.5. Rutherford's Experiment

### 7.. केही ऐन नियमहरु

- इन्जिनियरिङ्ग परिषद् ऐन, २०५५ र नियमावली
- नेपाल गुणस्तर (प्रमाण चिन्ह) ऐन, २०३७, नियमावली २०४०
- सवारी तथा यातायात व्यवस्था ऐन २०४९

### द. कार्यालयमा कम्प्यूटरको प्रयोग

- द.१ कम्प्यूटर सम्बन्धी आधारभूत ज्ञान
- द.२ Microsoft Office (Ms Word, Ms Excel, Ms PowerPoint) सम्बन्धी जानकारी

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द्रष्टव्य: : द्वितीय पत्र सेवा सम्बन्धी प्राविधिक विषयबाट ५० अंक भारको वस्तुगत बहुउत्तरको प्रश्नहरु तथा १०० अंक भारको विषयगत प्रश्नहरु सोधिनेछन् ।

-समाप्त-