Skill Enhancement Courses (SEC)

A. Quantitative & Logical Thinking (OLT)

Unit –I:

Whole numbers, Integers, Rational and irrational numbers, Fractions, Square roots and Cube roots, Surds and Indices, Problems on Numbers, Divisibility; Steps of Long Division Method for Finding Square Roots.

Unit –II:

Basic concepts, Different formulae of Percentage, Profit and Loss, Discount, Simple interest, Ratio and Proportion, Mixture, Time and Work, Pipes and Cisterns, Basic concepts of Time, Distance and Speed; relationship among them

Unit –III:

Concept of Angles, Different Polygons like triangles, rectangle, square, right-angled triangle, Pythagorean Theorem, Perimeter and Area of Triangles, Rectangles, Circles.

Unit-IV:

Analogy basing on kinds of relationships, Simple Analogy; Pattern and Series of Numbers, Letters, Figures. Coding-Decoding of Numbers, Letters, Symbols (Figures), Blood Relations. Logical Statements –Two premise argument, more than two premise argument using connectives; Venn Diagrams, Mirror Images, Problems on Cubes and Dices.

B. Organic Farming

Unit I:

- Definition need and scope of organic farming, Relevance to modern agriculture. Difference between organic and conventional farming practices.
- Modern farming practices – Permaculture, biodynamic farming.
- Organic farming – perspective in Odisha and India. Global status of organic farming. Future prospects of organic farming - advantages and barriers.

Unit II:

- Governmental initiative on promotion of organic farming in India - policies and success stories. Marketing and export potential of organic products – impact on national economy Organic nutrient sources and their fortification, Nutrient management in organic farming
- Green Organic manures – methods of preparation of green manures, impact of green. manures towards organic farming.
- Biofertilisers – types, methods of application – benefits and limitations

Unit III:

- Disease management, weed management and insect management under organic farming. Use of biological methods for pest and disease management
- Use of plant-based formulations for disease management – Use of neem extracts, seed kernels and other natural non-chemical-based formulation for management of diseases and pest for organic farming

C. Applied Optics and Photonics

UNIT I

Sources and Detectors : Lasers, Spontaneous and stimulated emissions, Theory of laser action, Einstein's coefficients, light amplification, Characterization of laser beam, He-Ne laser, Semiconductor Lasers.

UNIT II

Fourier Optics and Electron Microscopy : Concept of spatial Frequency Filtering, Fourier Transforming property of a thin lens. Electron Microscope, Working Principle, Types of electron microscope: TEM, SEM(BASICS), Applications of electron microscope, Advantages and limitations of electron microscope

UNIT III

Holography : Basic principle and theory: coherence, resolution, Types of holograms, white light reflection hologram, application of holography in microscopy, interferometry.

UNIT IV

Photonics: Fiber Optics : Optical fibers and their properties, Principal of light propagation through a fiber, The numerical aperture, Attenuation in optical fiber and attenuation limit, Single mode and multimode fibers, Fiber optic sensors.

D. Corrosion and prevention

UNIT-I

Definition of corrosion, Corrosion Damage, Classification of corrosion, Electrochemical Aspects, Electrochemical Reactions, Mixed Potential Theory.

UNIT-II

Polarization, Passivity, Environmental Effects, Effect of Oxygen and Oxidizers, Effect of Temperature, Effects of Corrosive Concentration, Effect of Galvanic Coupling Using Mixed Potential Theory.

UNIT-III

Corrosion Testing: Standard Expressions for Corrosion Rate, Galvanic corrosion, Erosion Corrosion, Crevice Corrosion, Intergranular Corrosion, Pitting, Stress Corrosion. Tafel and Linear Polarization, AC Impedance, Small-Amplitude Cyclic Voltammetry. Paint Tests, Sea Water Tests. Interpretation of Results.

UNIT-IV

Materials Selection, Alteration of Environment, Design, Cathodic and Anodic Protection, Coatings, High-Temperature Corrosion and Mechanisms and Kinetics, High-Temperature Materials, Corrosion problems in selected industry.

E. ଅନୁବାଦ ସାହିତ୍ୟ

Unit-I:

ଅନୁବାଦର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ

Unit-II:

ଓଡ଼ିଆ ଅନୁବାଦ ସାହିତ୍ୟ

Unit-III:

ଅନ୍ୟଭାଷାର ସାହିତ୍ୟ : ଓଡ଼ିଆ ଅନୁବାଦ (ହିନ୍ଦୀ କିମ୍ବା ବଙ୍ଗଳା)

Unit-IV:

ଅନ୍ୟଭାଷାର ଅନୁବାଦ (ହିନ୍ଦୀ କିମ୍ବା ଇଂରାଜୀ)

F. Guidance & Counselling

Unit-I

Introduction to Guidance and Counselling : Nature, Principle, Goal, and Adjustment Problem

Unit-II

Approaches to Guidance and Counselling-I : Personal centered approach, Psychodynamic approach, Behavioural approach, and Cognitive behavioural approach : CBT, REBT.

Unit-III

Approaches to Guidance and Counselling -II : Narrative therapy, Solution-focused therapy, Music therapy, and Yoga and meditation

Unit-IV

Applications : Child counselling, Family counselling, Career counselling, Crisis intervention : Suicide, grief, and sexual abuse.

G. Sustainable Ecotourism

Unit-I : Introduction to Ecotourism

History and scope of ecotourism; Components of ecotourism; Principles and characteristics of ecotourism; Ecotourism planning; Site diagnostics; Target groups; Ecotourism industry and its stakeholders; Resources and products of ecotourism; Commercialisation of ecotourism.

Unit-II : Types of Ecotourism

Tourism vs. Ecotourism; Types : Agro-ecotourism, Geo-ecotourism, Cultural ecotourism – Tangible and Intangible heritages and tourism, Sensitive areas of ecotourism; Ecotourism management plans.

Unit-III : Ecotourism Resources in India and Odisha

Eco-regions; Vegetation types : Protected areas; Endemism and Biodiversity hotspots; historical monuments and historical sites; Adventure ecotourism destinations; Ecotourism potential of Odisha.

Unit-IV : Community participation in ecotourism

Present scenario, Future prospects (year-round ecotourism); Sustainability of ecotourism; Ecotourism in developed countries; Community based ecotourism; case studies; joint forest management; Role of NGOs; Ethical and legal aspects; Eco-travel and environmental awareness; impacts of ecotourism; Green report card; Eco-labelling; Environmental sustainability practices.

H. Conflict and Peace Resolution

Unit-I : Concepts

Understanding Conflict; Conflict Management, Conflict Resolution and Conflict Transformation; Peace building

Unit-II : Dimensions of Conflict

Ideology; Economic/ Resources Sharing Conflicts; Socio-cultural Conflicts (Ethnic, Religious, Sander-based)

Unit-III : Sites of Conflict

Local; Sub-National; and International

Unit-IV : Conflict Responses : Skills and Techniques

Negotiations : Trust Buildings; Mediation: Skill Building; Active Listening; Track-I, Track-II and Multi-Track Diplomacy; Gandhian Methods.

***