

7. Particle Physics:

Basic forces, classification of elementary particle, Gellmann-Nishijima scheme, meson and Baryon octet, isospin, strangeness, spin, parity, Lepton and baryon number. conservation, parity conservation and non conservation, time reversal and consequence of time time reversal invariance, charge conjugation, G-parity, Statement of CPT theorem and its consequences, Hadron classification by isospin and hypercharge, SU(2) and SU(3) Groups, algebras and generators; Elementary idea of SU(3) symmetry and Quarks model, need for Color; Elementary ideas of electroweak interactions and standard model.

## Political Science

### PAPER-I

#### **Unit – I : Political Theory:**

Nature of Political Theory, Evolution and Growth, Behaviouralism, Decline and Resurgence, Contemporary Trends.

State : Its Origin, Functions and Role.

Law, Liberty, Equality, Justice and Rights.

Political Ideology : Liberalism, Socialism, Communism and Feminism.

Democracy : Perspective and Prospects.

#### **Unit-II : Political Thought :**

Plato: Ideal State, Justice, Communism.

Aristotle : State and Revolution .

Machiavelli : State, Religion and Morality.

Social Contractualists : Hobbes, Locke, Rousseau.

Karl Marx: Dialectical Materialism, Class Struggle, Surplus Value.

John Rawls & Robert Nozick.

#### **Unit-III : Public Administration :**

Nature, Scope and Significance of Public Administration and New Public Administration.

Theories and Principles of Organisation.

Personnel Administration : Recruitment, Training, Promotion, Morale, Employer-Employee Relations.

Public Policy : Policy Formulation and Implementation.

Relationship between Permanent and Political Executive.

#### **Unit-IV : Political Sociology :**

Nature and Scope.

Structural Functional Analysis, Systems Analysis.

Authority & Legitimacy.

Social Stratification: Bases of Stratification; Caste, Class and Status.

Political Culture, Political Socialisation, Political Modernisation and Political Participation.

#### **Unit-V : International Relations :**

Approaches to the Study of International Politics : Idealism and Realism, System Theory, Decision – Making and Game Theory.

National Power, Balance of Power and Collective Security, Disarmament, Human Rights, International Terrorism, Gender in I.R.

Non-Alignment : Evolution, Achievements and Contemporary Relevance.

India's Role in World Affairs.

India's Foreign Policy: Determinants, Continuity and Change.

### **PAPER-II**

#### **Unit-I : Indian Government and Politics :**

Ideological Bases of the Indian Constitution, Preamble, Fundamental Rights and Directive Principles of State Policy.

Structure and Process : President, Prime Minister, Parliament and the Working of the Parliamentary System.

Theory and Practice of Federalism in India.

Supreme Court, Judicial Review and Judicial Activism.

Political Parties and Pressure Groups.

Issues and Trends : Regionalism, Secularism, Caste & Politics.

Elections and Electoral Reforms.

#### **Unit-II: Comparative Government and Politics:**

Comparative Politics: Nature and Scope.

Issues in Comparative Politics: Parliamentary and Presidential, Unitary & Federal.

Constitutionalism: Meaning and Challenges.

British Political System: Conventions and Rule of Law.

Parliamentary Government: Crown, Parliament and Cabinet.

U.S. Political System: Separation of Powers, Checks and Balance.

President, Congress-Senate and House of Representatives, Supreme Court and Judicial Review.

Swiss Political System : Direct Democracy, Federal Council, Federal Assembly and Federal Tribunal.

Chinese Political System : Democratic Centralism, National People's Congress, President of People's Republic of China, State Council.

Party System in the U.K., U.S.A. and China.

### **Unit-III : State and Local Government in Odisha :**

Emergence of Odisha as a Separate State.

Government and Politics in Odisha from 1936 to 1950.

Government and Politics since 1950.

Governor, Council of Ministers, State Legislative Assembly, High Court and Subordinate Courts.

Politics of Defection and Coalition in Odisha.

Elections and Voting Behaviour in Odisha since 1952.

Rural Local Government and Urban Local Government in Odisha.

### **Unit-IV : Indian Political Tradition :**

Indian Political Tradition: Foundation & Features.

Kautilya : Arthashastra, Theory of Government and Statecraft.

Raja Rammohun Roy : The Indian Renaissance and Nationalism.

Swami Vivekananda : Nationalism, Internationalism and Enlightened Humanism.

G.K. Gokhale : Idealism and Swadeshi.

B.G. Tilak : Swaraj & Education.

Aurobindo : Political Techniques, Spiritual Nationalism and Universalism.

Gandhi : Satyagraha, Trusteeship and Sarvodaya.

B.R. Ambedkar: Equity and Social Justice.

## **Unit-V: Development Administration in India :**

Development Administration : Meaning, Scope and Significance.

Evolution of Development Administration in India.

Planning: Machinery, Process and Limitations.

Development Goals: Self-reliance, Industrialisation, Modernisation, Social Justice, Poverty Alleviation.

Planning Commission, National Development Council.

State Planning Board.

District Planning Machinery.

Bureaucracy and Development Administration in India.

Development Administration: Problems & Prospects.

Good Governance.

## **Psychology**

### **PAPER-I**

#### **Advances General psychology**

#### **UNIT-I**

Current definition of psychology – Different approaches : Biological, Behavioural, cognitive, Humanistic, Socio-cultural, Modern perspective in psychology.

The Biological Bases of Human Behaviour:

- a) Central Nervous System – (Central processing unit) Brain & Spinal cord.
- b) Peripheral nervous system: somatic nervous system & A.N.S.
- c) Chemical connection: the endocrine glands.

#### **UNIT-II**

Principles of Learning:

Classical Conditioning, Operant Conditioning and its application, Cognitive learning – Tolman's sign learning theory, Kohler's Insightful learning and Bandura's observational learning and applications.

Human Memory : Two influential models, Kinds of Information stored in Memory, Forgetting – Theories of forgetting, Memory and the Brain – Amnesia and other memory disorder.