

Systemic states and diseases : Fever, hyperthermia, hypothermia, toxemia, septicaemia, bloat, impaction, diarrhoea, dehydration and snake bite.

Herd health Management : Herd immunity, disease free zones, chemotherapeutics and chemoprophylaxis for herd health. Vaccination and deworming schedule of livestock and poultry.

Surgical intervention : Diagnosis and surgical intervention in fracture, hernia, choking, ruminotomy, castration and Caesarian section.

5. VETERINARY PUBLIC HEALTH AND EPIDEMIOLOGY

Epidemiology : Principles and applications of epidemiological measures in the study of diseases and their control. National and international regulations on livestock diseases.

Zoonoses : Socio-economic importance of zoonotic diseases. Role of animals in transmission of zoonotic diseases. Occupational zoonotic diseases.

Animal Welfare and Jurisprudence : Role of veterinarian in animal welfare. Animal Welfare Board of India. Role and function of Committee for the Purpose of Controlling and Supervising Experiments in Animals (CPCSEA), Common offences against animals. Examination of living and dead animals in criminal cases.

6. WILD / ZOO / LAB ANIMAL HEALTH CARE

Method of handling and restraint of Wild animals. Conservation of wild life. Management and feeding practice and housing of Wild, Zoo and Laboratory animals.

ANTHROPOLOGY :

Paper – I :

1. Introducing anthropology: Meaning and scope of anthropology. Major branches of anthropology:

1.1 Main branches of Anthropology, their scope and relevance :

- (a) Social-cultural Anthropology,
- (b) Biological Anthropology,
- (c) Archaeological Anthropology,
- (d) Linguistic Anthropology.

1.2 Brief outline of the growth of anthropology. Enlightenment. Colonialism and anthropology.

2. Human evolution and Hominization process :

2.1 Theories of organic evolution. Human evolution and emergence of Man :

- (a) Biological and Cultural factors in human evolution,
- (b) Theories of Organic Evolution (Pre-Darwinian, Darwinian and Post-Darwinian),
- (c) Synthetic theory of evolution; Brief outline of terms and concepts of evolutionary biology.

2.2 Neutral theory of molecular evolution.

2.3 Concept of evolutionary biology: Skeletal changes, (skull, vertebral column, pelvic girdle, hind limb).

2.4 Characteristics of primates, Primate classification (general), Features and distribution of New World Monkey, Old World Monkey, Asian and African Apes.

2.5 Theories of human origin.

2.6 Geological time scale with special reference to Pleistocene epoch.

2.7 Distribution, characteristics and phylogenetic status :

- (a) Parapithecus
- (b) Dryopithecus, Sivapithecus
- (c) Australopithecus africanus, Australopithecus afarensis, Homo habilis
- (d) Homo erectus (Java Man, Peking Man)
- (e) Archaic Homo sapiens
- (f) Neanderthal Man – La-chapelle-Aux-Saints, Tabun Man
- (g) Anatomically Modern Homo sapiens – Cromagnon, Grimaldi, Chancelade

3. Human Genetics :

3.1 Methods – Mendelism, Twin-study, Cytogenetics, Population genetics.

3.2 Biological basis of inheritance: DNA structure and replication, Restriction Fragment Length Polymorphism (RFLP), Variable Number of Tandem Repeat(s) (VNTRs), Short Tandem Repeat(s) (STRs) protein synthesis, gene, allele, cell division.

3.3 Concept of Human Genome : nuclear genome, mitochondrial genome, Chromosome and chromosomal aberrations in man (Numerical and structural aberrations, point mutation), Satellite DNA.

3.4 Patterns of inheritance – autosomal, sex-chromosomal, multifactorial, polygenic, sex determination, sex influenced.

| | |
|------------|---|
| 3.5 | Application of human genetics – consanguinity, inbreeding, genetic load, genetic counselling, forensic anthropology, personal identification, paternity identification, DNA fingerprinting, dermatoglyphics. |
| 4. | Human variation : |
| 4.1 | Concept of Race, racism. |
| 4.2 | Basis of variation – Morphological (hair, eye) metric (stature, head shape), Polymorphic (genetic marker) – blood group (ABO, Rh), Hb, PGM, HP, Y-chromosome STR, mtDNA. |
| 4.3 | Concept of Human physique and somatotype. |
| 4.4 | Concept of ethnic groups – Mongoloid, Caucasoid, Negroid, Australoid. |
| 5. | Human Growth and Nutrition : |
| 5.1 | Concept of human growth, stages of growth – Pre-natal, Post-natal, Adolescent. |
| 5.2 | Factors affecting the growth and development – genetic, environmental, nutritional, socio-economic. |
| 5.3 | Methodology of growth study. |
| 6. | Concept of Health and disease : |
| 6.1 | Concept of Communicable and Non-Communicable diseases. (Malaria and Type-2 diabetes respectively). Nutrition Deficiency related diseases. |
| 6.2 | Nutrition – concept of Macro and Micro nutrients and Deficiency. |
| 7. | Human adaptation : |
| 7.1 | Concept of Human adaptation and acclimatization – hot, cold and high altitude. Bergman’s and Allen’s Rules. |
| 7.2 | Anthropometry and its uses in understanding human adaptation (BMI and CI), Physiological variable (blood pressure, pulse rate), Body composition (fat patterning). |
| 8. | Cultural evolution : |
| 8.1 | Tool typology and technology of tool manufacturing. |
| 8.2 | Excavation, Exploration, Site survey, Application of GIS |
| 8.3 | Concept of Dating: Absolute (C14, K-Ar) Relative (Dendrochronology and Stratigraphy). |
| 8.4 | Features and distribution of prehistoric cultures with reference to India and Europe : |
| | (a) Paleolithic |
| | (b) Mesolithic |
| | (c) Neolithic |
| | (d) Chalcolithic |
| | (e) Iron Age. |
| 9. | Theories and concept of culture and society : |
| 9.1 | Brief outline of Anthropological Theories: Evolutionism, Diffusionism, Functionalism, Structuralism, Symbolism and Interpretative Approach, Post-structuralism and Post-modernism – Hermeneutics and Phenomenological Anthropology. |
| 9.2 | Concept (brief outline): Social structure, Social organization, Gender, Institution, Group, Community. |
| 10. | Culture and civilization : |
| 10.1 | Definition and features of culture and civilization. |
| 10.2 | Cultural relativism, Acculturation, Enculturation, Diffusion, Cultural lag, World view, Symbol. |
| 10.3 | Anthropological approaches to the study of civilization. |
| 11. | Elements of social organization : |
| 11.1 | Family – Definition, Types, functions, recent changes. |
| 11.2 | Marriage – Definition, Types, functions, recent changes. Marriage payments (dowry and bride wealth). Incest regulation, Preferential and prescribed forms of marriage. |
| 11.3 | Kinship - Definition of kinship system. Importance, Types of kinship systems, kin term classification. |
| 11.4 | Rules of Descent and alliance, Rules of residence, Descent groups. |

| | |
|--------------|--|
| | <p>12. Economic Anthropology :</p> <p>12.1 Concept and approaches.</p> <p>12.2 Major ways of subsistence – Hunting-gathering, Pastoralism, Horticulture and Settled Agriculture.</p> <p>12.3 Production, Distribution (Reciprocity, Market exchange, Re-distribution), Consumption, Gift exchange.</p> <p>12.4 Peasant.</p> <p>13. Political anthropology :</p> <p>13.1 Definition and approach.</p> <p>13.2 Power, authority, social control, law, social sanction, governance.</p> <p>13.3 Concepts of Band, Tribe, Chiefdom and State.</p> <p>13.4 Political movement - Approaches of study, Types of socio-political movements (Revitalization, Messianic, Social solidarity, regional and Ethnic).</p> <p>13.5 Ethnicity – Definition, concept of ethnic boundary.</p> <p>14. Anthropology of religion :</p> <p>14.1 Definition of religion, functions of religion.</p> <p>14.2 Approaches to the study of religion (intellectual, psychological, functional, interpretative).</p> <p>14.3 Concepts: Myth, magic, witchcraft, sorcery, taboo, totem, divination, rituals, symbolism in religion.</p> <p>14.4 Religious specialists – shaman, witch-doctor, priest.</p> <p>15. Social stratification :</p> <p>15.1 Definition and features.</p> <p>15.2 Theories/approaches.</p> <p>15.3 Types – Caste and class.</p> <p>15.4 Concepts: Status, role, age-set/age-grade, social mobility.</p> <p>16. Ecological anthropology :</p> <p>16.1 Definition, scope and approaches/methods of ecological anthropology.</p> <p>16.2 Concept of culture ecology.</p> <p>17. Emerging fields of social-cultural anthropology :</p> <p>17.1 Development anthropology – Definition and scope, development, globalization.</p> <p>17.2 Legal anthropology and Human Rights.</p> <p>17.3 Anthropology of communication – visual anthropology, mass media, popular culture.</p> <p>17.4 Anthropology of gender.</p> <p>18. Basic methods of data collection and interpretation :</p> <p>18.1 Qualitative and quantitative approaches, ethnography, fieldwork.</p> <p>18.2 Basic methods/techniques of data collection – observation (special reference participant observation), interview, case study, schedule, questionnaire, genealogy, PRA and RRA.</p> <p>18.3 Application of statistical principles – Descriptive statistics – central tendency (mean, median, mode), standard deviation, standard error, Testing of hypothesis: t-test, chi-square test.</p> |
| Paper – II : | <p>1. History and Development of Anthropology in India :</p> <p>1.1 Colonialism and Anthropology in India.</p> <p>1.2 Phases of development and major trends of Anthropology in India.</p> |

1.3 Idea of Indian tradition of Anthropology. Contribution of Indian scholars : S.C.Roy, N.K. Bose, M.N. Srinivas, D.N. Majumdar, T.C. Das, S.C. Sinha and S.S. Sarkar.

2. Evolution of Indian culture and civilization :

2.1 Prehistoric cultures: Palaeolithic, Mesolithic, Neolithic, Chalcolithic, Iron age.

2.2 Indus Valley Civilization (origin, distribution, features with special reference to architectural, socio-economic and religious; decline; Indus script.)

2.3 Vedic society (early and late): Society, economy and polity.

2.4 Contribution of tribal cultures to Indian civilization.

2.5 Ethnoarchaeology in India with special reference to mortuary practices and megalithic burials.

3. Emergence of man in India and contemporary variation :

3.1 Fossil remains in India: Ramapithecus, Narmada man.

3.2 Classification of Indian population: H.H. Risley, B.S. Guha and S.S. Sarkar.

3.3 Contemporary classification based on morphology, anthropometry and genetic markers (ABO, Hb, HP, mtDNA).

4. Demographic Profile of India :

4.1 Demography: concept, theories and methods.

4.2 Structure and features of Indian population; Rates and Ratios : Fertility, Mortality; Factors influencing fertility and mortality. Dynamics of demography in rural, urban and tribal contexts. Migration and effects of migration.

4.3 Linguistic elements in Indian population (Grierson and S.K.Chatterjee).

5. Anthropological approaches to Indian civilization :

5.1 Cultural categories of ancient India :Varnashram, Purushartha, Karma and Rebirth.

5.2 Caste system – origin, features, functions and change in caste system, Dominant Caste, Jajmani system.

5.3 Structure of Indian civilization: Theoretical understanding (R.Redfield, N.K.Bose).

5.4 Concepts for understanding Indian civilization: Sanskritization, Universalization-Parochialization, Tribe-peasant & Tribe-caste continuum, State Formation and Sacred Complex.

5.5 Idea of folk and folk culture, folkloric elements in Indian culture (proverbs, folksong, folkart with special reference to West Bengal), folklore and identity, performances.

5.6 Impact of Buddhism, Jainism, Islam, Christianity on Indian society.

6. Aspects of Indian village :

6.1 Development of village study in India and its significance.

6.2 Types of village, social organization of Indian village (agricultural).

6.3 Concepts developed through village studies in India.

6.4 Changes in rural society in post-Independent India.

7. Weaker sections :

7.1 Concepts of SC, ST, OBC, minority, women, children, aged – status, constitutional provisions, problems, programmes of development.

7.2 Linguistic minority and its problems.

8. Tribal situation in India :

8.1 Ethnic strains in Indian population, Geographical, Economic and linguistic distribution of Indian tribes.

8.2 Major problems of Indian tribes with special reference to issues of land and forest.

8.3 Plan and programmes for the development of the STs; problems/critique of tribal development; five year plans and Indian tribes – a review.

8.4 Constitutional safeguards for STs, 5th and 6th Schedules.

| | |
|--|---|
| | <p>8.5 Socio-economic changes in tribal milieu – Impact of urbanization, industrialization, forest policy, development projects on tribal people. Changes in tribal society in colonial and post-Independent periods. Impact of modern democratic institutions on traditional political system.</p> <p>8.6 Tribal movement (Nature and distribution), Emergence of Ethnicity, Issues of Identity, Tribe and Nation-State, Indian National Movement and Indian tribes, Regionalism, Jharkhand movement, Santal movement.</p> <p>9. Anthropology of development:</p> <p>9.1 Critique, approaches, issues of women development, cultural factors of development, displacement and rehabilitation, sustainable development, alternative to development.</p> <p>9.2 Role of NGO in development.</p> <p>9.3 Role of anthropology in development.</p> <p>10. Emerging issues in Indian Anthropology:</p> <p>10.1 Human Rights and advocacy of anthropology in the contexts of women, children, health and education.</p> <p>10.2 Social-cultural dimensions of health: Bio-medical, medical anthropology and ethno medicine.</p> <p>10.3 Issues in context: Sect, Cult, Religions pluralism in India, Visual image and Indian society, Public Culture in India, Refugee, Civil Society, Violence, Traditional Knowledge.</p> |
|--|---|

BOTANY :

| | |
|--------------------|--|
| <p>Paper – I :</p> | <p><u>Microbiology:</u> Plant virus- types - TMV- Physicochemical characteristics and Multiplication, One step growth curve, Lytic cycle (T_4 phage) and Lysogenic cycle (Lambda phage), Significance of lysogeny, Viroids and Prions. Bacteria - Distinguishing features of Archaea and Bacteria, Flagella (ultrastructure) and Pili, wall – chemical structure and differences between Gram +ve & Gram -ve bacteria, Bacterial genome and plasmid, Endospore – formation, structure and function. Genetic Recombination (Transformation, Transduction & Conjugation) Application in Medicine and Industry.</p> <p><u>Plant Pathology:</u> Terms and Definitions: Disease concept, Symptoms, Etiology and causal complex, Endemic, Epidemic, Pandemic and Sporadic diseases, Disease triangle, Disease cycle (monocyclic, polycyclic and polyetic) with special reference to Late Blight of Potato, Brown Spot of Rice and Citrus Canker. Host – Parasite Interaction. Pathotoxin (Definition, criteria and example), Phytoalexin, Resistance. Plant Disease Management- Symptoms, Causal organism, Disease cycle and Control measures.</p> <p><u>Cryptogams:</u> ALGAE: General account. Ultrastructure of cell. Diatom: Cell structure, Cell division, Auxospore formation in Centrales and Pennales. Economic Importance: Food, Phycocolloid (Agar-agar, Algin, Carrageenan), Diatomite, Algal Biotechnology – potential of microalgae for SCP, β-carotene, Biofertilizer, Biodiesel; Principles of mass cultivation of microalgae; Algal toxins.</p> <p>FUNGI & LICHEN: General Account: Hyphal forms, Fungal spore forms and mode of liberation, Sexual reproduction and degeneration of sex, Homothallism and heterothallism, Life cycle patterns, Anamorphic fungi and parasexuality, Mycotoxins with emphasis on aflatoxin. Mycorrhiza: Role in Agriculture & Forestry. Fungal Biotechnology: Mushroom, Cheese and Ethanol- Industrial production (brief outline), Fungal sources and uses of Mycoprotein, Enzyme (Cellulase), Amino acid (Tryptophan), Vitamin (Riboflavin), Antibiotic(Griseofulvin), Pharmaceuticals (Cyclosporin-A). Lichen : Types, Reproduction , Economic and ecological importance.</p> <p>BRYOPHYTES : General Account and Origin of Alternation of Generations (Homologous and Antithetic theory), Evolution of Sporophytes (Progressive and Regressive concept). Importance: Role of bryophytes in Plant succession and Pollution Monitoring.</p> <p>PTERIDOPHYTES: General Account: Colonisation and rise of early land plants. Fossil Pteridophytes: Structural features, Geological distribution and Evolutionary significance. Telome concept and its significance in the origin of different groups of Pteridophytes. Heterospory and Origin of Seed habit. Economic importance as food, medicine and Agriculture.</p> |
|--------------------|--|