First Year - Semester I

1.1 Sources of population data	**(60L+20P)**
	Censuses in India and World (15L), Registration of vital events (5L), population and Health surveys – Civil Registration System (CRS) (5L), Sample Registration System (SRS) (5L), National Sample Survey (NSS) (5L+5P), National Family Health Survey (NFHS) (5L+5P), District Level Household Surveys (DLHS) (5L+5P), Reproductive and Child Health Survey (RCHS) – Nature and limitation of data, data appraisal, evaluation and adjustments (15L+5P).
1.2 Basic Statistics for analysis of Population data and Software	**(60L + 20P)**
	Basic Statistics: Types of Data; Concepts of a Statistical Population and Sample from a Population; Qualitative and Quantitative Data; Nominal and Ordinal data; Cross Sectional and Time Series data; Discrete and Continuous data; Frequency data (10L). Different types of Scales - Nominal, Ordinal, Ratio and Interval (1L). Collection and Scrutiny of Data: Primary data - Designing a Questionnaire and a Schedule; Checking their Consistency (6L+2P). Secondary data - its Major Sources including some Government Publications (2L). Complete Enumeration, Controlled Experiments, Observational Studies and Sample Surveys (5L+1P). Scrutiny of data for Internal Consistency and Detection of Errors of Recording. Ideas of Cross-Validation, Logical Errors (3L+1P). Presentation of Data: Construction of Tables with one or more Factors of Classification (2L+5P). Diagrammatic and Graphical Representation of Grouped Data. Frequency Distributions, Cumulative Frequency Distributions/ Ogives and their Graphical Representation, Histogram, Frequency Polygon, and Box plot (3L+4P). Analysis of Quantitative Data: Univariate data-Concepts of Central Tendency, and Location (5L+2P). Dispersion and Relative Dispersion, Skewness and Kurtosis, and their Measures including those based on Quantiles and Moments (8L+2P). Analysis of Categorical Data: Consistency of Categorical Data. Independence and Association of Attributes (2L+2P). Various Measures of Association for two - three-way classified data (2L+1P). Odds Ratio and Relative Risk (1L+1P). Sampling Techniques, and Study Designs (10L).
1.3 Methods of Population Data Analysis and Adjustment of Demographic Data	**(48L + 32P)**
	Rates, Ratios, Percentages, Incidence, Prevalence, Rates of Population Growth, Arithmetic, Geometric and Exponential Growth Rates, Population Doubling Time, Population Stabilization, Cohort and Cross-Sectional Measures, Standardization of Rates (20L+13P). Types of Errors, Coverage and Content Errors (5L). Sources of Errors. Examples of data from Survey and Census Data (5L). Post-Enumeration Surveys; Dual Record System. Techniques of Evaluation of Age Data using Whipple's Index, Myer's Index, UN Joint Score (13L+12P). Quality Checks incorporated in Survey Procedures to Minimize Errors. Smoothing of Age Data (5L+7P)

Semester – II

2.1 Methods of Population Estimate and Projection	**(48L + 32P)**
	Concepts of Population Projections; Population Estimates, Forecasts and Projections, uses of Population Projections (20L+15P). Methods of Interpolation; Extrapolation using Linear, Exponential, Polynomial, Logistics, Gompertz curves (12L+7P). Cohort Component Method: basic Methodology; Projection of Mortality, Fertility and Migration Components (8L+5P). Methods of Rural-Urban and Sub-national Population Projections (8L+5P).
2.2 Population Composition and Change, National and World	**(58L + 28P)**
	Spatial Changes in Population Size, Composition and Distribution, Global Prospective with reference to India (20L+10P). Demographic, Social, Economic and Cultural Determinants (15L+6P). Aging & its Gender Issues (8L). Gender Inequalities and its Determinants & Consequences (7L+6P). Patriarchy and Matriarchy in Traditional and Modern Societies (8L).
2.3 Nuptiality and Fertility	**(54L + 26P)**
	Concept of Family, Indian Marriage and its Consequences (5L). Concepts and Measures of Nuptiality Levels, Trends and Differentials of Fertility (20L+12P). Sources of Nuptiality and Fertility data (1L). Concepts and Measures in the study of Fertility & its Determinants, Measures of Reproduction and their Determinants (10L+10P). Determinants of Fertility-Framework Analysis, Bongaart's Proximate Determinants of Fertility (8L). Methods of Family Planning (10L+4P).

Second Year - Semester III

3.1 Morbidity, Mortality, construction of life tables	**(48L + 32P)**
	Need of the study on Morbidity and Mortality (2L); Sources of Morbidity and Mortality data and their quality with special reference to the developing countries and India (3L). Concepts of Morbidity, Rates, Ratios, Incidence, Prevalence (7L+3P). Diagnostic Test Evaluation; False Negative, False Positive, Sensitivity and Specificity (8L+4P). Concepts and basic Measures of Mortality; Crude Death Rate (CDR) and Age-Specific Death Rates (ASDRs)(5L+2P) Still Birth Rate/Ratio, Perinatal Mortality Rate /Ratio, Infant Mortality Rate, Maternal Mortality Rate/Ratio and their relative merits and demerits (5L+3P). Standardization of Mortality Ratios/Rates; Direct and Indirect techniques of Need for adjustment, Standardization of Mortality Rates (5L+5P), Numerator and Denominator Approaches for Estimating Adjusted Rate and Lexis diagram; Estimating IMR from Large Scale Sample Surveys (8L+5P). Basic concept of a Life Table, Brief history of Life Tables, Anatomy of Life Table, Types and forms of Life Tables, Application of Life Table in Demographic Analysis (10L+10P).
3.2 Migration and urbanization	**(48L + 32P)**
	Basic concepts of Migration (In & Out), types of Migration, Determinants and Consequences of Migration (5L). Pull and Push factors for Migration (8L). Patterns of International Migration: Historical and recent trends, permanent Immigrants, Labour Migration, Brain Drain, Refugee Migration and Illegal Migration (5L). Migration Theories and models, Ravenstein's Laws of Migration, Everett Lee's Theory of Migration, Mobility Field Theory, Lewis-Fei-Ranis Model of Development, Todaro's Model of Rural-Urban Migration (5L). Measures of Migration; Direct Estimation of Lifetime, Inter-Censal Migration Rates from Census data, Indirect Measures of Net Internal Migration, National Growth Rate Method, and Census and Life Table Survival Ratio Methods of International Migration (10L+7P). Basic concepts of Urbanization, types of Urbanization, Determinants And Consequences of Urbanization, Measures of Urbanization (5L+5P). Measures of Concentration of Population-Density, Percentage Distribution and Dissimilarity Index, Measures of Degree and Tempo of Urbanization, Measures of Growth and Distribution of Urban Population (Rank-Size Rule), Primacy Index (Lorenz Curve and Gini's Concentration Ratio) (10L+20P).
3.3 Computer Softwares-SPSS, EPI info, R and EXCEL training and using	**(48L + 32P)**
	Training: SPSS, EPI info, R and EXCEL – to compute Measures of Fertility, Mortality, Life Table etc.

Semester – IV

4.1 Population, Health and Environment (Half Paper) (40L)	
	Demographic Dividend, Population Ageing, Age-Sex Structure, Demographic Transition Effect on Age-structure, Demographic determinant of Population Ageing, Population and its Development linkages (10L), Divergent Views regarding relationship between Population and Development (Malthusian Theory, Socialist and Marxist Views) (5L), Reproductive and Child Health and its relationship with Population Growth and Development, Impact of HIV/AIDS on Fertility, Mortality and its Relationship with Migration, Human Development Index (10L). Population and Environment Degradation and their Implications; Population Growth & Development, Global Warming, Pressure of Population Growth on Water Resources, Population Growth and Land Use, Soil Erosion, Deforestation (15L).
4.2 Population theories, Population and Health Policies (half paper) (40L)	
	Population Policies in India and other Developed Countries (4L), Family Welfare Programme & its Measures and Consequences for Population Change, including its Socio-economic and Cultural Determinants (5L). Contraceptives & their Prevalence Rate, Unmet Need for Family Planning, Human Resource Management, Cost Effective Analysis (5L). Health Influencing Policies, Historical Perspective of Health Policies and Programmes in Developing and Developed Countries (6L). Alma Ata Declaration - Health for all by 2000 A.D (4L). National Health and Family Planning Programmes: CNA, RCH, National Population Policy 2000, National Health Policy 2017, and National Rural Health Mission 2005, National Youth Policy 2012 (8L). Population Growth and Food, Water, Sanitation, Housing, Employment, and Environment for Sustainable Economic Growth (Malthus Theory), Theory of Social Capillarity, Theory of Change & Response, Theory of Diffusion or Cultural Lag, Liebenstein Theory, Becker's Theory, Easterlin Framework of Fertility, Caldwell's Theory, U. N. Threshold Hypothesis (8L).
4.3 Dissertation	
	Submission and publication of papers