

**DETAILED SYLLABUS FOR THE POST OF
STATISTICAL ASSISTANT GRADE II/STATISTICAL INVESTIGATOR GRADE II
IN ECONOMICS AND STATISTICS**

(Category No. 39/2020)

(Total 100 Marks)

PART I ECONOMICS

Module I. Microeconomic Theory and Applications (4 marks)

Theory of consumer behavior – utility functions – demand analysis – price, income and substitution effects - theory and applications of indifference curves – revealed preference theory – recent developments in the theory of demand - LES, CES demand functions – Bandwagon, Snob and Veblen effects

Theory of costs and production - traditional and modern theories of costs – production function – Cobb Douglas, CES, VES and translog production functions - Producer's equilibrium using Isoquants

Market structure and equilibrium price and output determination - perfect competition - monopoly - monopolistic competition – oligopoly markets - game theory and its applications

Theory of distribution - marginal productivity – Euler's theorem and adding up problem – contributions of Ricardo, Marx, Kalecky - partial and general equilibrium

Module II: Macroeconomic Theory and Applications (4 marks)

National income accounting - classical and Keynesian analysis of macro aggregates – IS-LM model – policy analysis in the closed and open systems – Mundell -Fleming Model

Behavioural foundations of macroeconomics - consumption functions and puzzle – absolute, relative, permanent and life cycle hypotheses of consumption - investment functions – neo-classical, Keynesian and accelerator theories of investment

Theory of business cycle - inflation and unemployment - aggregate demand and supply analysis of business cycles - theoretical contributions of Samuelson, Hicks and Kaldor – multiplier and accelerator – great depression and financial crisis – alternative views - classical, Keynesian and monetarist approaches to inflation and unemployment – Philip's curve – sacrifice ratio and Okun's law

Macroeconomic schools and policies - schools in macroeconomics – classical, Keynesian, Monetarists, new classicals, supply side - rational expectations – new Keynesian and new political macro economics - objectives of macroeconomic policy – monetary policy– fiscal policy– income policy

Module III: Quantitative Methods for Economic Analysis (4marks)

Statistical methods - measures of central tendency – measures of dispersion –skewness and kurtosis – correlation –partial and multiple regression analysis - probability Bayes' theorem – distribution – binomial, poisson, and normal distributions and their properties

Mathematical methods - matrix operation – determinants - static and dynamic input-output models – linear programming - duality and shadow prices– interpretation of revenue, cost, demand, supply functions, elasticities – market equilibrium – consumer's and producer's surplus

Econometric methods - methodology of econometric research – simple and general linear econometric models– estimation of parameters – co-efficient of determination - research methodology - sampling - types and techniques – hypothesis testing – research design – collection, organization and analysis of data

Module IV: Economic Development, Public Finance and International Trade (4 marks)

Concept and measurement of economic development - meaning of development – indicators of development - HDI - inequalities in income distribution - Lorenz curve and Gini coefficient

Theories of economic growth - classical theories - neo-classical growth theories - partial theories of growth - Lewis theory of development with unlimited supply of labour - Fei-Ranis theory - balanced growth - Rosenstein Rodan, Nurkse and Lewis - unbalanced growth - low level equilibrium trap - critical minimum effort thesis - Harrod Domar and Solow model

Money and banking - public finance - theories of international trade - theories of international trade - Smith, Ricardo, Heckscher-Ohlin - balance of payments - forms of economic integration–recent developments

Module V: Development Experiences of India and Kerala (4 marks)

Growth and structural changes of Indian Economy - Growth and sector-wise contribution to GDP and employment - demographic features – development strategies in India - economic planning in India - objectives and achievements - development strategies in India – NITI Aayog - Economic Reforms - recent developments

Economic policy and development in India - issues and policies in agriculture, Industry, Trade, Infrastructure - price movements and India's monetary, fiscal and financial sector policies and reforms- recent developments

Kerala's economic development - Kerala model of development - poverty and unemployment in Kerala - structural changes in Kerala's economy- performance of agriculture, industry, infrastructure and services – issues of migration, urbanisation and demographic features - fiscal scenario in Kerala - decentralisation and achievements – recent developments

PART II MATHEMATICS

Module I (4 marks)

Calculus:

Relations, functions, limits, continuity, differentiation, indefinite integral and definite integral, First order differential equations.

Module II (4 marks)

Number theory and Algebra.

Divisibility of numbers, prime factorisation, GCD, LCM, division algorithm, Euclidean algorithm, congruences- linear congruences, Euler's totient function, Little Fermat's theorem, Euclid's theorem - its applications.

Polynomials, factorisation, roots, Groups- cyclic groups, permutation groups

Module III (4 marks)

Linear Algebra

Linear equations, matrices and determinants, vector space, linear dependence, linear independence, basis, dimension. Linear transformations, matrix of linear transformation, rank, nullity, characteristic equation, characteristic values, diagonalization.

Module IV (4 marks)

Real Analysis:

Properties of real numbers, countability, sequence of real numbers and its convergence, series of real numbers and its convergence, Riemann integral, double integral and triple integral.

Module V (4 marks)

Complex Analysis

Complex Numbers, Analytic functions, power series, line integral, Cauchy's integral formula, Cauchy's theorem, singularities, Laurent series, harmonic function.

PART III STATISTICS

1. Descriptive Statistics: Measures of central tendency, Absolute and relative measures of dispersion, Skewness, Kurtosis, Principle of least squares and fitting of curves, Correlation and Regression, Partial and Multiple correlation. **(Marks: 2)**

2. Probability theory: Definitions, Addition theorem, Multiplication theorem, Conditional probability and Bayes' theorem. Theorem of total probability – Random variables, expectation, moments, generating functions -sequences of random variables and independence of random variables. Law of large numbers, Central limit theorem and its applications. **(Marks: 4)**

3. Distribution Theory: (i) Discrete distributions – Binomial, Poisson, Geometric, Negative binomial, Hyper-geometric and Multinomial distributions; (ii) Continuous distributions-Uniform, Exponential, Gamma, Beta, Normal, Log-normal, Logistic, Weibull, Pareto and bivariate normal distributions; (iii) Sampling distributions: Student's t, F and Chi-square distributions. **(Marks: 4)**

4. (i) Estimation: Basic properties of estimators, concepts of sufficiency, UMVUE and completeness, Methods of estimation.
(ii) Tests of Hypotheses – Two types of errors, significance level, size and power of a test, Tests based on normal, t, Chi-square and F distributions. **(Marks: 2)**

5. Sampling Theory: Various methods of sampling – Simple random sampling, Stratified random sampling, systematic sampling, PPS Sampling, cluster sampling, adaptive sampling, Ratio and Regression methods of estimation. **(Marks: 2)**

6. Design of Experiments: Basic properties of experimentation, ANOVA, CRD, RBD, LSD, Factorial designs, BIBD, Split-plot designs. **(Marks: 2)**

7. (i) Vital Statistics: Rates and ratios of vital events, Mortality and fertility, Measurement of mortality and fertility, Central mortality rate.
(ii) Time series analysis: Economic time series and its different components, Additive and multiplicative models, Determination of trend, Construction of seasonal indices. **(Marks: 2)**

8. (i) Economic statistics; Index numbers, its definitions, applications, price relatives, link and chain relatives. Use of averages: Simple aggregative and weighted average methods, Laspeyre's, Paasche's and Fisher index numbers, Time and factor reversal test of index numbers.
(ii) Official statistics: Introduction to Indian Statistical systems, CSO, NSSO, Census, National income statistics, Methods of national income estimation. **(Marks: 2)**

PART IV COMMERCE

Module 1: I Management Concepts and Thought: Meaning and importance of management, management levels -Nature of management - science, art or profession-Evolution and development of

management thought, Management thinkers, Management process, Management principles, Functions of management. **(Marks: 5)**

Module 2: Introduction to Accounting – Meaning and objectives of accounting – types of accounting – financial accounting, cost accounting and management accounting - Accounting concepts and conventions - GAAP- Indian Accounting Standards- Procedure for setting various Accounting Standards. **(Marks: 5)**

Module 3: Financial and Capital Market – structure of financial and capital market – Classification – Primary & secondary - Methods of floatation of capital –Functions of stock exchange – Securities traded in the stock exchange - Major stock exchanges in India- Role and functions of SEBI. **(Marks: 5)**

Module 4: Banking Theory and Practice: Evolution and structure of banking – Types of Banks in India – Public sector banks, private sector banks, scheduled banks, foreign banks, new generation Banks - Innovations and reforms in banking sector– E-banking, CORE, ECS, EFT, RTGS, NEFT, SWIFT, mobile banking, internet banking, retail banking - Banking Ombudsman. **(Marks: 5)**

PART V (20 Marks)

General Knowledge, Current Affairs, Renaissance in Kerala

RENAISSANCE IN KERALA AND FREEDOM MOVEMENT

Towards A New Society

Introduction to English education - various missionary organisations and their functioning- founding of educational institutions, factories, printing press etc.

Efforts To Reform The Society

(A) Socio-Religious reform Movements

SNDP Yogam, Nair Service Society, Yogakshema Sabha, Sadhu Jana Paripalana Sangham, Vaala Samudaya Parishkarani Sabha, Samathwa Samajam, Islam Dharma Paripalana Sangham, Prathyaksha Raksha Daiva Sabha, Sahodara Prasthanam etc.

(B) Struggles and Social Revolts

Upper cloth revolts. Channar agitation, Vaikom Sathyagraha, Guruvayoor Sathyagraha, Paliyam Sathyagraha. Kuttamkulam Sathyagraha, Temple Entry Proclamation, Temple Entry Act .Malyalee Memorial, Ezhava Memorial etc.

Malabar riots, Civil Disobedience Movement, Abstention movement etc.

Role Of Press In Renaissance

Malayalee, Swadeshabhimani, Vivekodayam, Mithavadi, Swaraj, Malayala Manorama, Bhashaposhini, Mathnubhoomi, Kerala Kaumudi, Samadarsi, Kesari, AI-Ameen, Prabhatam, Yukthivadi, etc

Awakening Through Literature

Novel, Drama, Poetry, Purogamana Sahithya Prasthanam, Nataka Prashtanam, Library movement etc

Women And Social Change

Parvathi Nenmenimangalam, Arya Pallam, A V Kuttimalu Amma, Lalitha Prabhu. Akkamma Cheriyan, Anna Chandi, Lalithambika Antharjanam and others

Leaders Of Renaissance

Thycaud Ayya Vaikundar, Sree Narayana Guru, Ayyan Kali. Chattampi Swamikal, Brahmananda Sivayogi, Vagbhadananda, Poikayil Yohannan (Kumara Guru) Dr Palpu, Palakkunnath Abraham Malpan, Mampuram Thangal, Sahodaran Ayyappan, Pandit K P Karuppan, Pampadi John Joseph, Mannathu Padmanabhan, V T Bhattathirippad, Vakkom Abdul Khadar Maulavi, Makthi Thangal, Blessed Elias Kuriakose Chaavra, Barrister G P Pillai, TK Madhavan, Moorkoth Kumaran, C. Krishnan, K P Kesava Menon, Dr. Ayyathan Gopalan, C V Kunjuraman, Kuroor Neelakantan Namboothiripad, Velukkutty Arayan, K P Vellon, P K Chathan Master, K Kelappan, P. Krishna Pillai, A K Gopalan, T R Krishnaswami Iyer, C Kesavan. Swami Ananda Theerthan, M C Joseph, Kuttippuzha Krishnapillai and others

Literary Figures

Kodungallur Kunhikkuttan Thampuran, KeralaVarma Valiyakoyi Thampuran, Kandathil Varghese Mappila. Kumaran Asan, Vallathol Narayana Menon, Ulloor S Parameswara Iyer, G Sankara Kurup, Changampuzha Krishna Pillai, Chandu Menon, Vaikom Muhammad Basheer. Kesav Dev, Thakazhi Sivasankara Pillai, Ponkunnam Varky, S K Pottakkad and others

General Knowledge and Current Affairs

Salient Features of Indian Constitution

Salient features of the Constitution - Preamble- Its significance and its place in the interpretation of the Constitution.

Fundamental Rights - Directive Principles of State Policy - Relation between Fundamental Rights and Directive Principles - Fundamental Duties.

Executive - Legislature - Judiciary - Both at Union and State Level. - Other Constitutional Authorities.

Centre-State Relations - Legislative - Administrative and Financial.

Services under the Union and the States.
Emergency Provisions.
Amendment Provisions of the Constitution.

Social Welfare Legislations and Programmes

Social Service Legislations like Right to Information Act, Prevention of atrocities against Women & Children, Food Security Act, Environmental Acts etc. and Social Welfare Programmes like Employment Guarantee Programme, Organ and Blood Donation etc.

CURRENT AFFAIRS

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper