SYLLABUS RELATING TO THE SUBJECTS FOR DIRECT RECRUITMENT TO THE POST OF TREASURY OFFICER AND FINANCE & ACCOUNTS OFFICER

1. Written Examination -   shall be on the following subjects :

Subject	No. of Papers	Time	Maximum Marks	Percentage of pass marks
1		2	3	4
1. General English	One	3hrs	200	40%
2. General Studies	One	3hrs	200	40%
3. Optional Paper - [either Commerce, or Economics or Mathematics]	Paper I Paper II	3hrs 3hrs	150 150	40% 40%

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2) **VIVA VOCE** for candidates who qualifies the written examination - Emphasis shall be on the aptitude of the candidate with financial matters and his role as a Finance Officer, his personality and general awareness. It shall carry a maximum of 200 marks and the percentage of pass marks is 40%.

3) The **STANDARD** of the written examination-shall be of Degree Standard and at par with that of the Meghalaya Civil Services and Meghalaya Police Services.

4) **SYLLABUS** for the written examination :

   i. **General English** - shall confine to Precis writing, Drafting, Essay on topics of national importance/ current events / economy of India & Meghalaya, and grammatical comprehension.

   ii. **General Studies** - shall comprise of General Science, Current events of national and international importance, History of India and Indian National Movement, Indian and World Geography, Indian Polity and Economy, General Mental Ability.

   a) On General Science, questions will cover general appreciation and understanding of science including matters of everyday observation and experience as may be expected of an educated person not necessarily one who specialise/ study in any scientific discipline.

   b) On Current events, questions/probe of knowledge on topics of local, national and international importance.

   c) On History of India, emphasis will be on broad general understanding of the subject in its social, economic and political aspect. And on Indian National Movement, question will relate to nature and character of the 19th century resurgence, growth of nationalism and attainment of Independence.

   d) On Geography, emphasis will be on Indian Geography. Questions on Geography of India will relate to physical, social and economic geography of the country, including the main features of Indian agricultural and natural resources.

   e) On Indian Polity and Economy, questions will be on knowledge of the country's political system and Constitution of India, Panchayati Raj, Social System and economic developments in India.

   f) On General Mental Ability, the candidates will be tested on reasoning and analytical abilities.

iii.   **Optional Papers -**

COMMERCE

PAPER I - Accountancy (150 marks)

Unit 1:   Accounting principles - concepts and conventions, journal, ledger, trial balance, rectification of error, cashbook - (single, double and triple column excluding petty cash book), preparation of bank reconciliation statement.

Accounting Standards (concepts only).

Unit 2:   Capital and revenue expenditure, construction of trading, profit and loss account and balance sheet of sole proprietorship concerns with adjustments.

Simple problems on final accounts of companies [Horizontal and Vertical presentation].

Preparation of income and expenditure account and balance sheet (from receipts and payments Account) with common adjustments for non-trading institutions.

Unit 3:   Ratio Analysis - meaning, advantages, limitations, types of ratios and their usefulness, simple problems on ratio analysis.

Fund Flow Analysis - preparation of statement of changes in working capital, preparation of fund flow statement

Cash Flow Analysis - Difference between cash flow statement and fund flow statement, preparation of cash flow statement (Direct/Indirect method).

Unit 4:   Budget, Theoretical concept of different types of budget, preparation of flexible budgets and cash budgets.

Concept of Zero Base Budgeting.

Capital budgeting, meaning of, various methods of ranking investment proposals, numerical problems (payback period method, present value method, rate of return method)

Unit 5:   Installation of costing system, classification of cost, preparation of cost sheet.

Marginal costing, Basic concepts of, break-even analysis, construction of break-even chart, practical problems of break-even analysis (use of BEP, P/V ratio, contribution, margin of safety, target profit, target sales), application of margin costing in decision making.

PAPER II - Management and Statistics

Section A : Management (75 marks)

Unit 1: Planning and Decision making - Types of planning, planning process, rational decision making, evaluation of alternatives, Management Information System, major factors determining success of planning, effective implementation.

Management by Objectives.

Unit 2: Organization and Communication, Types of organizational structure, centralization, decentralization.

Communication, process of, formal and informal communication, barriers to communication, flow of communication.

Motivation.

Unit 3: Controlling and Management of Change - control process, critical control points and standards.

Controlling techniques - budgetary and non budgetary control, PERT, CPM.

Preventive control - budget summary and reports, profit and loss control, control through return on investment, direct control Vs preventive control.

Management of change.

Section B: Statistics (75 marks)

Unit 1: Meaning, scope and limitations of Statistics. Collection of data - types of data, methods of collection, sources, classification, tabulation, presentation.

Measure of central tendency - mean, median, mode.

Measure of dispersion - range, quartile deviation/semi-interquartile range, mean deviation and standard deviation (including coefficients).

Unit 2: Index Number - meaning, utility, construction of various types of index number.

Time series analysis - components (secular trend, seasonal variations, cyclical variations, residual/irregular variations), measurement of trends (graphic, semi-average, moving average, least squares).

Unit 3 : Correlation- scatter diagram, Karl Pearson's coefficient of correlation, rank correlation.

Interpolation and extrapolation - meaning, methods of interpolation (Binomial expansion, Newton's Lagrange's).
Probability- Simple applications (numerical problems) of Additional and Multiplication theorems.

Books for Study:

1. Shukla, Grewal, Gupta, Advanced Accounts, S Chand Delhi.

2. Jain, Narang, Advanced Accountancy, Kalyani Publishers, Ludhiana.

3. C. Mohan Juneja, R.C. Chawla, K.K. Saksena, Double Entity Book Keeping, Kalyani Publishers, Ludhiana.

4. S.PJain, K.L. Narang, Cost accounting, Kalyani Publishers, Ludhiana.

5. Dr. Jawahar Lai, Accounting for Management, Himalaya Publishing House Mumbai.

ECONOMICS

PAPER I

Unit 1:   **MICRO ECONOMICS (30 marks)**

(a)   Definition of Economics by P. A. Samuelson & it's critical examination;

(b)   Demand, Law of Demand, Elasticity of Demand, Concepts of Price, Income & Substitution Effects;

(c)   Revenue & Cost concepts; Equilibrium of Firm

(d)   Features of different Markets (Perfect Competition, Monopolistic Competition, Oligopoly, Duopoly & Monopoly);

(e)   Price Determination & equilibrium under perfect competition & monopoly;

(f)   Marginal Productivity Theory.

Unit 2:   **MACRO ECONOMICS (30 marks)**

(a)   National Income — Concepts, Components & Measurement, Circular flow of income - Two sector model;

(b)   Consumption Function - Concepts of Average & Marginal Propensities to Consume & Save, Concept of simple Multiplier;

(c)   Investment & Saving Functions;

(d)   Characteristics & Phases of a Trade Cycle, Stabilization Policies;

(e)   Inflation & Deflation: Causes, Effects & Control.

Unit 3: PLANNING & DEVELOPMENT AND ENVIRONMENTAL ECONOMICS (30 MARKS)

    A (i)   Economic Development : Meaning, Measurement, Characteristics of less developed countries, Human Development Index - components & construction;

    A (ii)   Vicious circle theory, Balanced & Unbalanced growth theories;

    B (i)   Types & need for Planning - Centralized & decentralized planning, Micro level planning;

    C (i)   Environment - economy linkage;

    C (ii)   Population - environment linkage; (iii) Sustainable Development - Meaning & measurement.

Unit 4: INTERNATIONAL ECONOMICS (30 marks)

    (a) Absolute & Comparative Advantage Theories of International Trade;

    (b) Balance Of Payments - items in the BOP account, Balance of Trade & Balance of Payments, Equilibrium, Disequilibrium & Adjustment Process;

    (c) Functions of IMF, World Bank & GATT / WTO.

Unit 5: STATISTICS (30 marks)

    (a) Classification & Presentation of data;

    (b) Measures of central tendency;

    (c) Measures of dispersion;

    (d) Correlation & Regression (bivariate case), interpretation of results;

    (e) Sampling & Sampling Designs

    (f) Index Numbers - Concept, problems in construction, limitations;

    (g) Time series Analysis - concept & components, determination of regular trend.

PAPER II

Unit 1: PUBLIC FINANCE, MONEY & BANKING (60 marks)

    (a) Types of Government Budgetary Accounts : Capital & Current Accounts (with reference to India);

    (b) Sources of Public Revenue, Classification of Taxes, Effects of Taxation;

    (c) Methods of Public Debt Redemption;

(d) Public expenditure – Classification & Effects, Development & Non-development expenditure:

(e) Public Budget - meaning, Balanced & unbalanced budgets - implications, Economic & Functional classification of budget (with reference to India);

(f) Latest Finance Commission (with reference to India);

(g) Meaning of Deficit Financing - Fiscal, Budgetary, Revenue & Monetary deficits;

(h) Forms of financial markets, Money & capital markets In India, Principal financial instruments used in the Indian economy;

(i) Role of Development Banks in India - IFC, ICICI, IDBI, NABARD & SIDBI;

(j) Performance of Nationalized banks in India;

(k) Reserve Bank of India - functions and monetary policy.

Unit 2: INDIAN ECONOMY (60 marks)

(a) Basic features of Indian Economy;

(b) Trends & composition of National income;

(c) Occupational structure of labour force;

(d) Trends in Products & productivity of major food & non-crops; Agricultural Finance; Green Revolution - features & evaluation; Public distribution of food-grains;

(e) Trends and phases in Industrial Development during planning period - Emerging challenges; Sources of Industrial finance, Industrial policy of 1991; Small scale industries - growth & problems, Govt. policy;

(f) Foreign Trade - changes in composition & direction;

(g) Different forms & size of Foreign Capital; Role of MNCs;

(h) Poverty & Government Policies;

(i) Achievements & Failures of Five year Plans; Latest Five Year Plan;

(j) Unemployment - types & causes, Govt. Policy

(k) Inflation - Causes, Remedial measures.

Unit 3: ECONOMY OF MEGHALAYA (30 MARKS)

(a) Sectoral share of Net State Domestic Product (NSDP);

(b) State's Five Year Plans & Sectoral outlays;

(c) Economic Classification of Population;

(d) Resource-Base of Meghalaya: Land, Water, Forest, Minerals & Human;

(e) Industrial Structure of the State.

MATHEMATICS

PAPER I

Unit 1: ALGEBRA (45 marks)

Brief review of basics in set theory such as ways of describing a set, set operations, empty sets, disjoint sets, De Morgan's Laws, Venn Diagrams; Power Sets, Cartesian products, cardinality results; Relation as a subset of Cartesian product (notation: x R y if $(x,y) \in$ R).

Relation on a set : Reflexive, Symmetric, Anti - Symmetric, Transitive, examples from geometry and number system; Equivalence Relations and Equivalence Classes; partitions.

Functions / mappings from A to B as a rule of correspondence; as a subset of A x B; graph of a real - valued function on R; identity map, inclusion map; restriction of a map; composition of maps; associativity; onto, one- one, bijective maps; inverse images of sets, of union of the sets, of intersection of the sets, of complement of sets with respect to a function which need not be bijective; elementary facts, examples; inverse of a bijective map; finite and infinite sets; Proof of "if A is a finite set, then $f:A{\to}A$ is one - one if and only if is onto", examples where this assertion does not hold.

Addition, multiplication of matrices. Determinants of a matrix, Properties of determinants, Inverse of a matrix, Cramer's rule.

Binary operations; as maps from A x $A{\to} A$ commutative and associative binary operations; identities and inverses (one-sided as well as two-sided); Examples;

Groups : definition; detailed study of groups such as Z, Q, R, C,

Q^*, R^*, C^*, Z_n , S_n ,$M_2(R)$,$GL_2(R)$ D_{2n} , R^2, R^3 n^{th}

root of unity, etc; Laws of Indices in both additive and multiplicative notation; right and left cancellation laws; uniqueness of identity and inverses; group tables of group of low order (upto 8); subgroups; examples; cyclic subgroup generated by an element; cyclic group;

abelian group; subgroup of cyclic groups; determination of all subgroups of Z; order of an element; examples of elements of finite order; of infinite order. Polynomials over Z / Q / R / C ; addition and multiplication ; degree of a polynomial; degree of sum and product of polynomials:; the division algorithm; Remainder Theorem; ged; the Euclidean algorithm, Detailed study of roots of a polynomial with real coefficients; multiple roots, common roots, complex roots, surds roots; relation between roots and coefficients of the polynomial; Descartes' rule of signs - simple applications; location of roots using Rolle's Theorem; De Moivre's Theorem - application to solution of equations.

Unit 2: CALCULUS (45 marks)

Functions and graphs; real valued functions such as polynomials, rational functions, logarithmic functions, exponential functions, hyperbolic functions; limits, ε - δ Definition, standard theorem on limits, standard limits; Continuity : Intuitive idea, ε - δ definition, Theorem on sum, difference, product, quotient and composite of continuous functions; discussion of continuity of the functions mentioned earlier and their composites; properties of continuous functions defined on closed and bounded intervals : (statements with illustrations only for the following) boundedness, Intermediate Value Theorem, uniform continuity.

Derivative of real valued functions on intervals : definition; derivative as a rate measurer, derivative as the gradient of tangent; theorem on sum, difference, product, quotient and composite of differentiable functions; review of methods of differentiation; successive differentiation; Leibnitz's Theorem; L' Hospital's Rule (statement only with applications).

Antiderivative : review of the standard methods; integration by parts and by partial fractions; Examples of evaluation of integrals from the definition; statements with illustration of the following two results; fundamental theorem of integral calculus; differentiability of integrals of continuous functions, Properties of definite integrals evaluation of integrals using these properties.

Sequence of real numbers : definition of bounded sequence, convergent sequence, limit of a sequence, monotonic sequence; examples; Proof of the fact that monotonic and bounded sequences are convergent (using completeness of R as an axiom); Cauchy sequence; Cauchy's general principle of convergence. Infinite >>>>> real numbers, partial sums, convergent series, comparison test, ratio test,

root test; absolute convergence; Leibnitz's Theorem for alternating series.

Unit 3:MECHANICS (40 marks)

Velocity and acceleration in Cartesian coordinates; rectilinear motion with variable acceleration; simple harmonic motion; collision of elastic bodies; direct and oblique impact; projectiles; rectilinear motion in resisting media on a horizontal plane where resistance varies as (i) velocity (ii) square of velocity (iii) displacement; vertical motion under gravity where resistance varies as (i) velocity (ii) square of velocity.

Coplanar forces; reduction of coplanar forces; equilibrium of coplanar forces; general condition of equilibrium of any system of coplanar forces; friction; laws of statistical friction; laws of limiting friction; coefficient of friction; angle of friction, cone of friction; centre of gravity of thin uniform rod; uniform lamina, triangular lamina and lamina in the form of a parallelogram; centre of gravity of circular arcs; of uniform sector of a circle; moments and products of inertia; Theorems of parallel and perpendicular axes.

Unit 4: ELEMENTARY OF COMPUTER PROGRAMMING (20 marks)

Binary system, octal and hexadecimal system, conversion to and from decimal system. Codes, bits, bytes and words. Memory of a computer, Arithmetic and Logical operations on numbers. Precisions. AND, OR XOR, NOT. Algorithms and flow charts.

PAPER II

Unit 1: GEOMETRY AND VECTORS   (30 marks)

Analytical geometry of straight lines; Change of axes - invariants; pair of straight lines; general equation of second degree; the standard form; reduction of the general equation to standard form; conditions for different conies; general conies; equation of tangents; normals; pair of tangents, chord of contact, chord in terms of middle points, pole, polar. conjugate lines, diameter, asymptotes; polar equation., equation of a conic, directrix, chord, tangent and normal; parabola, ellipse, hyperbola.

Three dimensional geometry for planes, straight lines, sphere, cone and cylinder.

Addition and subtraction of vectors; Products (scalar and vector products) of two and three vectors-properties, geometrical significance and application. Directional derivatives, gradient of a scalar – valued function, tangent planes; vector fields, curl and divergence of a vector field.

Unit 2: DIFFERENTIAL EQUATION (25 marks)

Formation of differential equations; equations of first order and first degree; solutions by separation of variables, by substitution; homogeneous equations; linear equations; Bernoulli's equation ; exact equations; reduction to exact form by integrating factors; differential equations of first order but higher degrees; Clairaut's equation and singular solution; geometrical interpretation; applications of first order differential equations to geometric and physical problems (simple cases only) including orthogonal trajectories; linear equations of second order and third order with constant coefficients — complementary functions and particular integrals for $e^{ax}, x''e^{ax}$, $Sin(mx), Cos(mx), e^{ax}Sin(mx), e^{ax}Cos(mx), x^nSin(mx), x^nCos(mx)$ equations of type $a_1x^2y'' + a_2xy' + a_3y = f(x)$.

Unit 3: LINEAR PROGRAMMING (20 marks)

Linear programming problems, basic solution, basic feasible solution and optimal solution, graphical and simplex method of solutions. Duality, transportation problems.

Unit 4: NUMERICAL ANALYSIS, INDEX NUMBERS AND TIME SERIES (25 marks)

Δ , $>>$ and E operators. Interpolation formulae - Newton's forward and backward formulae. Lagrange's formula. Newton's divided difference formula. General quadrature formula for equidistant ordinates. Simpson's $\frac{1}{3}$ rd rule, Trapezoidal rule.

Index Number : Classification of index numbers, methods of constructing index numbers. Different test for index number. Details about the construction of consumer price index number, cost of living index number.

Time series : Component of time series. Measurement of trend of time series - Freehand or Graphical Method, Method of Semi - Averages, Method of Moving Averages,

Unit 5:   STATISTICAL METHODS (25 marks)

Meaning importance of statistics. Collection, classification, tabulation of data. Diagrammatic representation of statistical data - bar diagrams, pie - diagram, line graph. Frequency distribution of Grouped and Ungrouped data. Measure of central tendency - requisite of an ideal measure. Type of averages - mean, median, mode, geometric mean, harmonic mean - methods of calculations; their merits and demerits and the comparison of central tendency measures. Measure of dispersion - requisite of an ideal measure of dispersion. Types of measure of dispersion - range, quartile deviation, mean deviation, standard deviation -methods of calculations; their merits and demerits and their comparison. Measure of skewness and kurtosis.

Unit 6: PROBABILITY (25 marks)

Probability : Classical definition and its limitation. Axiomatic approach to probability. Calculation of probability. Theorem of probability - addition theorem and multiplication theorem. Conditional probability, independence of events. Baye's theorem. Concepts of random variable and probability distribution. Derivation of binomial, Poisson and normal distributions.