The Mizoram Civil, Service (Competitive Examination) Regulations, 1981

MIZORAM
India

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Rule
THE-MIZORAM-CIVIL-SERVICE-COMPETITIVE-EXAMINATION-REGUL
of 1981

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The Mizoram Civil, Service (Competitive Examination) Regulations, 1981Last Updated 19th February, 2020

1. Short title.

- These regulations may be called the Mizoram Service Competitive Examination) Regulations. 1981.

2. Definitions.

- In these rules regulations, unless the context otherwise requires-(a)"Vacancies" means the vacancies in the service which as determined by the Administrator under sub-rule (a) of Rule 5 are to be filled by direct recruitment on the result of an examination.(b)"Board" means the Board appointed by the Central Government under Rule 6 of the Mizoram Civil Service Rules.(c)"Examination" means a competitive Examination for recruitment to the service held under Rule 7 of the Mizoram Civil Service Rules.(d)"List" means the list of candidate prepared by the Board.(e)"Schedule" means a Schedule appended to these regulations.(f)"Scheduled Castes" and "Scheduled Tribes" shall have the same meaning as already assigned to them by Clause (24) and 25 respectively of Art. 369 of the Constitution of India.(g)"Service" means the Mizoram Civil Service.

3.

A candidate seeking admission to the examination must apply to the Secretary (Appointment), Government of Mizoram on the prescribed form of application. A specimen form of application is appended as Schedule II.

4.

A candidate seeking admission to examination must pay to the Government of Mizoram Rs. 5 (Rupees five) only as application fee and Rs.30 (Rupees thirty) only as admission fee in the event of his admission to the examination (in the case of candidate belonging to Schedule castes and Scheduled Tribes, the amount will be Rs. 2.50 and Rs. 15 respectively).

5.

(1)For admission to the examination a candidate must be a citizen of India (as defined in Arts. 5 to 7 of the Constitution of India).(2)A candidate in whose case a certificate of eligibility is necessary may be admitted to the examination but the offer of appointment may be given only after the necessary eligibility certificate has been issued to him by the Government of India.

6.

(1)A candidate must have attained the age of 21 years of must not have attained the age of 26 years on the 1st day of August of the year in which the examination is held.(2)The upper age limit prescribe above will be further relaxable-(i)up to a maximum of five years if a candidate belongs to a Scheduled Caste or a Scheduled Tribe;(ii)up to a maximum of three years in the case of Defence Service personnel, disabled in operations during hostilities with any foreign country or in a disturbed area and released as a consequence thereof:(iii)up to a maximum of eight years in the case of Defence Service personnel, disabled in operations during hostilities with any foreign country or in a disturbed area, and released as a consequence thereof who belong to the Scheduled Caste or the Scheduled Tribe:(iv)up to a maximum of three years in the case of Border Security Force personnel disabled in operations during Indo-Pak hostilities of 1971, and released as a consequence thereof;(v)up to a maximum of eight years in the case of Border Security Force personnel, disabled in operations during Indo-Pak hostilities in 1971, and released as a consequence thereof who belong to the Scheduled Caste or Scheduled Tribe.(3)Save as provided above the age limits prescribed can in no case be relaxed.

7.

A candidate must hold a degree of any of the Universities incorporated by an Act of the Central or State Legislature in India or other educational Institution established by an Act of Parliament or declared to be deemed as a University under Section 3 of the University Grants Commission Act, 1956 or possesses an equivalent qualification.Note. - Candidates, who have appeared at an

examination the passing of which would render them educationally qualified for the Board's examination but have not been informed of the result as also the candidates who intend to appear at such a qualifying examination will not be eligible for admissible to the examination.

8.

A candidate who is or has been declared by the Government of Mizoram to be guilty of-(i)obtaining support for his candidature by any means, or(ii)impersonating, or(iii)procuring impersonation by any person, or(iv)submitting fabricated document or documents which have been tempered with, or(v)making statements which are incorrect or false, or suppressing material information, or(vi)resorting to any other irregular or improper means in connection with his candidature for the examination, or(vii)using unfair means during the examination, or(viii)writing irrelevant matter, including obscene language or pornographic matter, in the script(s), or(ix)misbehaving in any other manner in the examination hall, or(x)harassing or doing bodily harm to the staff employed by the Government of Mizoram for the conduct of their examination or(xi)attempting to commit, or as the case may be, abetting the Government of Mizoram of all or any of the acts specified in the foregoing clauses may, in addition to rendering himself liable to criminal prosecution, be liable-(a)to be disqualified by the Government of Mizoram for the examination for which he is a candidate, or(b)to be debarred either permanently or for a specified period-(i)by the Government of Mizoram from any examination or selected held by them;(ii)by the Administrator from any employment under him; and(c)if he is already in service under Government to disciplinary action under the appropriate rules.

9.

The competitive examination shall comprise-(A)Written examination in-(i)three compulsory subjects-Essay, General English and General Knowledge, each with the maximum of marks as shown in Part I of Schedule I; and(ii)two optional subjects set out in Part II of Schedule I.(B)Interview for personality test of such candidates as may be called by the Board, carrying maximum of 300 marks.

10.

Candidates who obtain such minimum qualifying marks in the written examination as may be fixed by the Board in their discretion shall be summoned by them for an interview for a personality test:Provided that candidates belonging to the Scheduled Caste or Scheduled Tribes may be summoned for an interview for a personality test by the Board by applying relaxed standards if the Board is of the opinion that sufficient number of candidates from these communities are not likely to be summoned for interview for a personality test on the basis of the general standard in order to fill up the vacancies reserved for them.

11.

After the examination the candidates will be arranged by the Board in the order of merit as disclosed by the aggregate marks finally awarded to each candidate and in that order so many candidates as are found by the Board to be qualified by the examination shall be recommended for appointment up to the number or unreserved vacancies decided to be filled on the results of the examination:Provided that candidates belonging to the Scheduled Castes or the Schedule Tribes may, to the extent the number of vacancies reserved for the Scheduled Castes and Scheduled Tribes cannot be filed on the basis of the general standard, be recommended by the Board by a relaxed standard to make up the deficiency in the reserved quota, subject to the fitness of these candidates for appointment to the service irrespective of their rank in the order of merit at the examination.

12.

If any question aries as to the interpretation of these regulations the same shall be decided by the Administrator.Chief Secretary to the Government of MizoramAizawl

I

Syllabus in the different subjects for the Recruitment Examination for Grade II of M.C.S.I.
Compulsory Subjects-3 (Three)

(1) An Essay to be written on one of several special subjects	100 Mks.
(2) General English to test comprehension and expression, Precis,and unseen passages	100 Mks.
(3) General Knowledge	100 Mks.

Including knowledge of current events and of such matters of every day observation and experience in their scientific aspects as may be expected of an educated person who has not made a special study of any scientific subject. The paper will include questions of freedom movement of India and teachings of Mahatma Gandhi, Indian History including History of Mizoram and Assam and Geography of a nature which candidates should be able to answer without study.II. Optional Subjects-2 (Two)Each subject will have two papers carrying 100 marks each. The standard and syllabus of each subject are approximately those of the North-Eastern Hill University (NEHU) Degree Course Examination. A candidate is to select only two of the following subjects:

1. Mathematics

Paper IAlgebra, Trigonometry and Analytical Co-ordinate Geometry of two and three dimensionsAlgebraElementary theory of sets: group and their simple properties. Sub-groups and normal sub-groups. Definition and examples of Rings and fields. Idea of homomorphine in Groups and Rings.Determinants and their elementary properties. Addition and multiplication of determinants. Cramers' rule for solution of system of linear equations.Different types of Matrices. Addition and scalar multiplication of matrices. Multiplication of Matrices. The inverse of matrix. Rank of a matrix. Solution of a system of linear equations using matrix theory.Relation between

roots and coefficients of polynomial equations of nth degree with special reference to cubic and biquadratic equations (General solution not necessary).Sequences, Convergent and sequences, monotonic sequences and their convergence. Convergence and divergence of infinite series. Absolute and conditional convergence. Comparison test. D'Alermbert's ratio test and Raabe's test.TrigonometryDefinition of the trigonometric functions and their natural relations. Range and graphs of the trigonometric functions. Addition and subtraction formulae and deductions of trigonometric identities.De Moivre's theorem for a rational index. Expansions of sin X and cos X in ascending powers of Exponential values of circular functions, complex arguments. Gregory's series.Summation of finite and infinite trigonometric series. Hyperbolic functions.Co-ordinate geometry of two and three dimensionsTwo and three dimensional rectangular cartesian co-ordinates. Distance between two points; section, formula, area of a triangle Standard equation of a straight line, angle between two straight lines. Condition for perpendicularity and parallelism.Standard equation of a circle, parabola, ellipse and hyperbola. Tangents and normals to them General equation of a conic. Pair of straight lines.Shortest distance between two straight lines. Standard equation of a plane and a sphere. Tangent plane to a sphere.Ellipsoid. Hyperboloid and tangent planes to them.Paper IICalculus, Differential Equations and MechanicsCalculusIdea of function-Real valued function, Inverse functions Bounds, limits and continuity of functions. The derivative and its signs.Successive differentiation. Rille's theorem. Lagranges form of the mean value theorem. Taylor's and Maclaurin's theorems with Lagrange's form of remainder.Functions of two or more variables, partial derivatives. Maxima and minima. Envelopes, asymptotes, Evolutes and involutes.Rules of integration: Standard forms. Definite integrate, and their properties. Elementary idea of improper integrals.Application of calculus: Tangents and normals, curvature of plane curves. Rectification of plane curves, curves tracing, quadrature. Surfaces and volumes of solids of revolution.Differential EquationsFormation of differential equations, equations of first order and first degree. Clairauts form.Linear equations of the second and higher order with constant coefficients. Complementary function and particular integral in simple cases.MechanicsConcurrent forces: Movement of a force about a point. Varignous' theorem. Movement about an axis. Parallel forces, couples, resultant of a couple and a force.Coplanar forces: General conditions for equilibrium of coplanar forces.Centre of gravity of a system of particles, of a rigid body, a thin rod, of homogenous lamina in the form of a triangle, a parallelogram, a circle, a quadrant of a circle and of an ellipse, of a uniform rod bent in the form of a triangle or an area of a circle etc.Friction. Laws of statical and limiting friction. Equilibrium of a particle on a rough plane, angle of friction. Applications to simple problem.Simple machines system or pulleys mechanical advantages, velocity ratio. Analytical expression for velocity and acceleration. Rectilinear motion. Motion of a particle in two dimensions. Simple harmonic motion. Projectiles. Tangential and normal accelerations. Motion along a smooth vertical circle.Impulse, work energy and power. Principle of energy. Impulsive forces. Conservation of energy and linear momentum. Impact of elastic bodies (direct impact only).Chemistry

Paper I:	Inorganic	70	Total marks 100
	Physical	30	
Paper II	Organic	70	100 marks
	Physical	30	

Paper IGroup AInorganic ChemistrySimple concept of modern atomic theory, atomic structures, Isotopes, their separation and uses. Elementary ideas of electrovalency, co-valency and co-ordinate valency, elementary concept of molecular orbital theory and valency bond theory-Pi bond and sigma bond. Periodic classification of elements.Study of the following elements and their chief compounds with special reference to the following general considerations:(a)Co-relation of properties on the basis of period classifications of elements.(b)Simple structure of oxides and oxyacids and electronic structure of simple compounds.(c)Large scale preparation of elements and their chief compounds without technical details.For non-metal study of hydrides, oxides, oxyacids and halides.

1. Study of rare gases and their position in the periodic table Discovery, isolation and uses of rarer gases.

2. Study of water, hydrogen peroxides and ozon. Their preparation, properties and uses. Elementary ideas of dilirium, trilium, its oxide, its preparation and uses.

3. Study of Nitrogen-Ammonia. Nitric acid, hydrazine, hydrazoic and hydroxylamine, nitrous acid, hydronitrous acid.

4. Phosphorus-occurrence, preparation, properties and uses. Different allotropic modification, phosphoric acid and phosphate important hydrides, oxides and halides.

5. Sulphur hydrides, oxides and oxyacids (polithionic acid omitted). Manufacture or sulphuric acid, properties and uses.

6. Halogens-Hydrides, oxides, oxyacids of chlorine.

7. Arsenic-Arsenates and Arsenites.

8. Carbon-Its allotropic modification, coal gas, producer gas, water gas, carbides of silicon and calcium.

9. Silicon-Silici, Sodium Silicate, Silicic acid and glass.

10. Boron-Boric acid and borax.

Study of the following metals(Study of some of their principal compounds like hydrides, halides, oxides, hydroxides, carbonates, nitrates, sulphides and sulphatex including their laboratory preparation, properties and uses).Lithium, Sodium, potassium, copper, silver, gold, magnesium, calcium, stantium, barium, zinc, cadmium, mercury, alluminium, tin, lead, antimony, Bismuth,

chromium, manganese, iron, cobalt and nickel.The following metals are to be studies in detail: ores, extraction, alloys and their principal compounds, sodium, copper, silver, gold, zinc, alluminium, tin, cadmium, chromium, manganese, iron, nickel.Radioactivity-Discovery, properties of radioactive rays half life and average life period. Radioactive disintegration artificial transmutation. Elementary ideas of Fission. Fusion, Radiosotopes- their application, nuclear reactor.Elementary ideas of the following topics-Dissociation and decomposition, allotropy, isomorphism, oxidation-reduction oxidizing agent and reducing agent. Iron electron method, complex salt and double salt, Werner's theory (excluding space configuration and isomerism).Group BPhysical Chemistry

1. Osmosis and osmotic pressure, lowering of vapour pressure, elevation of boiling point, depression of freezing point-their experimental determination, Raout's law. abnormal behaviour of solution (non-thermodynamic relations between colligative properties).

2. Analogy of the behaviour of ideal gases and dilute solution determination of molecular lots of substances from the studies of dilute solutions and their limitations.

3. Chemical equilibria-Reversible and irreversible reactions, law of mass action and its verification (Kinetic and experimental), equilibrium in homogeneous system of liquids and gases, Lechatellier's principle and its applications.

4. Colloidal states of matter, crystalloids, colloids, classification of colloidal, lyophobic colloids, preparation of colloidal solutions. Properties of colloidal solution- peptisation, dialysis, electrophoresis, Brownian movement coagulation of colloids, optical properties, emulsions, gets, their uses.

5. Kinetic theory of gases-its fundamental postulates, deduction of gas laws, average velocity. Rule M.S. velocity. Ideal gas equation and derivation of gas laws, deviation from ideal behaviour, continuity of state, principle of liquefaction of gases. Vander Wall's equation of state, principle of corresponding state, the law of partial pressure.

6. Specific heat of gases and specific heat relation (from Kinetic theory) First law of thermodynamics, mathematical formulation, thermodynamic derivation of Cp and Cv. Coule-Thomson effect. Elementary treatment of second law of thermodynamics.

7. Vapour densities, abnormal vapour density, limiting density, different methods of determination of molecular-weights.

Paper IIOrganic ChemistryGroup A

1. Introduction to organic chemistry-growth, scope and application of organic chemistry, Qualitative and quantitative analysis of carbon, hydrogen, halogens and sulphur in organic compound. Determination of molecular formula. Structure and classification of organic compounds, Nomenclature, homologous series and isomerism.

2. Occurrence, preparation, general properties of saturated hydrocarbons (including structural formula), saturated parrafins up to a butane, unsaturated hydrocarbons including butadiens and isoprene, acetylene, significance of double and triple bond. Baeyer's strain theory, petroleum industry.

3. Halogen derivatives of paraffins-methyl and ethyl halides, their preparation properties and uses. Dihalogen derivatives of methane and ethane, chloroform, carbontetra chloride- preparation, properties, uses.

4. Aliphatic alcohol-preparation, properties and constitution of primary, secondary and tertiary alcohol, monohydric alcohol (first four members) fermentation and elementary knowledge of enzymes, manufacture of methyl and ethyl alcohol. Glycols, thyelene glycol, ethelene oxide, glycerol and its important derivatives.

5. Preparation, properties and constitution of ethers, diethylether.

6. Preparation, properties and constitution of aldehydes and ketones, formadehyde acetone.

7. Preparation, properties and constitution of fatty acid Formic acid, vinegar, propionic butyric acid, elementary ideas of fats and oils, Ester and its hydrolysis, halogen substituted acids.

8. Carbonyl chloride and urea-preparation, properties uses and test for urea.

9. Study of primary, secondary, tertiary amines and quartemary amonium compound-preparation, properties, sepration of mixture of amines, test of distinguish between primary, secondary and tertiary amines.

10. Study of organometallic compound of magnesium and its applications.

11. Preparation, properties of disbasic acid and tribasic acid, oxalic, malonic, succinic, malic and citric acid.

12. Lactic acid, tartaric acids, and their optical isomers.

13. Carbohydrates-definition, classification, glucose, fructose-their preparation and properties. Cane sugar, starch, cellulose and their molecular structure.

14. Aromatic hydrocarbons-Aroma tic character, Kekule's theory and structure of bensene' properties of aromatic compounds. Coal tar distillation, benzene, toluene, xylenes-their properties and reactions, Komer's absolute method of orientation.

15. Aromatic halogen compound-chlorobenzene, bromobenzene, iodobonzene, benzyl chloride, benzal chloride and their properties.

16. Aromatic nitro compound.

17. Sulphuric acid, benzene sulphuric acid.

18. Phenols-preparation, properties of phenols, nitrophenols, picric anisole.

19. Aromatic alcohol-benzyl alcohol

20. Aromatic aldehydes-benzaldehyde, salicyldehydes.

21. Aromatic ketones-Acetophenon, benzophenon.

22. Aromatic aids and their derivatives-Benzonic acid, benzoic anhydride, benzamide, benzoic esters, phenylacetic acid, cinnamic acid, salicylic acid, acetyl salicylic acid, phthatic acid.

23. Aromatic amines-preparation, properties of aniline, demethyl aniline, toluidine, benzilamine, and sulphuric acid.

24. Preparation and properties of diazo compounds (constitution omitted)

25. Phenylhydrazine-preparation, properties and uses,

26. Napthalene and anthracene-their preparation, properties, napthols and napththaquinones.

27. Elementary idea of amino acids and protiens.

28. Elementary idea of valency electron of carbon and their hybridisation, molecular orbitals, electrophillic and neucleophillic substitution.

Physical ChemistryGroup B

1. Thermochemistry. - Heat of reaction, Heat of formation. Hess's law, Kirchoff's equation.

2. Heterogenious equilibrium-Phase rule and its application to one component system of water and sulphur. Solubilities of gases liquids-Henry's law, binary liquids mixtures-their mixibility, distillation, Nersit's distribution co-efficient.

3. Elementary idea of chemical Kinetics-Order of reaction and its determination (first and second order only) elementary idea of reaction mechanism.

4. Catalysis. - Homogeneous and heterogeneous autocatalysis, catalytic poisons, elementary treatment of mechanism of catalysis.

5. Electrolysis and electrolytic dissociation. - Faraday's laws, Arrhenius theory of electrolytic dissociation, specific equivalent and molar concentration, measurement of concentration of solution, variation of

concentration with dilution, transference number, Kohlrausch law, strong and weak electrolytes, degree of dissociation. Oswald dilution law, principle of solubility product and its applications in analytical chemistry, common ion effect.

6. Elementary treatment of the following topics-Acid base concept, strength of acids and bases. Ionisation of water, hydrolysis of salts neutralisation, hydrogen on concentration and pH, buffer solutions indicator-its theory, choice of indicator, theory of acid base indicator.

3. Botany

Paper I

100. Marks

(A)Morphology (B) Anatomy (C) Cryptogams (D) Gymnosperms (E) Angiosperms.A. Morphology. A general advanced knowledge of the external morphology of vegetative and reproductive organs of the vascular plant with special emphasis on microsporogenesis, megasporogensis, development of male and female gametophyte, a typical monosporic embryosac, fertilization, embryogeny and endosperm formation.B. Anatomy. Basic knowledge of the cells, cell-well- structure and development, ergastic matters. The shoot-apex and the root apex. Tissues and tissue system. The stele, leaf and branch gaps-Primary and secondary structure, the cambium, secondary growth including anomalous types.C. Cryptogams. - Algae-General characters, classification, origin and evolution of sex.(a)Myxophyceae or Cyanophyceae-General cell structure, reproduction and nitrogen fixation.Type study-Nostoc(b)Chlorophyceae-Type study-Chlorella, volvox, oedogonium, chaetophora, vaucheria, chara.(c)Bacillariophyceae-A general account.(d)Phaecophyceae-Type study-Ectocarpus, Fucus.(e)Rhodophyceae-Type study-Polysiphonia.Paper II

100. Marks

(1)Physiology (2) Ecology (3) Plant geography (4) Element of Cytology (5) Genetic and Plant breeding (6) Economic Botany.

1. Physiology : Plant and water relationship. Absorption of water and their translocation, transpiration-process and factors affecting and significance of transpiration, type of state of water in the soil, their availability, importance of water for plants, drought resistance.

Mineral Nutrition-Macronutrients and micronutrients. Nitrogen metabolism. Nitrogen cycle. Enzymes-classification, properties and mode of action-Photosynthesis-mechanism and factors

affecting and Respiration Mechanism, factors affecting and Respiratory quotient. Growth and Development-Factors influencing growth. Auxins and their actions in plants, photoperiodism, vernalisation. Movements-Autonomous and Induced movements.

2. Ecology ; Ecological concept-organisation level, individual, population, community and ecosystem. Ecological factor-climate (Rainfall, Wind, Temperature, Light), Edaphic, Biotic, Origin development and organisation of a community. Hydrosene, Xerosene, Ecological adaptations of plants to water.

3. Plant Geography ; Vegetation (General) of Eastern Himalayas, General knowledge of the Phyto-Geographical regions of India.

4. Cytology ; Parts of a generalised cell and properties. Detailed study of Mitochondria, Plastids, Chromosomes, Nucleic Acid. Mitosis, Polyploidy.

5. Genetics and Plant Breeding ; Mendel's law of Inheritance. Linkge and crossing over. Chromosome theory of heredity. Mutation-General principles and techniques of Plant Breeding and its significance in agriculture.

6. Economic Botany : The scope, cultivation and processing of the following:

(a)Cereals-Rice, Maize.(b)Pulses (Legumes)-Soyabean, Pea, Gram, Groundnut.(c)Oils-Mustard, Coconut.(d)Fibres-Cotton, Jute.(e)Drugs-Rauwolfia, Cinchona.(f)Beverage-Tea.(g)Sugar-Sugar-cane.(h)Timber-Seal, Teak.FUNGI-General characters, classification, economic importance.(a)Phycomycetes-Type study, phytophtora, cystopus.(b)Ascomycetes-Sexual Reproduction, Development of Ascus and Ascospores.Type study-Peziza Erysiphe.(c)Basidiomycetes-Type study-UstiJago, Puccina, Psalliota.(d)Deauteromycetes-Type study-Helebinthosporium, Fusarium.(3)Lichens-A general account.(4)Bacteria and Viruses-A general account,(5)Bryophyta-General characters, classification, origin and evolution of Bryophyta, origin and development of sporophyte.

Type study	(a) Hepaticea	Marchantia
	(b) Anthocerotae	Anthoceros
	(c) Musci	Sphagnum

(6)Pteridophyta-General characters, classification, Heterospory and its significance.

Type study	(a) Lycopsida	Lycopodium, Selaginella
	(b) Pteryopsida	Marsilea

D. Gymnosperms-General characters, clafficiation, a general knowledge of fertilisation.

Type study	(a) Coniferales	Pinus (Morphology, life cycle)

(b) Gentales Gnetum (Morphology, life cycle and affinity)

E. Angiosperms-General knowledge of the principles of classification, outline, systems, of classification Artificial, Natural and Phylogenetic concept of species, Nomenclature.A knowledge of the following families including Phylogenetic affinities and economic importance.(a)Monocotyledens-Graminacea Palmacea, Liliacea, Musaceae, Orchidaceae.(b)Dicotyledens-Cruciferacea, Tiliaceae, Malvacea, Rutocea, Leguminoceae, Umbelliferae, Compositae, Solonaceae, Verbanaceae, Labiateae, Cucurbitaceae, Euphorbiaceae.

4. Physics

Paper I

100. Marks

General PhysicsUnit and dimension of a physical quantity, dimensional equations and applications. Movement of inertia and radius, of gyration angular mementum, kinetic energy in rotational motion. Theorems of perpendicular and parallel axis, calculation of moment of inertia for rod and rectangular lamina about axis of symmetry. Differential equation of simple harmonic motion and its solution, kinetic and potential energy in simple harmonic motion, composition of simple harmonic motions, resolution, of simple harmonic into two equal and opposite circular motions; lissajeous figures, compound and torsional pendulum, determination of Bygkater's pendulum.Experimental determination of G by Boyle's method, calculation of gravitational potential and filed due to thin spherical shell and solid sphere, Kepler's laws and its deduction.Deformation in solids, Hooke's Law, elastic constant, inter- relations between elastic constants. Bending of a light bar fixed at one end.Viscosity of fluids, Poiseulle's equation, experimental determination of viscosity of liquids (Poiseulle's method).Surface tension, relation between surface tension and surface energy, angle of contact, excess pressure inside a soap bubble, rise of liquid in a capilary cube.Production and measurement of low pressure diffusion pumps, meleod gauge.SoundFree vibration, Forced vibration, resonance, transverse and longitudinal wave. Vibration of string, velocity of transverse waves in strings, stationary waves in strings and air columns. Kungt's tube experiment.Electrically maintained tuning fork, determination of frequency of a tuning fork (Melde's experiment).Recording and reproduction of sound, Ultrasonic sound, application of Ultrasonic waves. Acoustics of building and reverbetration.OpticsRefraction at spherical surfaces, thin lens and combination of two thin lenses separated by a distance'd' spherical abberation and chromatic operation, achromatic combination of lenses. Eye pieces-Ramsden & Huygen's eyepiece.Determination of velocity of light of Mechelson's method.Interference of light, Fresher's biprism, colours of thin films, Newton's ring. Diffraction of light-Freshel's half period zone, difraction at a straight edge, Frouhofer diffraction-single silt, double slit and a plane grating (Elementary deduction).Polarization of light-plane, polarized light, double refraction, Nicol prism, polarymetry.HeatSpecific heats and their determination.Kinetic theory of gases, perfect gas laws theory of specific heats. Brownian motion and determination of Avogadro's number.Andrew's and Amagat's experiment, equation of state Vander Wall's equation, reduced equation of state, omical constants.First law of thermodynamic mechanical equivalent heat (J) and its determination by Callendar and Barnes method. Isothermal expansion, C.C.R., equation for an adiabatic.PVChange,

determination Gamma by Clements and Desomers method, Porous-plug experiment, jouble. Thomson Effect : Temperature of inversion; liquefaction of gases. Production and measurement of low temperature.Second law of thermodynamics, Reversible and irreversible processes, Carnet cycle Entropy, Absolute scale of temperature, Calpeyron's equation.Statistical ElectricityCapacity of sphere, two concentric spheres, two coaxial cylinders, two parallel plates, Energy or a condenser, Forces between the plates of a condenser, effect of dielectrics on capacity, electrometers-attracted disc; comparison of capacities, measurement of dielectric constant of solid in the form of a slab.Electric charges inverse square law of electrostatics, Electrostatic potential, electric filed, dielectric constant (specific inductive capacity), mechanical forces on charged conductors, energy in an electrostatic medium, electrical induction, Gauss's theorem and its application.MagnetismInverse square law of Magnetism. Magnetic potential line of Force and field. Potential gradient and field intensity, potential and filed due to a short magnet. Forces and couples between two short magnets, magnetic shell, potential due to a magnetic shell. Tangent law, magnetic induction and intensity of magnetisation, magnetic susceptibility and permeability.Paper II

100. Marks

Current ElectricityMagnetic Field about a current and its direction-Laplace's law Equivalent magnetic shall Ampere's theorem. Field due to a circular current. Field due to a solenoid.Effect of magnetic field on current. Couple on a rectangular coil carrying current placed in a magnetic field, moving coil galvanometers-dead beat and ballistic galvanometer current, sensitivity and voltage sensitivity of a galvanometer, determination of figure of merit.Thermo-electricity, Pelteir and Thomson effect, thermo-electronic thermo-metry magnetisation of iron, magnetic Hysieresis loss, electromagnetic induction, self and mutual inductance and their determination, Eddy currents, electromagnetic damping. Transient phenomena-growth and decay of currents in different coupled systems, induction coil, alternating current Reactance, Impedance, L-C, L-R, and L-C-R circuits, power in A-C circuits, power factors. Transformer, their theory-construction, uses. Current-transmission, electric motors.Modern PhysicsIron and Ionisation current, Effect of electric and magnetic fields on charged particles in motion, Detailed study of e/m for electrons by Thomson method, Millikan's determination of 'e' (Details) Positive rays-Positive ray analysis (Thomson method), Isotopes, Mass spectrograph (Asian and Bainbriage) and Atomic number, X-rays, scattering and determination of wave length by Braggs X-ray spectrometer, Compton effect and its verification, scattering of alpha particles by Nucleus, Nuclear structure of the Atom (Details of Rutherford and Bohr's) Bohr's theory of hydrogen spectrum, photo-electric effect- Einstein equation and determination of 'h' by Millikan's method-Photo electric cell and their uses.

5. Geography

100. Marks

Paper IGroup A-Physical Geography-60 MarksTheories on origin of the earth, Internal structure of the earth, forces of the earth and their effects on the earth's crust; earthquakes and volcanocity, sculpturing of the earth's surface through the agents of denudation such as weathering, water,

glacier, underground water and wind.Composition of atmosphere, temperature and pressure distribution, pressure belts and planetary winds, cyclones and anticyclones, precipitation.Distribution and depth of ocean floor, ocean deposists, distribution of salinity of ocean, waves, tides and ocean currents.Group B-Economic Geogrpahy-20 MarksMeaning and Scope of economic geography; factors and systems of agriculture, conditions of growth, distribution, production and world trade of rice, wheat, cotton, teat and rubber. Minerals and power resources such as coal, iron-ore, petroleum, natural gas and water power. Factors of localisation of industries, detailed study of cotton textile, iron and steel and chemical industries. A comparative study of various transport systems.Group C-Human Geography-30 MarksMeaning and scope of human geography, man and environment, climate and man, human activities in mountains and plains, distribution of world population, growth structure and distribution of rural and urban settlement.Paper IIRegional Geogrpah-Marks 100Candidates will be required to answer five questions; three from Group 'A'; one from Group 'B' and one from Group 'C'.Group A-Regional Geography of India with special reference to North-Eastern RegionsPhysical feature ; climate and climatic regions, agriculture and agricultural regions industrial regions, multipurpose projects, national vegetation and forests, population and food problem, detailed geographical account of Kashmir region, Chhotanagpur plateau, lower Gangetic valley and Brahmaputra valley, detailed geographical study of Mizoram, Meghalaya plateau and Nagaland.Group B-Regional Geography of Great Britain, Japan and U.S.A.Life, climate, natural vegetation, agriculture, mineral resources, industries and industrial regions.Group C-Major Natural RegionsLife and industrial development in Equatorial region, Hot desert region, Monsoon region, Mediterranean region and Tundra Region.Books RecommendedPhysical Geography

1. Principles of Physical Geography-F.J. Moukhouse

2. Physical Geography-P. Lake (Indian Edition)

3. A text book of Geomorphology-P.G. Worcestor

4. Elements of Physical Geography-G.T. Trawortha

5. Principles of Physical Geography-A. Dasgupta and A.K. Kapoor

Economic Geography

1. Economic and Commercial Geography-M.C. Agarwalla and J.R. Monga

2. Economic Geography-Dr. R.N. Dubey

3. Economic Geography-A. Dasgupta

4. Economic Geography-J.L. Guha and P.R. Chatteraj

Human Geography

1. Principles of Human Geography-E. Huntington.

2. Introduction to Human Geography-J.H.G. Lebon.

3. Introduction to Human Geography-D.C. Money.

Regional Geography

1. India-A Regional Geography-R.L. Singh.

2. Geography of India-Gopal Singh.

3. Japan-G.K. Trewartha.

6. ANTHROPOLOGY		
Paper I.	Physical Anthropology and pre-history	100 Marks
Paper I.	Social and Cultural Anthropology	100 Marks
7. ZOOLOGY		
Paper I.	Group 'A' Chordata	100 Marks
	Group 'B' General Principles of Zoology	
Paper I.	Group 'A' non-Chordata	100 Marks
	Group 'B' Embryology	
8. GENERAL ECONOMICS		
Paper I.	Principles of Economics and Theory of Money	100 Marks
Paper I.	Pubic Finance and Indian Economics	100 Marks
9. POLITICAL SCIENCE		
Paper I.	Part 'A' Political Philosophy of Plato Aristotle and theirpredecessors	100 Marks

	Part 'B' Principles of Political Science	
Paper I.	(1) Constitution of Great Britain, the United Stages ofAmerica, the Union Socialists of the Soviet Republic and India (2) Local-Self Government in India with special emphasis onLocal-Self Government in Assam.	100 Marks
10. EDUCATION		
Paper I.	Principles of Education and Educational Psychology	100 Marks
Paper I.	History of Education in India with particular reference tomodern education	100 Marks
11. INDIAN HISTORY		
Paper I.	From the pre-historic period of 1200 A.D.	100 Marks
Paper I.	From 100 A.D. to 1947	100 Marks
12. BRITISH HISTORY		
Paper I.	From 1485 to 1714	100 Marks
Paper I.	From 1714 to 1947	100 Marks
13. WORLD HISTORY		
Paper I.	From 1789 to 1914	100 Marks
Paper I.	From 1914 to 1947	100 Marks
14. ENGLISH LITERATURE		
Paper I.	Poetry and Drama	100 Marks
Paper II.	Prose, Text and Composition	100 Marks

The books and pieces thereof are appropriately those of the North-Eastern Hills University for the Degree Course Examination. The candidates are expected to answer critical questions on the authors and the poets and the general characteristic of the literature.

15. HINDI

Paper I.	Prose and Poetry	100 Marks
Paper II.	Drama, Unseen, Essay and History of India	100 Marks

16. ADVANCED ACCOUNTANCY AND AUDITING		
Paper I.	Advanced Accountancy	100 Marks
Paper II.	Auditing	100 Marks
17. BUSINESS ORGANISATION AND COMMERCIAL LAW		
Paper I.	Business Organisation	100 Marks
Paper II.	Commercial Law	100 Marks
18. PRINCIPLES OF ECONOMICS AND MODERNECONOMIC DEVELOPMENT		
Paper I.	Principles of Economics	100 Marks
Paper II.	Modem Economic Development of India and other Great powers	100 Marks
19. INTERNATIONAL LAW		
Paper I.	History of International Law	100 Marks
Paper II.	Law of the belligerents and neutrals in war	100 Marks

II

Application From for Grade II of M.C.S.

To be filled in by the candidates 'Own' handwriting. Beforecompeting the application form the candidates must carefullystudy the Notice, Rules and other instructions and abide by them.

Affix signed photograph passport size (5 cm x 7 cm approx).

Closing date(All Answers must be given in words and not by dashes and dots)

1. Name in full (block letters)

2. Postal address in full (in block letters) to which communications should be sent.

3. Exact date of birth (in Cristian era)

4. (a) Are you married? (a)

(b)If you answer to (a) is 'Yes' (b) whether you have more than one wife living

5. (a) Place of birth and the State in (a) which it is situated

(b)District and state to which you belong (in case of a displaced person, the District and place in which you have settled after migration should be stated).

6. Give below, particulars of place(s) where you have lived for more than one year during the last five years. Place (including district) of residence Address Period of residence with dates

7. (a) Are you a citizen of India by birth and/or by domicile?

(b)If you are not a citizen of India to what place do you claim to belong?

8. (a) Are you a displaced person from areas which now form Pakistan ? (a)

(b)If so, what is the date of your migration ? (b)(c)What was your address before migration? (c)(d)Is an affidavit necessary in your case ? (d)Strike out the words which are not applicable and answer the question.

9. (a) State your religion:

(b)(o Are you a member of a Scheduled (b) (i) caste? answer 'Yes' or 'No'(ii)Are you a member of a Scheduled Tribe? (ii)(iii)If the answer to (i) or (ii) is 'Yes' give (iii) the name of caste or tribe?(iv)Have you attached an original certificate (iv) from a competent authority in support of your claim?

10. Your father's name and place of birth.....

11. Is or was your father a citizen of India by birth and/or domicile?

12. Did your father ever change his nationality? If so, give particulars

13. Give your father's postal address (if dead give last address) and profession

14. What language (including Indian language) can you read, write or speak? Give particulars and state the Examination, if any, passed in each

Read only Speak only Read and Speak Read, white & Speak Examination passed

15. Educational Institution attended-

(a)Secondary or High School (including National Defence Academy)(b)University or other institution of higher education attended.

Name of University/Institution College, if any with address Date of entering Date of leaving

Strike out the words which are not applicable and answer the question.

16. (a) Give particulars of all examinations passed and degree obtained (commencing with matriculation or tenth class of a Higher Secondary School or equivalent examination):

Examination or degree	Class or Division obtained	Year	Subject taken	Name of University/ Institution/ Board	Name of Institutions with address	Date of entering	Date of leaving

17. If you are employed under Government, or have at any time been employed under Government, give details of the service rendered in various offices and scale of pay of the post held

Name of the Department/Office Post in which employed and scale of pay Period of Servicefromto

18. Attach a summary of not more than two pages of your life experience indicating any special background which you feel may show your aptitude for a healthy outdoor life in the hills, leadership, decision, making and original and lucid thought

19. (a) Are you free from debt (a)

(b)If you are under liability to repay money (b) advanced by any Institution or party for your education or for any other purpose state the particularsAnswer 'Yes' or 'No' to question (a) if the answer is 'No' answer question (b) clearly.

20. Have you ever been convicted by a criminal court and so, in what circumstances and what was the sentences?

21. State the name of Treasury/State Bank of India from which you submit Treasury Challan and the No. and dates of Treasury Challan

Name of Treasury State Bank	No. of Treasury Challan	Date	ValueRs.P.

22. Give a list of documents attached to the application

(a)(b)(c)(d)(e)(f)(g)23. In the space below write clearly the optional subjects in which you wish to be examined; no change in the selection of optional subjects once made will be allowed(i)Optional subjects 2 (two)(a)----------(b)----------Declaration to be signed by the candidateI hereby declare that the statement in this application are true to the best of my knowledge and belief.DateSignature.....For the use of Government servants onlyCertificate by Head of Department of OfficeCertified that Shri.....holds a temporary post/permanent post under the Central/State Government. His character so far as known to me is good and I am not aware of any circumstances which show that he would be unsuitable for any appointment to any of the services/post(s) if successful in the examination.Date.Signature.