PUBLIC SERVICE COMMISSION, WEST BENGAL

I M P O R T A N T A N N O U N C E M E N T

PRELIMINARY WRITTEN TESTS for recruitment to the posts of Assistant Master in Bengali/Physics/Chemistry/History/Life Science/Geography (Vide Advt.No. 12/2010) and Assistant Master in English (vide Advt. No. 4/2010) and Assistant Mistress in Life Science/Geography/English(Vide Advt. No. 12/2010) and Screening Test for Library Assistant (Vide Advt. No. 4/2010) will be held on 26th, 27th March and 2nd April, 2011.

The details regarding dates, time, venues and syllabus of Examinations are displayed at Commission's Enquiry and may be obtained through the Commission's website at http://www.pscwb.org.in

Admit Cards are being despatched by post. The candidates who will not receive the same may contact personally at the Commission's office at 161-A, S.P. Mukherjee Road (5th floor), Kolkata – 26 on the 23rd & 24th March, 2011 for Tests on 26th & 27th March, 2011 and 30th & 31st March, 2011 for Tests on 2nd April, 2011 between 11:00 a.m. and 3:30 p.m. for duplicate Admit Cards.

"MOBILE PHONES ARE BANNED IN THE CAMPUS OF THE EXAMINATION HALLS"

SCHEDULE FOR PRELIMINARY WRITTEN TESTS FOR RECTT. TO DIFFERENT POSTS OF ASSISTANT MASTER/MISTRESS IN WEST BENGAL SUBORDINATE EDUCATIONAL SERVICE AND LIBRARY ASSISTANT IN THE WEST BENGAL LEGISLATIVE ASSEMBLY

Date	Time	Sl. No.	Advertisement No.	Subjects	Medium	Venue	Range of Appln. Nos.
26.03.2011 (Saturday)	**10:00 a.m. to 1:00 p.m.**	1.	12(3h)/2010	Assistant Master in Bengali	English	Examination Hall at Lake Avenue	All Candts.
		2.	12(3b)/2010	Assistant Master in Physics	English	Examination Hall at S.P. Mukheree Road	All Candts.
	2:00 p.m. to 5:00 p.m.	3.	12(3j)/2010	Assistant Master in Chemistry	English	Examination Hall at Lake Avenue	All Candts.
		4.	12(3g)/2010	Assistant Master in History	English	Examination Hall at S.P. Mukheree Road	All Candts.
27.03.2011 (Sunday)	**10:00 a.m. to 1:00 p.m.**	5.	12(1a)/2010	Assistant Mistress in Life Science	Bengali	Asutosh College	1-350
		6.	12(1a)/2010	Assistant Mistress in Life Science	Bengali	Institute of Education for Women	351-600
		7.	12(1a)/2010	Assistant Mistress in Life Science	Bengali	Examination Hall at Lake Avenue	601 & Above
		8.	12(3a)/2010	Assistant Master in Life Science	English	Examination Hall at S.P. Mukheree Road	All Candts.
	2:00 p.m. to 5:00 p.m.	9.	12(1c)/2010	Assistant Mistress in Geography	Bengali	Institute of Education for Women	1-300
		10.	12(1c)/2010	Assistant Mistress in Geography	Bengali	Examination Hall at Lake Avenue	301-600
		11.	12(1c)/2010	Assistant Mistress in Geography	Bengali	Examination Hall at S.P. Mukheree Road	601 & Above
		12.	12(3f)/2010	Assistant Master in Geography	English	Examination Hall at S.P. Mukheree Road	All Candts.

P. T. O.

SCHEDULE FOR PRELIMINARY WRITTEN TESTS FOR RECTT. TO DIFFERENT POSTS OF ASSISTANT MASTER/MISTRESS IN WEST BENGAL SUBORDINATE EDUCATIONAL SERVICE AND LIBRARY ASSISTANT IN THE WEST BENGAL LEGISLATIVE ASSEMBLY

Date	Time	Sl. No.	Advertisement No.	Subjects	Medium	Venue	Range of Appln. Nos.
02.04.2011 (Saturday)	**10:00 a.m. to 1:00 p.m.**	13.	12(1b)/2010	Assistant Mistress in English	Bengali	Examination Hall at Lake Avenue	1-308
		14.	12(1b)/2010	Assistant Mistress in English	Bengali	Examination Hall at S.P. Mukheree Road	309 & above
		15.	4(12a)/2010	Assistant Master in English	Bengali	Examination Hall at S.P. Mukheree Road	All Candts.
	2:00 p.m. to 5:00 p.m.	16.	4(23)/2010	Library Assistant in the W.B.L.A.		Examination Hall at Lake Avenue	1-308
		17.	4(23)/2010	Library Assistant in the W.B.L.A.		Examination Hall at S.P. Mukheree Road	309 & above

সরকারী বিদ্যালয়সমূহে বাংলা সহ-শিক্ষক / সহ-শিক্ষিকা নিয়োগের জন্য প্রাথমিক লিখিত পরীক্ষার পাঠ্যসূচী

পূর্ণমান — ১০০

১। বাংলাসাহিত্যের ইতিহাস ১৫+১৫=৩০

'ক'-গুচ্ছ : প্রাচীন ও মধ্যযুগ — প্রধান প্রধান কবিদের যুগ, জীবন ও রচনা সম্পর্কে বিশেষ জ্ঞান।

'খ'-গুচ্ছ : আধুনিক যুগ — ফোর্ট উইলিয়ম কলেজ, রামমোহন, বিদ্যাসাগর, বঙ্কিমচন্দ্র, মধুসূদন, দীনবন্ধু, দীনবিন্দু ঘোষ, রবীন্দ্রনাথ, দ্বিজেন্দ্রলাল, শরৎচন্দ্র, প্রমথ চৌধুরী, সত্যেন্দ্রনাথ দত্ত, নজরুল এবং বিশ্বযুদ্ধকালীন ও বিশ্বযুদ্ধোত্তর কালের কবি, কথাশিল্পী, নাট্যকার ও প্রাবন্ধিকদের সম্বন্ধে সাধারণ পরিচিতি।

২। বাংলা ভাষার ইতিহাস ১৫+১৫=৩০

'ক' গুচ্ছ : বাংলা ভাষার ইতিবৃত্ত — নব্যভারতীয় আর্যভাষার বিবর্তন ধারায় বাংলা ভাষার উদ্ভব, বিকাশ ও আধুনিক কাল পর্যন্ত তার বিবর্তন সম্বন্ধে বিশেষ জ্ঞান

'খ' গুচ্ছ : বাংলা ভাষা বিজ্ঞান — শুদ্ধলাপাঠ্য ব্যাকরণ সম্বন্ধে সাধারণ জ্ঞান।

৩। ভাবার্থ অথবা সার সংক্ষেপ — দৃষ্টি বিষয়ের যে কোন একটির উত্তর দিতে হবে। ১৫

৪। প্রবন্ধ রচনা (অনধিক ৬০০ শব্দ) — সাহিত্য, সংস্কৃতি ও সমাজজীবনের সমসাময়িক প্রকৃতি সংক্রান্ত নিবন্ধ (ব্যক্তি-কেন্দ্রিক নয়)। ২৫

PRELIMINARY WRITTEN TEST FOR RECRUITMENT TO THE POST OF ASSISTANT MASTER/MISTRESS IN PHYSICS (BENGALI MEDIUM) IN THE WEST BENGAL SUBORDINATE EDUCATIONAL SERVICE

Full Marks : 100 **Time : 3 Hours**

S Y L L A B U S

1. Classical Mechanics :

Newton's laws of motion; Mechanics of a single particle; Rotational Motion; Gravitation.

2. General Properties of matter :

Elasticity; Surface Tension; Viscosity.

3. Vibrations and Waves :

Simple Harmonic Motion; General Wave Equations; Vibrations of Strings.

4. Heat :

Kinetic theory of gases; Equations of state; Brownian Motion.

5. Thermodynamics :

First and second Laws Entropy, Thermodynamic Functions.

6. Optics :

Geometrical Optics; eye pieces; physical optics; Interference; Diffraction, resolving power, polarisation.

7. Electricity and Magnetism :

Magnetic effects of currents
Varying currents
Alternating currents.

8. Electronics :

P – n Junctions, transistors and uses.

9. Modern Physics :

Bohr's theory
Millikan's experiment
X-rays, Moseleys Laws, Bragg reflection
Radio-activity, alpha, beta, gamma rays.

ASSISTANT MASTER/ASSISTANT MISTRESS IN CHEMISTRY IN THE WEST BENGAL SUBORDINATE EDUCATIONAL SERVICE

S Y L L A B U S

Time : 3 Hours **Full Marks : 100**

Group - A
Organic Chemistry

1. Bonding in organic molecules :

σ and π bonds, bond distance, bond angle, and bond energy. Dipole moment of organic molecules. Inductive, resonance and hyperconjugative effect. Hydrogen bond. Tautomerism, Aromaticity, Huckel's rule, aromatic, non aromatic and anti aromatic compounds. Effects of structure, substituents and solvent on acid and base strength.

2. Stereo Chemistry of carbon compounds :

Elements of symmetry. Chirality, Eanantiomerism and diastereo isomerism. Optical purity, racemization, resolution. Projection structure of stereoisomers – Fischer, Sawhorse, Newman, Flying – wedge DL, RS and EZ notations. Examples of enantiotopic and diastereotopic ligands and faces. Conformations of alkanes (upto 4 carbon), Cyclohexane, dimethylcyclohexanes and 1, 2 – glycols. Stereoisomerism in allenes and biphenyls (excluding RS notation).

3. Reaction mechanism :

General methods of study of mechanism of organic reactions illustrated by examples – use of isotopes, cross-over experiement, intermediate trapping, kinetic studies, stereochemistry. Energy profile diagrams of simple organic reactions, thermodynamic and kinetic control of reactions.

4. Reactive intermediates :

Generation, geometry, stability and reactions of carbocations, carbanions, free radicals, carbenes and benzynes.

5.
- **a) Substitution reaction** – S_N1 , S_N2, S_Ni and NGP. Electrophilic and nuclephilic substitution of aromatic compounds.
- **b) Elimination reaction** – E_1, E_2, E_1CB and Syn - elimination.
- **c) Addition reaction** – electrophilic addition to C=C and C≡C, nucleophilic addition to C=O, conjugated olefins and carbonyls.
- **d) Rearrangement reaction :** Pinacol-pinacolone, Hofmann, Beckmann, Claisen, Baeyar-Villiger, Favorskii.

6. Chemistry and mechanism of :

Aldol condensation, Claisen condensation, Perkin reaction, Knoevenagel reaction, Wittig reaction, Michael reaction Arndt Eistert reaction, Acyloin condensation, Friedel-Craft reaction and Von Richter reaction.

7. Synthetic uses of reagents :

OsO_4, HIO_4, $Pb(OAc)_4$, SeO_2, $LiAlH_4$, $NaBH_4$, B_2H_6, NBS, PCC, Na or Li in liq-NH_3, Alkyl lithium, Lithium dialkylcuprate, Lithium diisopropylamide, Aluminium isopropoxide.

8. IUPAC nomenclature. Synthesis and reactions of alkanes, alkenes, alkynes, alkyl halides, ethers, alkanols, alkanals, alkanones, alkanoic acids, esters, amides, nitriles and amines.

9. Pericyclic reaction :

Definition and classification. FMO approach of electrocyclic, cycloaddition reactions and sigmatropic H-shifts.

10. Basic principles and applications of UV, IR, and NMR spectroscopy of simple organic molecules. Road-map problems related to spectroscopy and organic reactions.

Contd…P/2

Group - B
Inorganic Chemistry

1. Chemical bonding :

a) Ionic bonding ;
polarizing power and polarizability, ionic potential, Fajan's rules.

b) Covalent bonding :
Lewis structures, VSEPR theory, Valence Bond theory (Heitler-London approach), Directional character of covalent bonds, hybridization, Bent's rule, concept of resonance. Molecular orbital theory (MO) elementary approach – sigma and pi bonds, multiple bonding, MO diagrams of simple homonuclear and heteronuclear diatomic molecule, simple triatomic molecules like BeH_2, CO_2, BF_3, bond order, bond energy.
Shapes of the molecules and ions containing lone pairs and bond pair.

c) Weak Chemical forces :
Vander Waals forces; Hydrogen bonding, Effects of chemical forces on physical properties.

d) Metallic bonding :
Qualitative ideas of band theory, Conducting, Semiconducting and insulating properties.

2. Chemical periodicity :

a) Periodic Table :
Classification of elements on the basis of electronic configuration, Modern periodic Table (current IUPAC version).

b) Atomic and ionic properties :
Effective nuclear charge, screening effect, Slater rules, atomic radii, ionic radii, covalent radii, ionization energies, electron affinity, electro-negativity, inert pair effect.

3. Acid-Base Concepts :
Bronsted and Lowry's concept, Lewis concept, HSAB principle.

4. Non-aqueous solvents :
Liquid ammonia and liquid sulphur dioxide.

5. Coordination Compunds :

Double and complex salts, Werner's theory, Chelate complexes, nomenclature of complex compound, stereo chemistry and coordination number, isomerism of coordination compounds – geometrical and optical isomers in respect of coordination numbers 4 and 6.

Bonding in coordination compounds : valence bond descriptions and its limitations, crystal field theory (elementary). Crystal field stabilization energies in weak and strong field cases mainly of octahedral and tetrahedral complexes.

6. Magnetism and Colour :

Origin of magnetic moments, paramagnetism, diamagnetism, ferro and antiferromagnetism, orbital and spin contributions, spin only moments of $3d^n$ ions.

Theoretical aspects of d-d spectra (elementary idea) selection rules for spectral transitions.

7. Organo metallic compounds :

Definition and classification, Metal-Carbon bonded complexes of transition metals – their preparation, properties and stability. Application of 18 electron rule to carbonyl, nitrosyl and cyanides of transition metals.

8. The Chemical elements and its compounds :

(a) (i) Group trends and periodic trends of effective nuclear charge, atomic and ionic radii, ionisation energies, electron affinity and electronegativity with respect to s-, p-, d- block elements.

(ii) General trends of variation of electronic structures, elemental forms, oxidation states, catenation and properties of important class of compounds such as oxides, oxyacids, halides and formation of complex compounds with respect to the following groups of **(i)** Li, Na, K **(ii)** Be, Mg, Ca, Sr and Ba **(iii)** B, Al, Ga, In, Tl **(iv)** C, Si, Ge, Sn, Pb **(v)** N, P, As, Sb, Bi **(vi)** O, S, Se, Te **(vii)** F, Cl, Br, I. and **(viii)** Chemistry of rare gases.

9. Extraction/Preparation/Isolation of the following elements :

(i) Extraction and purification of Li, Mg, Sn, Pb.
(ii) Extraction and purification of Ti, V, Cr, Mn, Pt, Ag, Au, U.

10. Radioactivity and Atomic structure :

(a) Radioactivity : Radioactive decay, half-life, Average life of radio elements, radioactive equilibrium Group displacement law, isotopes (uses of isotopes), isobars and isotones.

(b) Atomic nucleus : Fundamental particles of atomic nucleus, nuclear stability, neutron-proton ratio, nuclear binding energy. Nuclear forces.

Transmutation of elements, fission, fusion reactions.

(c) Extra nuclear structure : Bohr's theory and its limitations, Sommerfield's modification, spectrum of H-atom.

Contd…P/3

Group - C
Physical Chemistry

1. Quantum Theory :

Black-body radiation and Planck's Law, photo-electric effect and photon concept of light, wave particle duality, de Broglie hypothesis, Heisenberg uncertainty principle, Schrodinger's wave equation (time independent), Interpretation of wave function particle in one-dimensional box, quantum numbers, hydrogen atom wave functions separation of radial and angular part, shapes of s, p and d orbitals.

2. The Gaseous State :

Kinetic theory of gases, equation of state of real gases, intermolecular interactions, liquefaction of gases and critical phenomena, Maxwell's distribution of speeds, features of kinetic energy distribution, mean speed, root mean square speed, most probable speed, principle of equipartition of energy, specific heats of gases, intermolecular collisions, collision number and mean free-path, viscosity of gases and mean free-path.

3. The Liquid State :

Nature of liquid state, surface tension, capillary rise, spreading of liquid over other surface, temperature dependence of surface tension. Measurement of surface tension, viscosity of liquids, origin of viscosity of gases and liquids, determination of viscosity coefficient, Poiseuille's equation, temperature dependence of viscosity coefficients of gases and liquids.

4. Solid State :

Forms of solids, laws of crystallography, crystal lattices, crystal systems and crystal classes, Bragg's Law, X-ray diffraction by crystals, crystal structure of NaCl, KCl, structure of diamond and graphite, Lattice energy, Born-Haber Cycle, Einstein's equation for heat capacity of solids, Debye equation (elementary concept).

5. Thermodynamics :

a) Thermodynamic systems, states, processes, work, heat and internal energy, first law of thermodynamics, work done and heat absorbed in different types of processes. Reversible and irreversible process, energy and enthalpy changes in various processes and their temperature dependence.

b) Second law of thermodynamics, Carnot's cycle and Carnot's theorem, absolute scale of temperature, entropy as a state function, entropy change in various processes, entropy – reversibility and irreversibility, Free-energy functions, criteria for spontaneity and equilibrium, physical concept of entropy, entropy and probability.

c) Application thermochemistry, laws and their applications, Kirchoff's relation, Maxwell relation, $C_p - C_v$ relation Joule-Thomson expansion, thermodynamic equation of state, Gibbs-Helmholtz equation, Clausius-Clapeyron relation and phase transition, colligative properties of dilute solutions.

6. Reaction equilibrium :

a) Homogeneous equilibrium, relationship K_p ,K_c ,K_x . Van't Hoff's reaction isotherm (deduction using chemical potential). Temperature dependence of equilibrium constant, La-Chateleer's principle, response of equilibria to different conditions.

b) Ionic equilibrium, solubility product, dissociation constant of weak acids, ionic product of water, pH, buffer, indicators, hydrolysis of salt solutions.

7. Electrochemistry :

a) Electrical conductance, weak and strong electrolytes, variation of equivalent conductance with dilution, Kohlrausch's law, transport number, determination of transport number by moving boundary method, theory of strong electrolytes, applications of conductance measurements.

b) Galvanic cells, thermodynamic derivation of E.M.F. of chemical cells with examples, Transference cell, liquid junction potential and salt bridge, measurement of e.m.f. of cells and its applications, fuel cells and batteries.

8. Chemical Kinetics :

Concentration dependence of rate of reaction, differential and integral rate equations for zeroth, first, second order reactions, rate equations involving reverse, parallel, consecutive and chain reactions, effect of temperature and pressure on rate constant, collision and transition state theories of reaction rates.

9. Photo Chemistry :

Absorption of light, Lambert-Beer's law, laws of photochemistry, quantum yield, some typical photochemical reactions, HI-decomposition, CH_3CHO-decomposition, $H_2 - Br_2$ reaction, photosensitized reaction, Fluorescence and phosphorescence.

10. Surface phenomenon and Catalysis :

Adsorption from gases and solutions on solid adsorbents, adsorption isotherms – Langmuir and B.E.T. isotherms, determination of surface area. Gibbs adorption isotherms, surfactants, micelle formation. Characteristics and mechanism of homogeneous and heterogeneous catalytic reactions Enzyme catalysis.

SYLLABUS FOR PRELIMINARY WRITTEN TEST FOR RECRUITMENT TO THE POSTS OF ASSISTANT MASTER/MISTRESS IN HISTORY IN THE WEST BENGAL SUBORDINATE EDUCATIONAL SERVICE

Time : 3 Hours **Full Marks : 100**

The Questions will be of Honours Standard

***** (Answer any 5 Questions taking at least one from each group)**

G R O U P - A

ANCIENT HISTORY

1. Ancient India (From rise of Magadhan imperialism to Harshavardhan).

2. Ancient China (Economic, Social and Cultural achievements under Tang & Sung Emperors).

3. Ancient Egypt (An outline of ancient Egypt with special reference to Pyramids, Mummies, Scripts, Trade & Commerce).

4. Ancient Greece (Cultural achievement under the Athenian Empire & Spartan constitution).

5. Ancient Rome (A general survey of ancient roman empire-building, Roman Law & System of Government).

G R O U P - B

MEDIEVAL HISTORY

1. Medieval Europe (Feudalism, Charlemagne, Empire vs Papacy & Crusades).

2. Medieval India (1206-1707 AD).

G R O U P - C

MODERN INDIA (1757-1947)

G R O U P - D

MODERN EUROPE & WORLD (1789-1945)

PRELIMINARY WRITTEN TEST FOR RECRUITMENT TO THE POST OF ASSISTANT MASTER/MISTRESS IN ENGLISH (BENGALI MEDIUM) IN THE WEST BENGAL SUBORDINATE EDUCATIONAL SERVICE

Full Marks : 100 **Time : 3 Hours**

S Y L L A B U S

1. A knowledge of the history of English Literature from 1340 to 1980. (One question out of three is to be attempted). **20**

2. A close acquaintance with the following works which are prescribed for detailed study :-

a)	Shakespeare	:	Macbeth
b)	Lamb	:	The Superannuated Man
c)	Shelley	:	Ode to the West Wind
d)	Keats	:	Ode to a Nightingale
e)	Tennyson	:	Ulysses
f)	Browning	:	My Last Duchess
g)	Eliot	:	Preludes

(Four questions each carrying 5 marks are to be attempted)

3. Translation from Bengali into English (passage of approx. 125 words). **20**

4. Precis writing (of a passage containing approx. 300 words) **20**

5. Essay writing (to be written in about 350 words - one essay out of four is to be attempted) **20**

SYLLABUS FOR GEOGRAPHY FOR RECRUITMENT TO THE POST OF ASSISTANT MASTER/MISTRESS IN GOVERNMENT SCHOOLS IN THE WEST BENGAL SUBORDINATE EDUCATIONAL SERVICE

Time : 3 Hours **Full Marks : 100**

S E C T I O N - I

A. PHYSICAL GEOGRAPHY

1. Origin of Continents and Ocean Basins; Continental Drifts and Plate Tectonics; Epirogenic and Orogenic movements; Different kinds of Landforms and their origin; Volcanoes and Volcanic features; Earthquakes.

2. Earth's Crust - general properties; Modes and origin of igneous, sedimentary and metamorphic rocks.

3. Weathering and Mass wasting.

4. Evolution of Landforms under different Cycles of Erosion - fluvial, glacial, Aeolian, marine and karst; Evolution of drainage system and its adjustment to structure.

5. Elements and factors of climate; Distribution of temperature and pressure belts over the Earth.

6. Airmass, Planetary Winds and Local Winds.

7. Precipitation - origin and types; Cyclones and Anti-Cyclones.

8. Classification of World Climates.

B. ENVIRONMENTAL GEOGRAPHY

9. Concepts of Environment, Ecology and Ecosystem; Natural and Man-made Ecosystems; Concepts of Bio-Diversity; Environmental Pollution, Degradation and Conservation; greenhouse effects and global Warming; Man-Environment relationships.

S E C T I O N - II

C. ECONOMIC GEOGRAPHY

10. Geographical factors favourable for the localization of the following major economic activities :

a) Lumbering,

b) Agriculture (Intensive Subsistence farming, Extensive Commercial farming and Plantation agriculture),

c) Fishing,

d) Mining (Coal, Petroleum and Iron ore - their distribution and utilization),

e) Power resources (conventional and Non-conventional),

f) Manufacturing (Iron & Steel, Aluminium, Cotton Textile and Jute industries).

D. HUMAN GEOGRAPHY

11. Concepts of Geographical Environment, Natural Regions of the Earth; - their characteristics; Role of Climate, Drainage and Relief in localizing human activities with particular reference to food gathering, pastoralism and subsistence agriculture.

12. Settlement Patters - Rural and Urban; Hierarchy of Urban Settlements; Growth and distribution of World Population.

E. GEOGRAPHY OF INDIA

13. Structure, Relief, Drainage, Climate, Soils and Natural Vegetation.

14. Irrigation and River Valley Projects; Agriculture and Green Revolution.

15. Mineral Resources and industrial Regions.

16. Population - growth and distribution, age-sex composition, migration, urbanization and regional disparities.

SYLLABUS FOR PRELIMINARY WRITTEN TEST FOR RECRUITMENT TO THE POST OF ASSISTANT MASTER/ASSISTANT MISTRESS IN LIFE SCIENCE IN THE WEST BENGAL SUBORDINATE EDUCATIONAL SERVICE

Time : 3 Hours **Full Marks : 100**

S U B J E C T : B O T A N Y

Candidates will have to answer five questions from the following modules each having 20 Marks.

Module – 1 : The Gateway of Life Sciences :

1. The science of Life - Definition of Life; Origin and Evolution of Life on the Earth (overview).

2. Basic Technology associated with the study of Botany - Concept of simple, compound and electron microscopy; cell fractionation and centrifugation; colorimetry; tracer techniques.

3. Cell Structure and Function - Differences between prokaryotic and eukaryotic cells; ultra structural components and functions of the cell wall, plasma membrane, nucleus, mitochondria, plastids, endoplasmic reticulum, Golgi bodies, ribosomes, lysosomes and peroxisomes.

Module – 2 : Cell Biology and Genetics :

1. Morphology of chromosome; autosomes and sex chromosomes; differences between euchromatin and heterochromatin; basic methods of chromosome study; concept of gene; physical structure and chemical properties of nucleic acids (DNA and RNA).

2. Cell cycle; cell division (mitosis and meiosis) in plants.

3. Mendel's laws and experiments of heredity; linkage and crossing over; concept of mutation and mutagens; polyploidy.

Module – 3 : pH, Buffer, Water and Biomolecules :

1. Concept of pH; pH scale; Justification for pH value (7.0) of pure water; concept of buffer.

2. Diversification in structures of different carbohydrates (monosaccharides, disaccharides and polysaccharides); differences between reducing and non-reducing sugars.

3. Concept of structural, functional aspects and basic classification of proteins and lipids; types and classification of vitamins.

Module – 4 : Plant Physiology :

1. Concept of cell physiology - imbibition, diffusion, osmosis and plasmolysis; ascent of sap; translocation of solutes; types of transpiration and mechanism of stomatal transpiration; types of micro and macro elements required by plants.

2. Phases and factors of plant growth; precursor(s), structure and physiological roles of auxins, gibberellins, cytokinins, ethylene and abscissic acid.

3. Concept of photoperiodism and vernalization; physical and chemical nature of phytochrome; mechanism of seed dormancy and germination.

Module – 5 : Biochemistry :

1. Enzymes – Definition; basic architecture (holoenzyme, apoenzyme, coenzyme, cofactor); properties; nomenclature and classification (6 major classes with examples indicating name and reaction at least one for each class) according to IUBMB; concept of enzyme action.

2. Respiration - Definition; differences between aerobic & anaerobic respiration; metabolic pathways (by means of schematic presentation only) of glycolysis, oxidative decarboxylation of pyruvic acid, TCA cycle; concept of electron Transport System & Oxidative Phosphorylation; concept of RQ.

3. Photosynthesis - Definition; major photosynthetic pigments; concept of the spectrum of visible light; Hill reaction; concept of light-dependent & light-independent phases; Z-scheme of light reaction; biosynthetic reactions (by means of schematic presentation only) of CO_2 - fixation in C_2, C_3 and C_4 cycles/pathways.

Contd…P/2

SUBJECT : BOTANY

Module – 6 : Molecular Biology and Plant Biochnology :

1. Gene structure and function; genetic code; concept of DNA replication; concept of protein synthesis (outlines only).

2. Outlines of recombinant DNA technology (preliminary concept of vectors, plasmid, restriction enzymes, DNA and CDNA libraries, nucleic acid sequencing and PCR).

3. Definition and agricultural application of Plant Biotechnology; outlines of Plant tissue culture and its applicationsl concept of totipotency; basic concept and objectives of cloning and transgenic plants.

Module – 7 : Microbiology :

1. Concept of microbial world; structure of a typical phage virus; structure of a bacterial cell.

2. Basic types of bacterial on the basis of morphological features; concept and difference between Gram-positive and Gram-negative bacteria; reproduction of bacteria.

3. Concept of nitrogen-fixing bacteria; concept of pathogenic bacteria; concept of antibiotics.

Module – 8 : Plant morphology and Anatomy :

1. Root-Morphology and functions of tap and adventitious roots; different modified roots; Stems-Morphology and functions of stem different modified stems; Leaf-morphology and functions of leave phyllotaxy, stipule, modified leaves.

2. Flower – Different parts of a typical flower, flower as a modified shoot, principal types of inflorescences, types of lower (regular irregular, actinomorphic and zygomorphic), morphology and androcium and gynocium; Fruit – definitions and types; basic morphology of seed.

3. Plant Anatomy - Concept and types of meristematic and permanent tissues; epidermal, ground and vascular tissue systems; types of stele; primary anatomical structures of root (monocot and dicot), stem (monocot and dicot) and leaf (dorsiventral and isobilateral).

Module – 9 : Plant Taxonomy :

1. Taxonomy - Definition, importance, relations of taxonomy with classification of plant groups.

2. Rules of Binomial nomenclature; basic types of classification (artificial, natural and phylogenetic).

3. Classification of plant kingdom; salient features of different plant groups (algae, fungi, bryophyte, pteridophyta, gymnosperms and angiosperms).

Module – 10 : Plant groups :

1. Life cycle pattern with special reference to alteration of generations in thallophyta (algae and fungi) and Bryophyta.

2. Life cycle pattern with special reference to alternation of generations in Pteridophyta and Gymnosperms.

3. Morphological description pattern of any angiospermic plant for its taxonomic identification; economically important angiosperms - bamboo, jute, lemon and tea.

Contd…P/3

S U B J E C T : Z O O L O G Y

Section – I : Marks : 30 (Three Questions, Ten Marks each)

1. Classification of Protozoa up to Phyla.

2. Structural organization and reproduction in Paramoecium.

3. Classification upto subclass ; Porifera to Echinoderm.

4. Coral reef : Types and formation.

5. Locomotion in Protozoa.

6. Canal system in Porifera.

7. Nervous system in Mollusca

8. Respiration in Arthropoda.

9. Affinities in Onycophora, Balanoglossus.

10. Classification of Chordata upto order.

11. Structural organization of Lates.

12. Axolotl Larva and its importance.

13. Difference between poisonous and non-poisonous snakes.

14. Migration of birds.

15. Dentititon in mammals.

16. Comparative anatomy of Heart, Aortic arches, and Kidney in Vertebrates.

Section – II : Marks : 20 (Two Questions, Ten Marks each)

1. Principles of optical and electron microscopes.

2. Ultra structure and functions of Plasma memberane, Mitrochondria, golgi complex, Endoplasmic reticulum and Lysosome.

3. Physico-chemical properties of DNA and RNA, Nucleosome concept.

4. Sex determination in Drosophila and Man.

5. Replication, Transcription and Translation.

6. 3-point gene mapping in diploid.

7. Inborn metabolic errors : Albinism, Haemophilla, thalassaemia.

8. Gametogenesis.

9. Fertilization.

10. Histological organization of Pituitary, Thyroid, Pancreas and Liver.

Contd…P/4

SUBJECT : ZOOLOGY

Section – III : Marks : 15 (One Question, Fifteen Marks)

1. Geological time scale.

2. Origin of life.

3. Origin and Evolution of Horse.

4. Theories of Evolution : Darwinism & Neo Darwinism.

5. Hardy-Weinberg principles (application in autosomomal alleles).

Section – IV : Marks : 20 (Two Questions, Ten Marks each)

1. Taxonomy, Systematics and classification.

2. Mode of speciation.

3. Biological species concept.

4. Concept of Energy flow, Food chain and food Web.

5. Ecological succession.

6. Concept of biodiversity : Types of biodiversity, biodiversity and human welfare.

7. Life cycle, Pathogenecity, clinical features and control of : Taenia, Ascaris, Plasmodium, Leishmania and Wuchereria bancrofti.

Section –V : Marks : 15 (Two Questions, 7½ (Seven and Half) Marks each)

1. Structure of mammalian nephron and mechanism of Urine formation.

2. Propagation of nerve impulse.

3. Transport of CO_2 and O_2 in mammals.

4. Structure of eye and mechanism of vision in mammals. Structure of ear and mechanism of hearing in mammals.

5. Aquaculture : Induced breeding in carp culture. Fresh water and brakish water prawn culture, Pearl culture.

6. Sericulture : Mulbery silk wom culture; diseases of silk worm and their control.

7. Apiculture : Apiculture technique; diseases of honey bees and their control.

Contd…P/5

SUBJECT : PHYSIOLOGY

1. Units of Hyman Systems : Structure – function relationship of cell and tissues.

2. Basic Biophysical Principles : pH, Osmosis, buffers, Gibb's Donnan equilibrium, eloectrophoresis.

3. Conservation of matter and erergy in human systems : Digestion, Elementary Biochemistry and metabolism, vitamins and minerals principles of nutrition, nutritional deficiencies, nutrition and health, enzymes and isozymes, inborn errors of metabolism.

4. Blood and Body fluids : Functions of blood, Hemoglobin, Plasma proteins, Erythropoisis, Coagulation of blood, Blood-groups, Blood transfusion - rational use and transfusion related diseases. Basic principles of immunology - auto immune diseases.

5. Heart & Circulation : Structure & functions of heart, properties of cardiac muscle, origin & spread of cardiac impulse, Cardiac cycle, Cardiac output - regulation & determination, innervation of heart, reflexes, regulation of circulation, Electrocardiography, Non invasive cardiac assessments.

6. Respiratory System : Basic physiology, carriage of oxygen & carbon dioxide, Lung volumes & capacities, regulation of respiration, High altitude and under water physiology.

7. Renal Physiology : Structure & functions of nephron, formation of urine, micturition, non excretory functions of Kidney, dialysis, artificial Kideney.

8. Nerve-Muscle Physiology : Structure & functions of muscles & nerve, classification of nerve fibres, different types of muscles, neuromuscular junction, N-M transmission, synaptic transmission, origin and propagation of nerve impulse, degeneration and regeneration in nerve fibres.

9. Nervous System : Gross organization, tracts - ascending and descending, reflex arc, classification of reflex - properties, autonomic nervous system, functions of sympathetic & para-sympathetic system, Higher funcitions of CNS – sleep, memory, learning.

10. Sensory physiology : vision - structure and functions - specially of retina, colour vision, accommodation, defects of vision. Olfaction, gestation and audition - noise and its effects.

11. Skin and Body temperature regulation : Basic physiology.

12. The Endocrine System : Structure of endocrine glands, Hormone classification, different hormones - their functions : hypothalamus, pituitary, thyroid, parathyroids, pancreas, adrenal cortex and medulla Diseases associated with hypo and hyper secretion of hormones.

13. Reproductive physiology : Histology of male and female reproductive system, menstrual cycle - hormonal regulation, ovarian and testicular hormones, Pregnancy, Placenta - formation and function, lactation, contraceptives.

14. Basic principles of Work Physiology & Ergonomics : Static and dynamic work, PFI, doping, role of anthropometry, somatotyping, Role of ergonomics in industry and agriculture. Exercise and Health.

15. Environmental Physiology : Pollutants and pollution, classification of pollutant according to physiological mechanism of action, Bio-transformation, dose-response curves/relationship, teratogens, mutagens, neurotoxins, corrosive agents, Heavy metal toxicity, Pesticidal Hazards.

16. Social Physiology : Basic principles, mass immunizations, ORS, Safe drinking water, communicable and non-communicable diseases.

SYLLABUS OF SCREENING TEST FOR RECRUITMENT TO THE POST OF LIBRARY ASSISTANT UNDER THE WEST BENGAL LEGISLATIVE ASSESBLY SECRETARIATE

F U L L M A R K S : 100 **T I M E : 3 HOURS**

STANDARD : BACHELOR DEGREE IN LIBRARY SCIENCE

S Y L L A B U S

A. GENERAL KNOWLEDGE & CURRENT AFFAIRS : 20 Marks

(Objective – Multiple Choice Type) - 20 Questions

B. ENGLISH 10 Marks

i) Précis-writing : 5 Marks

ii) Letter-writing : 5 Marks

C. LIBRARY & INFORMATION SCIENCE : 70 Marks

(Subjective Type)

a) **Foundation of Library and Information Science**

Library as a social institution

- Library-Definition, types, objectives and services
- Changing of character of libraries
- Social functions of libraries
- Censorship and right to information
- Role of libraries in formal and informal education
- Eminent thinkers on libraries.

Different types of libraries – their features and functions

- National and copyright libraries
- Academic libraries – levels, features and functions
- Public libraries – levels, features and functions
- Special libraries – types and functions.

Normative Principles of Library and Information Science

- Basic laws and fundamental laws
- Five laws of library science & their implications.

Library development and cooperation

- Library development in modern India
- Resource sharing and networking.

Public library laws

- Library legislation – need and features
- Library legislation in India
- West Bengal Public Library Acts and Rules.

Library and information profession

- Attributes of profession
- Librarianship as a profession
- Professional ethics
- Professional associations.

b) **Management of Libraries and Information Centres**

Basics of Management

- Concept of management,
- Components of management process
- Organizational structures.

Library house-keeping operations

- Acquisition work
- Technical work
- Maintenance and preservation work
- Circulation work
- Periodicals work.

Library committee, Rules and regulations

- Library committee : types and functions
- Library rules : need, nature, contents and implications.

Library statistics

- Concept of numbers and variables
- Measurement of variables and types of scale
- Types of data sources
- Methods of collections, organization and presentation of data
- Charts and diagrams
- Measurement of central tendency : mean, median and mode
- Application of statistical methods to different activities of library.

Library records, reports

- Different types of records and their importance
- Annual reports : contents, importance and compilation.
- Preservation and Handling of Books & Journals and other documents.

Contd…P/2

c) **Knowledge Organization (Theory)**

Library classification : preliminaries

- Classification : its different meanings
- Purpose and function of library classification
- Features of book classification
- Basic terminology and concepts
- Call number and shelf arrangement
- Notation and its role in classification.

General theory of library classification

- Three planes of work
- Normative principles of classification : canons and principles
- Facet and facet analysis
- Devices for formation and sharpening of foci
- Postulational approach.

d) **Knowledge Organization**

Cataloguing of books and serials by AACR-II (R)

- Personel authors and corporate authors
- Uniform title.

e) **Computer Basics and Application in Libraries**

Use of PC operating System

- Useful DOS Commands
- Windows.

Data communication and network

- Parallel and serial communication
- Data transmission technologies
- Network basics
- Development of Internet.
- Internet Services and their impact on the library

File organization and Database Management System

- Data processing
- File utilities
- Database system
- Building of a database.

f) **Information Sources and Services (Theory)**

Information sources : Preliminaries

- Types of information sources
- Importance of information sources.

Documentary Sources

- Paper based documentary sources : Primary, secondary and tertiary
- Non-paper based documentary sources : Micro publications, films, digital sources etc.

Non-documentary sources

- Human sources
- Institutional sources.

Information users and their needs

- Characteristics of user
- User studies : behavior study, use study, information flows study
- User's need : different approaches
- User survey : different methods.

Users education

- Objectives
- Types of programmes.

Documentation and information services

- Definition and need of reference, documentation and information services.
- Information query and search strategy, query negotiation
- Information service to generalist users : short range and long range
- Information services to specialist users : Documentation list, CAS, SDI, indexing and abstracting services.
- Information systems and centres.
- On-line and off-line information services.

g) **Information Sources and Services (Practice)**

- Study of different types of information sources.
