

NATIONAL UNIVERSITY



First Year Syllabus Department of Zoology

Four Year B.Sc. Honours Course
Effective from the Session : 2013–2014

National University

Syllabus for Four Year B.Sc. Honours Course

Subject: Zoology

Effective from the Session: 2013-2014

Year-wise Papers and marks distribution

FIRST YEAR

Paper Code	Paper Title	Marks	Credits
213101	Introduction to Zoology	100	4

213103	Animal diversity-1: Protozoa and Non-chordates	100	4
213104	Zoology Practical-I	100	4
	Any Two of the following :		
212807	Chemistry-I	100	4
212808	Chemistry Practical-I	50	2
	Or		
212905	Biochemistry-I	100	4
212906	Biochemistry-I Practical	50	2
213007	Botany-I	100	4
213008	Botany-I Practical	50	2
211501	History of the Emergence of Independent Bangladesh	100	4
	Total =	700	28

Detailed Syllabus

Paper Code	213101	Marks: 100	Credits: 4	Class Hours: 60
Paper Title:	Introduction to Zoology			

1. Introduction

Concept, history and scope of Zoology, subdivisions of Zoology, application and importance of Zoology, relation of animals to human.

2. Origin of Life

Spontaneous generation, special creation, cosmic, naturalistic and recent theories.

3. Foundation of Animal Life

Origin of life – major stages in the early evolution of life (e.g. Stage I – Molecular, Stage II – Polymeric, Stage III – Semi-biotic and Stage IV – Cellular); level of organization (protoplasmic, cellular, tissue, organ, organ system, organism, species, individual, population, community, fauna, biota, ecosystem, biosphere and biodiversity).

4. Cells and tissues

Cells and tissues – types, structure and function.

5. Bases of animal classification

Body forms (sexual, developmental and polymorphic), symmetry, polarity of the body, metamerism, tagmatization, appendages (flagella, cilia, antenna, styles, poda, fins, wings and limbs); embryogeny (radial, spiral, determinate and indeterminate cleavages; germinal layers and coelom types); protostomia and deuterostomia; morphometrics and meristics.

6. Classification of Animals

Number of kingdoms; classification up to phyla on the basis of organization, symmetry, coelom and phylogeny; different taxa and Linnaean hierarchy and nomenclature.

7. Methods of Studying Animals

Collection, sampling, transportation, preservation, identification and tagging.

8. Instrumentation in Zoological Studies

Microscopy, configuration, incubation, balance, collecting devices and kits, microtomes, habitat analysis kits, haemocytometer, sphygmomanometer, photography, camera lucida and micrometer.

Paper Code	213103	Marks: 100	Credits: 4	Class Hours: 60
Paper Title:	Animal diversity-1: Protozoa and Non-chordates			

1. General characters with examples of protozoans, mesozoans and parazoans; radiate, acelomate and pseudocelomate animals.

2. Broad classification of the following phyla up to orders with general and diagnostic characteristics of each taxonomic category with examples and affinities:

Sarcomastigophora, Apicomplexa, Ciliophora, Porifera, Cnidaria, Platyhelminthes, Annelida, Nematoda, Mollusca, Arthropoda, Echinodermata and Hemichordata.

3. Type study of the following with their origin, evolution, systematic position, habitats, external morphology, organ systems such as digestion, movement, circulation, respiration, excretion, nervous, reproduction, food and feeding habits, mode of life and development:

- a. Phylum Sarcomastigophora: *Euglena*
- b. Phylum Apicomplexa: *Eimeria*
- c. Phylum Ciliophora: *Paramecium*
- d. Phylum Porifera: *Scypha*
- e. Phylum Cnidaria: *Obelia* and *Aurelia*
- f. Phylum Ctenophora: *Hormiphora*
- g. Phylum Platyhelminthes: *Taenia*
- h. Phylum Nematoda: *Ascaris*
- i. Phylum Acanthocephala: *Macracanthorhynchus*
- j. Phylum Mollusca: *Pila* and *Lamellidens*
- k. Phylum Annelida: *Neanthes*
- l. Phylum Onychophora: *Peripatus*
- m. Phylum Arthropoda: prawn and grasshopper
- n. Phylum Bryozoa/Ectoprocta: *Bugula*
- o. Phylum Brachiopoda: *Lingula*
- p. Phylum Chaetognatha: *Sagitta*
- q. Phylum Echinodermata: *Astropecten*
- r. Phylum Hemichordata: *Balanoglossus*

4. Brief notes on the following including habits, habitats, and food and feeding :

- a. Sarcomastigophora: *Trypanosoma*, *Leishmania*
- b. Ciliophora: *Vorticella*
- c. Porifera: *Spongilla*
- d. Cnidaria: *Physalia*, *Gorgonia*
- e. Ctenophora: *Bero*
- f. Platyhelminthes: *Fasciola*, *Schistosoma*
- g. Nematoda: *Meloidogyne*
- h. Sipuncula: *Sipunculus*
- i. Mollusca: *Dentalium*, *Loligo*, *Octopus*
- j. Annelida: *Chaetopterus*, *Tubifex*
- k. Arthropoda: *Balanus*, *Scolopendra*, housefly, *Drosophila*
- l. Echinodermata: *Echinus*, brittle star

Paper Code	213104	Marks: 100	Credits: 4	Class Hours: 60
Paper Title:	Zoology Practical-I			

1. Study of museum specimens: Representative of all major non-chordate phyla (minimum 50 specimens to be studied).
2. Study of permanent slides: Whole mount, body parts and various cells and invertebrate tissues (at least 20 slides to be studied):

- a. Whole animals – representatives of protozoans, rotifers and arthropods.
 - b. Mouth parts of arthropods.
 - c. Parasites – nematodes and Platyhelminthes.
 - d. Different larval forms of invertebrates.
 - e. Histological slides of invertebrates.
3. Preparation and study of whole mounts of different non-chordates.
4. **External morphology and dissection of various organ systems of earthworm, cockroach, prawn, *Pila* and *Lamellidens*:**
- A. Major dissection**
- a. Circulatory system of earthworm and prawn.
 - b. Nervous system of cockroach, grasshopper, prawn, *Pila* and *Lamellidens*.
 - c. Reproductive systems of earthworm, cockroach, grasshopper and prawn.
- B. Minor dissection**
- a. Digestive system of prawn, *pila* and *Lamellidens*
 - b. Nervous system of cockroach, grasshopper and prawn.
5. **Temporary mounting:**
- a. Brain of earthworm.
 - b. Salivary gland of cockroach.
 - c. Statocyst of prawn.
6. **Study of appendages (locomotory, prehensile, food capture, copulatory, defensive and offensive organs of cockroach and prawn).**
7. **Field visit to observe local invertebrate fauna, or field visit to a farm, and prepare a report on the visit.**

Distribution of Marks for First Year Final Examination

1. Major dissection (dissection 6 + display 2 + drawing and labeling 4) = **12 marks.**
2. Minor dissection (dissection 4 + display 2 + drawing and labeling 2) = **8 marks.**
3. Temporary mount (staining, mounting and display 4 + drawing and labeling 4) = **8 marks.**
4. Spotting of museum specimens – 15 items (identification and classification 1 + diagnostic characteristics 1) = **30 marks.**
 - a. Invertebrate specimens (9 items) $2 \times 9 = 18$ marks.
 - b. Whole mount slides (mouth parts, parasites, larvae) (3 items) $2 \times 3 = 6$ marks.
 - c. Histological slides of non-chordates (3 items) $2 \times 3 = 6$ marks.
5. Appendages (detachment, placement and drawing on a paper sheet 4, labeling 2, displaying 1) = **7 marks.**
6. Report writing on field visit = **15 marks.**
7. Class records = **10 marks.**
8. Viva-voce = **10 marks.**

Books Recommended:

1. C. P. Hickman and L.S Roberts. 1995. *Animal Diversity* Wm C. Brown
2. J.W. Nybakken and J. McClintock 1996. *The Diversity of Invertebrates: Gulf of Mexico Version.* Wm. C. Brown
3. L.S. Dillon. 1976 *Animal Variety: An Evolutionary Account.* Wm. C. Brown Company Publishers. Dubuque. Iowa
4. J.D. Bernal. 1969. *The Origin of Life.* Weidenfeld and Nicolson. London.
5. G.B. Wilson and J. H. Morrison. *Cytology.* Affiliated East-West Press Pvt. Ltd. New Delhi
6. E.E. Rupert and R.D. Barnes 1994. *Invertebrate Zoology* (6th edition). Saunders College Publishing Harcourt Brace College Publishers. New York, London.
7. R.S.K. Barnes P. Calow and P.J.W. Olive, 1993. *The Invertebrates A New Synthesis* Blackwell
8. A.J. Marshal and W.D. Williams. *Text Book of Zoology Invertebrates* (edited the 7th Edition of Text Book of Zoology. Vol. 1, T. J. Parker and W.A. Haswell)
9. P. Wilmer 1990. *Invertebrate Relationship: Patterns in Animal Evolution* CUP.
10. J.W. Knudsen *Biological Techniques. Collecting. Preserving an Illustrating Plants and Animals.* Harper and Row. New York, John Weather Hill Inc. Tokyo.
11. E.O. Wilson, T. Eisner and W.R. Briggs. *Life Cells. Organist Populations.*
12. M. Sleight 1989. *Protozoa and other protists..* Chapman and H. Inc. New York.
13. C. Starr and R. Taggart 1981. *Biology: The Unity and Diversity life.* Wadsworth Publ. Co. Belmont, California.
14. J. W. Nybakken. 1996. *The Diversity of Invertebrates a Laboratory Guide.* Pacific Coast Version. Wm. C. Brown
15. R.P. Dales. 1981. *Practical Invertebrate Zoology.* Blackwell Scientific Publications. Oxford. London
16. R.L Wallace and W.K. Taylor. 1996 *Invertebrate Zoology Laboratory Manual Practice-Hall*
17. mœvZK cÖvwYweÁvb, (†cÖv‡Uv‡Rvqv Ges bb-KW©vUv), mœúv`bv cÖ‡dmi †gvt bvWRg Dwİb, wbmM© cÖKvkbx-evsjv evRvi, XvKv | (2004)

18. cÖvwY%ewPÍ-cÖ_g LÛ-A†gi“` Ûx cÖvYx-2004, Wt ^cb Kzgi `Ë Ges Ab“vb“, gwjK e^av`vm©-evsjv evRvi, XvKv|
19. cÖvwYweÁvb cwiwPwZ-2003, Wt †gvt AvjZvd †nv†mb Ges Ab“vb“, gwjK e^av`vm©, evsjvevRvi, XvKv
20. gvBbi dvBjv, cÖ†dmi Lvb | Wt Kwig
21. cÖvwYweÁv†bi f~wgKv, Avey gvmy`, †Mve jvB†e^aix (cÖvt) wjt, evsjv evRvi, XvKv|
22. cÖvwYweÁv†bi cÖ_g cvV-cÖ†dmi †K. Gg. Avli^{1/2}†Re, Kwei cvewjK†kb |

Paper Code	212807	Marks: 100	Credits: 4	Class Hours: 60
Paper Title:	Chemistry-I			

- Measurements and the Scientific Method:** Measurements, units, SI units, reliability of measurements – precision and accuracy, rounding off, significant figures, significant figures in calculation, mean and median, errors, sources of errors.
- Structure of atom:** Atom, isotopes, atomic masses, mass spectroscopy, atomic nucleus, nuclear binding energy, nuclear reactions – fission and fusion reactions, Bohr atom model, spectrum of atomic hydrogen, dual nature of electron, Heisenberg uncertainty principle, quantum numbers, atomic orbitals, Aufbau principle, Pauli exclusion principle, Hund's rule of maximum multiplicity, electronic configuration of atoms.
- Periodic Table:** Periodic law, periodic table, electronic configurations from the periodic table, periodic properties of the elements such as ionization energies, electron affinity, electro negativity, atomic/ionic radius along a period and down a group, diagonal relationship
- Chemical Bonds:** Chemical bond, types of chemical bonds – ionic, covalent coordination, metallic, hydrogen, polar and non polar covalent bonds, Lewis dot structure, shapes of molecules, VSEPR theory, valence bond theory, hybridization, σ - and δ -bonding in compounds, molecular orbital theory.
- Oxidation and reduction:** redox reactions, writing and balancing redox reactions,
- States of Matter:** Comparison between solids, liquids and gases, changes of state, m.p. and b.p, phase transition, phase diagram of water.
- Gases and Their Properties:** The gas laws, the perfect gas equation, the kinetic theory of gases, Van der Waals equations, real gases, Graham's laws of diffusion and effusion.
- Solutions:** Solubility and intermolecular forces, solubility product, types of concentration units, colligative properties, of solutions, Henry's law, Nernst distribution law.
- Acids and Bases:** Various concepts on acids and bases, conjugate acids and bases, neutralization reactions acid- base strength, pH, acid-base titrations, acid-base indicators, acid-base properties of salts, the common ion effect, buffer solutions, hard and soft acids and bases.
- Chemical Equilibrium:** Reversible reactions and the equilibrium state, the equilibrium law, reaction quotients and equilibrium constants, calculations using K_c , K_p .
Homogeneous and heterogeneous equilibria, the principle of Le Chatelier and Brown.
- Hydrocarbons:** Hydrocarbons, saturated and unsaturated hydrocarbons, alkanes, alkenes, and alkynes, nomenclature of organic compounds- the IUPAC system natural gas, petroleum, petrochemicals.
- Study of different classes of organic Compounds:** Alcohols, aldehydes, ketones, carboxylic acids, esters, amines and amides.

Books recommended:

1. General Chemistry, D. D. Ebbing, Houghton Mifflin Co.
2. Chemistry – The Molecular Nature of Matter and Change, M. Silberberg, WCB /Mc Graw-Hill.
3. Introduction to Modern Inorganic Chemistry, S.Z. Haider, Friends' International.
4. Principles of physical chemistry, M. M. Huque and M. A Nawab, students' publications.
5. Essentials of Physical chemistry, B.S Bahl, G.D Tuli and A Bahl, S. Chand & Co. Ltd.
6. Advanced Organic Chemistry, B.S. Bahl and A Bahl, S. Chand & Co. Ltd.
7. A Level chemistry by C.W. Ramsden
8. Organic Chemistry: T Morrison and R.N Boyed,
9. Fundamental of Organic Chemistry by W Solomons

Paper Code	212808	Marks: 50	Credits: 2	Class Hours: 30
Paper Title:	Chemistry-I Practical			

1. Preparation of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, Mohr's salt and potash alum.
2. Separation and identification of four radicals from a mixture of anions and cations The cations are Pb^{2+} , Cu^{2+} , Cd^{2+} , Al^{3+} , Fe^{2+} , Fe^{3+} , Co^{2+} , Ni^{2+} , Zn^{2+} , Ca^{2+} , Ba^{2+} , Na^+ , K^+ , and NH_4^+ , the anions are NO_3^- , CO_3^{2-} , S^{2-} , SO_4^{2-} , Cl^- , Br^- and I^-
3. Standardization of NaOH solution using standard oxalic acid solution,
4. Determination of Fe^{2+} using standard permanganate solution
5. Iodometric determination of copper (II) using standard Na_2SO_3 solution.]
6. Gravimetric determination of nickel as $\text{Ni}(\text{HDMG})_2$ complex
7. Determination of the enthalpy change for the decomposition of Sodium bicarbonate into Sodium carbonate.
8. Determination of the pH - neutralization curves of a strong acid by a strong base.
9. Investigation of the conductance behaviour of electrolytic solution and applications (acetic acid)
10. Determination of the presence of nitrogen, halogen and sulphur in organic compounds.
11. Identification of the functional groups (unsaturation, alcohol, phenol, carbonyl, aldehyde, ketone, carboxylic acid, aromatic amine, amide and nitro- groups) in organic compound.

Books Recommended:

1. A Text Book of Quantitative Inorganic Analysis, A.I. Vogel, 3rd/4th edition, ELBS and Longman Green & Co. Ltd.
2. A Text Book of Quantitative Inorganic Analysis, A.I. Vogel 3rd/4th edition, ELBS and Longman Green & Co. Ltd.
3. Practical physical chemistry, A Faraday.
4. A Text Book of practical organic chemistry, A.I. Vogel, ELBS edition.

Paper Code	212905	Marks: 100	Credits: 4	Class Hours: 60
Paper Title:	Biochemistry-I			

1. **Acid, base & buffer:** Ion product of water; acid base P^H , P^H indicators, buffer solution and buffer capacity, some biological buffer.
3. **Thermodynamics:** 1st law of thermodynamics, enthalpy, Hess's law, 2nd law of thermodynamics, Entropy, standard states, spontaneous, reversible, irreversible and non-equilibrium reactions steady state.
4. **Cell:** Cell, Sub-cellular particles and structure and their isolation and identification; their functions.
5. **Carbohydrates:** Nomenclature, classification, optical properties, general reactions, colour test and methods of estimation, isolation from natural sources and structure of glucose, fructose, galactose, sucrose, lactose, maltose, starch, glycogen, cellulose, amino sugar. Biological importance of carbohydrates.
6. **Lipids:** Nomenclature, classification. Reactions of fatty acids, sterols and methods of estimation; structure and biological functions of different classes of lipids. Role of phospholipid in membrane formation- the fluid mosaic model.
7. **Amino acids and Peptides:** Structural features, optical activity and classification of amino acids, reaction of amino acids, ionization in solution, isoelectric behaviour, colour tests, isolation of amino acids from protein hydrolyses, peptide bonds and biologically important peptides.
8. **Proteins:** General introduction; biological functions classification based on shape. Structure: different levels of structural organization (in brief). Enzymes-chemical nature; effect of substrate. Temperature and P^H on its activity, Michaels-Menten equation, significance of K_m values and V_{max} ; enzyme inhibition, digestive enzymes.
9. **Nucleosides and nucleotides:** Basic chemistry of nucleosides and nucleotides: polynucleotides.
10. **Vitamins:** Classification, occurrence, deficiency symptoms, biological functions, vitamins as coenzymes.
11. **Hormones:** Definition, Classification, their importance and functions.

Books Recommended:

1. *Lehninger Principle of Biochemistry*
By: David L., Nelson and Michael M. Cox.
Publisher: W.H. Freeman and company, New York.
2. *Biochemistry* By: Lubert Stryer.
Publisher: W.H. Freeman and company, New York.
3. *Biochemistry*
By: Donald Voit and Juldith Voit.
Publisher: John Viliy & Sons.
4. *Cell and Molecular biology*
By: Gerald Karp.
Publisher: John Viliy & Sons.

Paper Code	212906	Marks: 50	Credits: 2	Class Hours: 30
Paper Title:	Biochemistry-I Practical			

- a) Preparation of standard solution and standardization of HCL.
- b) Estimation of calcium in biological sample.
- c) Determination of ascorbic acid content of a biological sample.
- d) Color tests for bio-molecules.

- e) Determination of lactose content of milk.
- f) Determination of phosphorus content of the supplied solution.

Paper Code	213007	Marks: 100	Credits: 4	Class Hours:60
Paper Title:	Botany-I			

1. **Introduction:** Origin and evolution of life; differences between plants and animals; modern concepts of classification of living organisms.

2. **Microbiology:**

- a) Introduction to Viroid, Prions, Rickettsia and Mycoplasmas.
- b) Virus: Physical and chemical nature of phage, plant and animal viruses, multiplication of HIV virus and economic importance.
- c) Bacteria: Types, fine structure, reproduction and importance.
- d) Fungi: Habitat, characteristics, classification up to class (Alexopoulos), reproduction, importance, life history of *Saccharomyces*.
- e) Cyanobacteria: Habitat, characteristics, structure, importance of Cyanobacteria.
- f) Algae: Habitat, characteristics, classification up to class (Fritsch), reproduction, importance; life history of *Oeodogonium*.
- g) Phytoplankton: Habitat, characteristics, classification and importance.

3. Lichen: Habitat, characteristics, classification and importance.

4. Limnology: Definition, scope, importance and classification of lakes.

5. Bryophyta: Habitat, characteristics, classification up to classes and reproduction; life history of *Riccia* and *Anthoceros*.

6. Pteridophyta: Habitat, characteristics, classification up to classes, importance; life history of *Selaginella* and *Christella*.

7. Gymnosperms: Habitat, characteristics and importance; life history of *Cycas* and *Gnetum*.

8. Angiosperms: Habitat, characteristics, ICBN, classification systems of plant kingdom. (Artificial, natural & phylogenetic). Identifying characters and economic importance of the following families: (a) Fabaceae, (b) Solanaceae and (c) Malvaceae and (d) Poaceae.

9. Plant Pathology: Concept of diseases in plants, causes, diagnosis, classification and importance of plant diseases, symptomatology and control measures; forecasting of plant diseases.

Causal organisms, symptoms and control measures of brown spot of rice, stem rot of jute, citrus canker and tungro disease of rice.

10. Economic Botany: Local and scientific names, parts used and importance of at least 8 prominent plants of each of the following groups: (a) Food, (b) medicine, (c) timber, (d) fiber, (e) oil and (f) vegetables. Cultivation and processing of tea and rubber.

Books Recommended:

- 1. Agrios, G.N. 1997 : Plant Pathology (4th ed.). Academic Press, London.
- 2. Bold, H.C. and M.J. Wynne. 1978 : Introduction to the Algae, Prentice Hall, India

3. Hawker, Lilian, E. 1967 : Fungi, Hutchinson Univ. Library, Cambridge Univ. Press, London.
4. Lawrence, G.H.M. 1951 : Taxonomy of Vascular Plants. The Macmillan Co. New York.
5. Pelczar, M.J., E.C.S. Chan : Microbiology: Concepts and Applications. McGraw Hill Book Co. and N.R. Krieg, 1993 Inc. New York.
6. Vashista, P.C. 1993 : Botany for Degree Students: Pteridophyta. S.C. Chand & Co. Ltd. Ramnagar, New Delhi.
7. Mukherji, H. and Ganguly, 2000: Plant Groups, Central Book Agency, Calcutta.
8. Hill, F.A. 1972. : Economic Botany, Tata McGraw-Hill Publishing Company, India.
9. ivq, k`vgj Kzgvi, cvj, wbkx_ Acy®úK Dw™ç`weÁvb (1g l 2q LÛ), evsjv GKv†Wgx, Kzgvi : XvKv|
cvkv, †gv—dv
11. Lvb, AvRgvR` Avjx Ges mœvZK Dw™ç` weÁvb 1g, 2q l 3q LÛ|
ZwiKzj Bmjvg
:
12. L>`Kvi gwbi“¾/vgvb, 1994
13. evmvi, Gg. G., Gg.G. wjg†bvjRx, XvKv wek|we`vjq cÖKvkbv, XvKv|
nvmvb Ges
g. iwdKzj Bmjvg. 2004
- 13 nvmvb, Gg. G. Ges Dw™ç` weÁvb, nvmvb eyK nvDR, evsjv evRvi, XvKv|
Gg. †K. Avjg. 1997 Dw™ç` †kªYx web`vm ZËj (3q ms`<iY), nvmvb eyK
nvDm, XvKv|
14. LvZzb, iv†eqv, 2002 Dw™ç` †kªYxweb`vm, BD†iKv eyK G†RwÝ, ivRkvnx

Paper Code	213008	Marks: 50	Credits: 2	Class Hours:30
Paper Title:	Botany-I Practical			

1. Detail study including dissection (where necessary), mounting, drawing, description and identification with classification of the following genera: (any one) 10
Cyanobacteria : *Nostoc, Anabaena*
Fungi : *Saccharomyces*
Bryophyte : *Riccia*
Pteridophyte : *Christella*
Gymnosperms : *Cycas*
Angiosperm : *Poaceae*

2. Identification of the following genera with reasons: 6×1=6

Algae	<i>Volvox, Polysiphonia</i>	
Fungi	<i>Rhizopus, Agaricus</i>	
Lichen	<i>Crustose and Foliose</i>	
Bryophyte	<i>Anthoceros</i>	
Pteridophyte	<i>Selaginella, Marsilea</i>	
Gymnosperms	Male cones of <i>Cycas</i> ,	
Angiosperms	Scientific names of common plants around the institution.	

3. Find out algal specimens from local fresh water sample; draw and describe.....05
4. Study of the symptoms and causal organisms of Brown spot of rice and stem rot of Jute.05
5. Detailed taxonomic study of the families as included in the theory syllabus.08
6. Study of plant and plant parts, and economic uses of angiosperms included in the syllabus.06
7. Preparation of herbarium specimens of local plants and submission during examination.05
8. Laboratory Note book. 05

Books Recommended:

1. Agrios, G.N 1997 : Plant Pathology (4th Ed.). Academic Press, London.
2. Bold, H.C. and M. J. Wynne. 1978 : Introduction to the Algae, Prentice Hall, India
3. Devlin, M.R. and H.F. Witham.1986 : Plant Physiology (4th Ed.). CBS Publishers and

- Distributors, New Delhi.
4. Esau, K.1953 : Plant Anatomy. John Wiley & Sons, Inc., New York.
 5. Goodwin, T.W. and E. I. Mereer. : Introduction to Plant Biochemistry (2nd ed.). Pergamon Press.
 6. Hawker, Lillin, E. 1967 : Fungi, Hutchinson Univ. Library, Cambridge Univ. Press, London.
 7. Kumar, H.D. 1995 : General Ecology, Vikash Pub. House, India.
 8. Lawrence, G.H.M. 1995 : Taxonomy of Vascular Plants. The Macmillan Co. New York.
 9. Pelczar, M.J., E.C.S. Chan and N.R. Krieg.1993 : Microbiology: Concepts and Applications. McGraw Hill Book Co. Inc. New York.
 10. Vashista, P.C. 1993 : Botany for Degree Students: Pteridophyta. S.C. Chand & Co. Ltd. Ramnagar, New Delhi.
 11. cvkv, †gv̄—dv Kvgvj ivq, k̄vgj Kzgvj, 1986 XvKv| : ēenvwiK Dw™ †` weÁvb, evsjv GKv†Wgx,
 12. AvLZvi“¾vgvb, g. : eskMwZ we`v, nvmvb eyK nvDR, XvKv|
 13. AvLZvi“¾vgvb, g. 2000 : eeZ©b ev`, nvmvb eyK nvDR, XvKv|
 14. Bmjvg, G. Gm. 1984 : eskMwZ we`vi g~j K_v, evsjv GKv†Wgx, XvKv|
 15. Kg©Kvi, h`yvj. 2000 : Dw™ †` kixi weÁvb, nvmvb eyK nvDR, XvKv|
 16. Lvb, AvgRv` Avjx Ges ZwiKzj Bmjvg : mœvZK Dw™ †` weÁvb 1g, 2q I 3q LÛ|
 17. L>`Kvi gwbi“¾vgvb, 1994 cÖKvkbv, XvKv| : wjg†bvjRx, XvKv wek|we`vjq
 18. Rvgvb, Gg. G. 1975 : †Kvlwe`v, evsjv GKv†Wgx, XvKv|
 19. evmvi, Gg. G., Gg.G. nvmvb Ges evRvi, XvKv| : : Dw™ †` weÁvb, nvmvb eyK nvDR, evsjv g. iwdKzj Bmjvg. 2004
 20. nvmvb, Gg. G. 1996 : evsjv†`†ki †fIR Dw™ †`, Avkivwdqv eB Ni, evsjv evRvi, XvKv|
 21. nvmvb, Gg. G. Ges eyK nvDm, XvKv| : Dw™ †` †kªYx web`vm ZËj (3q ms`<iY), nvmvb Gg. †K. Avjg. 1997

Paper Code	211501	Marks: 100	Credits: 4	Class Hours: 60
Paper Title:	History of the Emergence of Independent Bangladesh			

^vaxb evsjv†`†ki Afy`†qi BwZnvm

f~wgKv: ^vaxb evsjv†`†ki Afy`†qi BwZnvm-cwiwa I cwiwPwZ

- 1| †`k I Rb†Mvwôï cwiPq
K) f~ cÖK...wZi ^ewkó` I cÖfve

L) b,,ZvwË;K MVb

M) fvlv

N) ms<...wZi mgš^qevw`Zv I ag©xq mnbkxjZv

O) Awfbœ evsjvi cwi#cÖw¶Z ZrKvjxb c~e©e½ I eZ©gvb evsjv¶`¶ki
^Kxq mËv

2| ALÛ ^vaxb evsjv ivóª MV¶bi cÖqvm I Dcgnv¶`¶ki wefw³, 1947

K) Jcwb¶ewkK kvmb Avg¶j mvæcÖ`vwqKZvi D™ ¶e I we-—vi

L) jv¶nvi cÖ-—ve, 1940

M) ALÛ ^vaxb evsjv ivóª MV¶bi D¶`vM, 1947 I cwiYwZ

N) cvwK-—vb m,,wó, 1947

3| cvwK-—vb: ivóªxq KvVv¶gv I ^elg`

K) ¶K>`ªxq I cÖv¶`wkK KvVv¶gv

L) mvgwiK I ¶emvgwiK AvgjvZ¶š; i cÖfve

M) A_©%øbwZK, mvgvwRK I mvs<...wZK ^elg`

4| fvlv Av¶>`vjb I evOvwji AvZ¶cwiPq cÖwZôv

K) gymwjg jx¶Mi kvmb I MYZvwš;K ivRbxwZi msMÖvg

L) Avlqvgx jx¶Mi cÖwZôv, 1949

M) fvlv Av¶>`vjb: cUf~wg I NUbv cÖevn

N) nK-fvmvbx-¶mvnívlqv`©xi hy³d«>U, 1954 mv¶ji wbe©vPb I cwiYwZ

5| mvgwiK kvmb: AvBqye Lvbi I Bqvwnqv Lv¶bi kvmbvgj (1958-71)

K) mvgwiK kvm¶bi msÁv I ^ewkó`

L) AvBqye Lv¶bi ¶lgZv `Lj I kvm¶bi ^ewkó` (ivR%øbwZK wbcxob, tgŠwjK MYZš;, a¶g©i

ivR%øbwZK e`envi)

M) AvBqye Lv¶bi cZb I Bqvwnqv Lv¶bi kvmb, GK BDwbU wejywßKiY, mve©Rxb ¶fvUvwaKvi, GjGdl (Legal Framework Order)

6| RvZxqZvev¶`i weKvk I ^vwaKvi Av¶>`vjb

K) mvs<...wZK AvMÖvm¶bi wei“¶x cÖwZ¶iva I evOvwj ms<...wZi D¾4xeb

L) ¶kL gywReyi ingv¶bi 6-`dv Av¶>`vjb

M) 6-`dv Av¶>`vj¶bi cÖwZwµqv, „i“Z; I Zvrch©

N) AvMiZjv gvgjv, 1968

7| 1969-Gi MYAfy`ivb I 11-`dv Av¶>`vjb

K) cUf~wg

L) Av¶>`vj¶bi Kg©m~Px, „i“Z; I cwiYwZ

8| 1970 Gi wbe©vPb, Amn¶hvM Av¶>`vjb I e½eÜzi ^vaxbZv ¶NviYv

K) wbe©vP¶bi djvdj Ges Zv tg¶b wb¶Z ¶K¶>`ªi A^xK...wZ

L) Amn¶hvM Av¶>`vjb, e½eÜzi 7B gv¶P©i fviY, Acv¶ikb mvP©jvBU

M) e½eÜzi ^vaxbZv ¶NviYv I ¶MÖdZvi

9| gyw³hyx 1971

- K) MYnZ²v, bvix wbh©vZb, kiYv_©x
L) evsjv³k miKvi MVb I ²vaxbZvi †NvIYvcĭ
M) ²Z:ù,Z© cÖv_wgK cÖwZ†iva I msMwVZ cÖwZ†iva
(gyw³†dŠR, gyw³evwnbx, †Mwijv I mæšyL hyx)
N) gyw³hy†x cÖPvi gva²g (²vaxb evsjv teZvi †K>²a, we†²kx cÖPvi
gva²g I RbgZ MVb)
O) Qvĭ, bvix I mvaviY gvby†li Ae²vb (MYhyx)
P) gyw³hy†x e,,nrkw³ mg~†ni f~wgKv
Q) `Lj²vi evwnbx, kvwš—KwgwU, Avje²i, Avjkgm, ivRvKvi evwnbx, ivR
%obwZK `j I †²kxq
Ab²vb² mn†hvMx†²i ²vaxbZvwe†ivax Kg©KvŪ I eyw×Rex nZ²v
R) cvwK²ĭv†b ew>² Ae²vq e^{1/2}eŪzi wePvi I wek|cÖwZwµqv
S) cÖevmx evOvwj I we†k|i wewfbœ †²ki bvMwiK mgv†Ri f~wgKv
T) gyw³hy†x fvi†Zi Ae²vb
U) †hŠ² evwnbx MVb I weRq
V) ²vaxbZv msMÖv†g e^{1/2}eŪzi †bZ...Z;

10| e^{1/2}eŪz †kL gywReyi ingv†bi kvmbKvj, 1972-1975

- K) ²†²k cÖZ²veZ©b
L) msweavb cÖYqb
M) hyx weaŸ²— †²k cybM©Vb
N) mcwiev†i e^{1/2}eŪz nZ²v I Av²wk©K cUcwieZ©b

History of the Emergence of Independent Bangladesh

Introduction: Scope and description of the emergence of Independent Bangladesh.
Writing on this topic.

1. Description of the country and its people.

- Geographical features and their influence.
- Ethnic composition.
- Language.
- Cultural syncretism and religious tolerance.
- Distinctive identity of Bangladesh in the context of undivided Bangladesh.

2. Proposal for undivided sovereign Bengal and the partition of the Sub Continent, 1947.

- Rise of communalism under the colonial rule, Lahore Resolution 1940.
- The proposal of Suhrawardi and Sarat Bose for undivided Bengal : consequences
- The creation of Pakistan 1947.

3. Pakistan: Structure of the state and disparity.

- Central and provincial structure.

- b. Influence of Military and Civil bureaucracy.
- C. Economic, social and cultural disparity

4. Language Movement and quest for Bengali identity

- a. Misrule by Muslim League and Struggle for democratic politics .
- b. The Language Movement: context and phases.
- c. United front of Haque - Vasani - Suhrawardi: election of 1954, consequences.

5. Military rule: the regimes of Ayub Khan and Yahia Khan (1958-1971)

- a. Definition of military rules and its characteristics.
- b. Ayub Khan's rise to power and characteristics of his rule (Political repression, Basic democracy, Islamisation)
- c. Fall of Ayub Khan and Yahia Khan's rule (Abolition of one unit, universal suffrage, the Legal Framework Order)

6. Rise of nationalism and the Movement for self-determination.

- a. Resistance against cultural aggression and resurgence of Bengali culture.
- b. Sheikh Mujibur Rahman and the six point movement
- c. Reactions : Importance and significance
- d. The Agortola Case 1968.

7. The mass- upsurge of 1969 and 11 point movement: background, programme and significance.

8. Election of 1970 and the Declaration of Independence by Bangobondhu

- a. Election result and centers refusal to comply
- b. The non-co-operation movement, the 7th March , Address , Operation Searchlight
- c. Declaration of Independence by Bangobondhu and his arrest

9. The war of Liberation 1971

- a. Genocide, repression of women, refugees
- b. Formation of Bangladesh government and proclamation of Independence
- c. The spontaneous early resistance and subsequent organized resistance (Mukti Fouz, Mukti Bahini, guerillas and the frontal warfare)

- d. Publicity Campaign in the war of Liberation (Shadhin Bangla Betar Kendra, the Campaigns abroad and formation of public opinion)
- e. Contribution of students, women and the masses (Peoples war)
- f. The role of super powers and the Muslim states in the Liberation war.
- g. The Anti-liberation activities of the occupation army, the Peace Committee, Al-Badar, Al-Shams, Rajakars, pro Pakistan political parties and Pakistani Collaborators , killing of the intellectuals.
- h. Trial of Bangabondhu and reaction of the World Community.
- i. The contribution of India in the Liberation War
- j. Formation of joint command and the Victory
- k. The overall contribution of Bangabondhu in the Independence struggle.

10. The Bangabondhu Regime 1972-1975

- a. Homecoming
- b. Making of the constitution
- c. Reconstruction of the war ravaged country
- d. The murder of Bangabondhu and his family and the ideological turn-around.

mnvqK MÖš'

1. bxnvi iÄb ivq, *evOvjxi BwZnvm*, † Ö R cvewjwks, KjkvZv 1402 mvj|
2. mvjvn& Dwİb Avn†g` I Ab`vb` (mæúvw`Z), *evsjv†`#ki gyw³ msMÖv†gi BwZnvm 1947-1971*, AvMvgx cÖKvkbx, XvKv 2002|
3. wmivRyj Bmjvg (mæúvw`Z), *evsjv†`#ki BwZnvm 1704-1971*, 3 LÛ, GwkqvwUK †mvmvBwU Ae evsjv†`k, XvKv 1992|
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7. W. AvZdzj nvB wkejx I W.tgvt gvneyei ingvb, *evsjv†`#ki mvswewwbK BwZnvm 1773-1972*, m~eY© cÖKvkb, XvKv 2013|
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11. W. tgv́t gvneyei ingvb, *evsjv#`#ki BwZnvm, 1947-1971, mgq cÖKvkb, XvKv 2012*|
12. %omq` Av#bvqvi tnv#mb, *evsjv#`#ki ^vaxbZv hy#x civkw³i f~wgKv, Wvbw cÖKvkbx, XvKv 1982*|
13. Aveyj gvj Ave`yj gywnZ, *evsjv#`k: RvwZiv#ó^ai D™#e, mvwnZ` cÖKvk, XvKv 2000*|
14. #kL gywReyi ingvb, *Amgvß AvZ#Rxebx, w` BDwbfvwm©wU t#Öm wjwg#UW, XvKv 2012*|
15. wmivR D`&`xb Avn#g`, *GKv#i gyw³hyx: ^vaxb evsjv#`#ki Af~`q, BmjvwgK dvD#Ükb, XvKv 2011*|
16. RqšI Kzgv́i ivq, *evsjv#`#ki ivR%bwZK BwZnvm, myeY© cÖKvkb, XvKv 2010*|
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