NEW
GUIDE TO

Course of Study
for

B.Sc. & B.Com
Part- II Examination
B.R.A. Bihar University

SCIENCE
&
COMMERCE

Revised
Honours & Pass

COURSE OF STUDY
B.Sc. (Honours) Part - II

M.I.L. (हिन्दी भाषियों के लिये)
(Hons./Pass & Subsidiary सभी के लिये)

समय : 3 घंटे **पूर्णांक : 100**

अंकों का विभाजन :

1. प्रत्येक पाठ्य पुस्तक से एक–एक परिचयात्मक या सारांशपरक या वर्णनात्मक या चरित्र–चित्रण मूलक प्रश्न — 5x3=45 अंक
2. प्रत्येक पाठ्य पुस्तक से दो व्याख्याएँ — 10x2=20 अंक
3. निबन्ध लेखन — 20 अंक
4. व्याकरण (लिंग निर्णय, मुहावरे एवं लोकोक्तियाँ) — 10 अंक
5. संक्षेपण

निर्धारित पुस्तकें :

1. रामराज्य (बेनीपुरी जी की चार एकांकियों का संग्रह) – डॉ. प्रभा बेनीपुरी।
2. संक्षिप्त परिचय–डॉ. श्यामनन्दन किशोर; केवल 'संकल्प', 'आह्वान', 'स्वर्ण–मृत्तिका', 'शरणागत' और 'मुक्तिसंघर्ष' निर्धारित।
3. कथापंचक (पाँच कहानियों का संग्रह) सम्पादक, डॉ. सर्वजीत और डॉ. प्रमोद कुमार सिंह

सहायक ग्रंन्थ : University Guess paper to M.I.L.

हिन्द रचना (हिन्दीत्तर भाषा भाषियों के लिए)

समय : 1.30 घंटा **पूर्णांक : 50**

अंकों का विभाजन

पाठ्यपुस्तक के गद्य–पद्य से एक–एक आलोचनात्मक प्रश्न– — 15x2=30 अंक

संक्षेपण–

व्याकरण (विपरीतार्थक शब्द, मुहाबरे तथा लोकोक्तियाँ)– — 10 अंक

निर्धारित पुस्तक :

साहित्य–नवनीत –सं.–डॉ. महेन्द्र मधुकर तथा डॉ. अवधेश्वर अरुण

व्याकरण के लिए व्याकरण तथा रचना –डॉ. वासुदेव नन्दन प्रसाद

व्याकरण चन्द्रिका – डा. अवधेश्वर अरुण

सहायक ग्रन्थ : University Guess Paper to Non-Hindi.

ENGLISH COMPOSITION

Time : 1.30 Hours **Full Marks - 50**

(a) Rapid Reader — 20 Marks
Shakespare - Julius Caesar

(b) An essay on current topic — 20 Marks

(c) Letter writting — 10 Marks

Help Book : University Guess paper to English Composition.

URDU COMPOSITION (Poetry)

Time - 1.30 Hours. **Full Marks-100**

Poetry — 30 Marks

Grammer — 20 Marks

1. Adabistan

Following Poetry:

(i) Shoa-e-Ummid-Hali,

(ii) Khade-Hind-Chakbast,

(iii) Dawat-e-Azm-Jamil Mazhari,

(iv) *Nav* Jawan-o-se-Khitab-josh.

Or, Following Gazals :

(i) Dard ki Ghazal-Arz-o-Saman Kahan Ted.

(ii) Meer Ki Ghazal-Jis Sar Ko Gharur Aaj Hai.
(iii) Ghalib Ki Ghazal-Aah Ko Chahiye.
(iv) Aatish Ki Ghazal-Sun To Sahi Jahan Mein .

2. Adabiyat-Prescribed Poetry or Ghazals

Following Poetry:
(i) Aiyam-e-Jahiliya-Hali,
(ii) Shahim-Eqbal,
(iii) Senay-e-Millat-Akbar,
(iv) Do Isque-Faiz.

Or, Following Gazals :
(i) Meer Ki Gazal-Apani Hasti. ..... ,
(ii) Dard Ki Ghazal-Zindagi Hai Ya Koi. .....
(iii) Ghalib Ki Ghazal-Har Ek Baat Par Kahte Ho...
(iv) Momin Kf Ghazal-Woh Jo Ham Mein Tum Mein Karar Tha.

PHYSICS (Hons.) Paper-III

Time: 3 Hours **Full Marks : 75**

(12 qestions to be set, 6 to be answered, 4 from Group A and 2 from Group B.)

Group-A

Optics-8 questions.

Fermat's principle and mirror and lens formula Cardinal points of a thick lens and thick fens formula.

Interference phenomena by division of wave front and division of amplitude, Michelson interferometer, Fabryperot interferometer, L-G plate Echelon grating Diffraction-Fresnel's and Fraunhoffer's diffraction Half period Zones, Zone plate, Fresnel's diffraction at straight edge and single narrow wire, Fraunnoffer's diffraction at n slits! and circular aperture Plane diffraction grating, Concave grating and Eagle's mounting, Resoloving power of prism, telescope, and microscope Cornu's spiral and-its use in diffraction problems.

Production of plane circularly and elliptically polarized light, Nicol's prisrn, Quarter wave plate, Sabinet's compensator and analysis of elliptically polarised light and polarimeter, principle of laser action, Ruby laser He Ne Laser.

Group-B

Electomagnetic Theory - 4 questions.

Maxwell's Field Equation. Vector, Electromagnetic momentum. Maxwell's stress tensor, pressure of radiation plane, electromagnetic wave, Reflection refraction and total mternal reflection of polarised light, Double refraction in crystals, Theory of dispersion, optical properties of metals and dispersion in metals, Scauering by free and bound charges.

Help Book:- University Guess Paper to Physics (Hons.) III

PHYSICS (Hons.) Paper-IV

Time: 3 **Hours** **Full Marks: 75**

12 questions to beset, 6to be answered. Selecting at least 1 from Group A and at least 2 from each of Group B and Group C.

Group-A

Electrostatics & Magnetism-Two questions.

Boundry condition at the surface of separation of two dielectries and refraction of lines of force.

Scalar potentials in Electrostatics. The potential of a system of charges. Dipole and quadrupole moments, Energy shared in an eiectrostatic field. Poisson's and Laplace's equations in Cartesian, Polar and. cylindrical coordinates and their solutions for simple geometries. Dielectric polarisation, Relation between D.E.&P.

Properties of ferromagnetic materials, Hysteresis curve, method for obtaining B.H. curve, Energy loss per cycle of magnetisation Magnetic circuit and application to electronic asuremenf of magnetic fluxmeter, Energy stored in magnetic field. Measurement of susceptitheories oIdia, Para and ferromagnetism.

Group-B

Current Electricity-5 questions.

Thermodynamic treatmentotSeebeck, Peltier and Thompson effeyts and their applications SelfJnductanceand Mutual Inductance Growth and decay of current of these circuits, Moving coil galvanometer, aperiodic and ballistic galuanometer, A.C. circuits-Use of vectors and compiex numbers in A.C. circuit theory, Series and parallel resonant circuits, power in A.C.circuits watt-meter, A.C. Bridqes-e- (i) De Sauty's bridge (ii) Anderson bridge (iii) Carey Foster bridge (iv) Schering bridge. Three phase A.C. system. Mutually coupled circuits, Rotating magnetic fields Polyphase and .single phase induction motors. The transformer-Equivalent circuit arid Vector diagram, Iron and Copper losses in a transformer.

Group-C

Modern Physics-5 questions.

Measurement of charge by Millikan's method and specific charge of electron by Thompson's method. Naturalradio activity, Rutherford-Soddy's theory of a Neutron Isotopes, Artificial radioactivity. Elementary ideas about nucleus and its Structure. Nuclear fission reactors, Aston's mass spectrograph. Cyclotron and Betatron.

Photoelectric emission, Einstein's photoelectric equation photo-Inductiveand Photo voltaic Cells.

Compton effect, Bragg's law and determination of X-ray wavelength.

Cathode ray Oscilloscope and its uses in amplitude frequency and phase measurements. Solid state rectifier and one stage R-C amplifier.

Primary and secondary cosmic rays, penetrating components of comic rays. Altitude and latitude variation of cosmic ray intensity, E-W. Asymmetry, Cosmic ray showers, Rossi curve, Outline of Cascade theory, Origin of cosmic rays.

Help Book : University Guess Paper to Physics (Hons.) IV

PRACTICAL

Time: 6 Hours **Full Marks: 50**

The course shall include the following experiments -

1. Refractive index by spectrometer.
2. Calibration of prism spectrometer.
3. Determination of Cauchy'S constant.
4. Wavelength by plane transmission grating and identification of gas in discharge tube.
5. Determination of Rudberg's constant.
6. Wavelength by Newton's ring.
7. Wavelength by Biprism.
8. Resolving power of telescope.
9. Magnifying power of telescope and microscope.
10. Specific rotation by polarimeter.
11. Dip by Dip circle and Earth inductor.
12. Hysteresis curve of a rod shaped specimen.
13: Measurement of magnetic field with a search coil,
14. Calibration of Ammeter and voltmeter by potentimeter.
15. B.G. constant arid log decrement.
16. Figure of merit of a moving coil galvanometer.
17. Measurements of Low and High resistances.
18. Temperature variation of electrical resistance.
19. Temperature variation of e.m.f. of a thermocouple.
20. Use of oscilloscope to measure voltage, current, frequency and phase.
21. Study of series and parallel resonance circuits.
22. Capacipance by Di-sauty's bridges.

Help Book- University Prayogik Physics.

PHYSICS (Gen. & Sub.)

Time: 3 Hours **Full Marks : 70**

(12 questions to be set, 6 to be answered, one from Group-A, 2 from Group B and 2 from Group C.)

Group-A

Electrostatic and Magnetism (Two [1+1] questions.)

Boundary conditions at the surface of separation of two dielectrics, Electric doublets. Dipole. moment, Dielectric polarisation, Electrical images-problems involving infinitet conducting plane and thin conducting spherical shell only. Magnetic shelf Langevin's and Weiss theory of diapara and Ferromagnetism, Curie Law. Production and measurement of strong magnetic fields. Magnetic Circuit and Electromagnets.

Group-B

Current Electricity, Modern Physics (Six questions).

Thermodynamic treatment of Seebeck. Pektier and Thomson effects and their applications. Moving coil aperiodic and ballistic galvanometers. Growth and decay of currents in electric circuit. Oscillatory discharge of a condenser. A.C. and A.C. circuits: Uses of vectors and complex quantities in A.C. circult theoiy (LR., CR and LCR circuits), De sauty'sbridge, Anderson bridge, Carey Foster's bridge.

Measurement of charge by Millikan's method and Specific charge of an electron by Thomson method, Natural radio-activity. Rutherford Soddy's theory of radio active decay. Geiger Mueller counter, Discovery of Neutron, tsotopes., Artificial radioactivity. Elementary ideas about nucleus and its structure. Nuclear fission Reactors. Aston's mass spectrograph. Photoelectric emission, Einstein's photoelectric equation, Photo-electric, Photo-conductive and Photo-voltaic cells.

Bragg's Law and determination of X-rays wave length.
Cathode ray oscillonscope and its uses in amplitude, frequency and phase measurements. Solid stae rectifier. One stage RC. amplifier, Principle of amplitude modulation and demodulation, Radio receiver through block diagram.

Group-C

Optics (Four questions).

Fermat's principle. Newton's ring. Michelson's Interierrometer, Fresnel's diffraction at straight edge, Fraunhoffer's diffraction single slit, plane transmission grating, Resolving power of microscope and telescope. Polarization : production of plane, circularly and elliptically polarized lights, Nicol's prism, Quarter waveplate. Half shade polarimeter, Babinet's compensator.
Bragg's theory of hydrogen spectra. Principle of laser action, Ruby taser.
Help Book: University Guess Paper to Physics (General & Subsidiary).

PRACTICAL

Time: 6 Hours **Full Marks: 30**

The course shall include following experiments-

1. Refractive index by Spectrometer,
2. Wavelength by Newton's ring.
3. Wavelength by plane transmission grating.
4. Magnifying power of telescope.
5. Magnifying power of microscope.
6. Resolving power of telescope.
7. Dip by (i) Dip-circle (ii) Earth inductor.
8. Figure of merit of. moving coil galvanometer.
9. Celibration of Ammeter and Voltmeter by Potentiometer.
10. B.G. Constant and Log decreament.
11. Measurements of low' and high resistanoes.
12. Temperature variation of electrical resistance.
13. Characteristics of Triode valve.

Help Book : University Prayogik Physics.

CHEMISTRY (Honours) Paper- III

Time: 3 Hours **Full: Marks: 75**

Nine questions to be set. Five questions to be answered. Short answer type questions are recommended. There may be several parts in a *question and different units may be mixed in questions. Two questions to be answered from group 'A 'and three questions to be answered from group* 'B'.

Group -A

Physical (Four questions) 25 Marks

1. **Chemical Kinetic and Catalysis :** Rate law for a general reaction, Mathematical derivation of 1st, 2nd and 3rd order reaction and their life period. Methods of determining order of reactions, Arrhenius equation. Energy of activation, Potential energy diaqrarn and concept of activated complex, rate data and mechanism of reactions. Homogeneous and Heterogeneous catalysis. Effect of catalyst on reaction rate, specificity of catalysed reaction.
2. **Distribution of velocities of Gases:** Maxwell distribution law of velocities and energies of gaseous molecules. Effect of mass and temperature on molecular velocities. Treatment of veiocitres,Collision number, Collision frequency, mean free path, viscosity of gases.
3. **Ionic Equilibria :** Ostwald's dilution law and its verification, pH of buffer solutions. Hydrolysis of salts. Relation between Kh, Kw, Ka and Kb, pH of hydrolysed salt solutions, degree of hydrolysis, chice of acid-base indicator with pH change, solubility product, Ionic product and common ion effect.
4. **Electrochemical Cells:** Electrochemical cells, reversible and Irreversible cells, reversible electrodes, Concept of electrode potential, standard electrode potential, Nernst equation for electrode potential, Calomel electrode, Quinhydrone electrode, Applications of emf measurement, determination of pH, ionic product of water, solubility & solubility product of sparingly soluble salt.

Group- B

Inorganic (Five questions) 50 marks

1. Nature of Cnemical Bond : Types of bond : α , , and bonds, Bonding in B_2H_6 copper acetate and chromous acetate, Concept of resonance and delocalisation of orbitals e.g. $N0_2$, $N0_3$, $S0_2$, $S0_3$, SO_4^{2} $P04^{3}{}_{4}$ and $C0_3^{2}$ ions. Hydrogen bond and related properties.
2. **Chemistry of Elements of First Transition Series :** d-block elements and their characteristic properties, Study of elements of firsttransition series and their binary compounds, complex formation in different oxidation states

and their stabilities, Principles behind volumetric estimation of Cu^{2+}, Fe^{2+} and Cr^{3+} ions by the use of standard sodium thiosulphate, potassium peramangnet and potassium dichromate solution.

3. **Chemistry of Elements of Seconed Transition Series :** General characteristic of heavy elements, comparative study with their *3d* analogues in respect of their ionic radii, stability of oxidation states, magnetic behaviour of compounds complexes forming tendencies and stereochemistry.
4. **Non-aqueous Solvents :** Physical properties of solvents, types of solvents and their general characteristics, reactions in non-aqueous solvents such as liquid ammonia and liquid sulphur dioxide.
5. **Coordination Compounds :** Werner's coordination theory and its justification from physical data, Isomerism in complexes, Sidwick of effective atomic number, Chelates, Nomenclature of coordination compounds, valence bond theory of metal-ligand bonding with respect to coordination number 4 and 6, Inner and outer orbital complexes, Inner complexes metal ions with organic reagents such as B - hydroxyquinoline, cupferron and dimethyl glyoxime.

Help Book : University Guess Paper to Chemistry (Hons.) III

CHEMISTRY (Hons.) Paper-IV

Time : 3 Hours **Full Marks: 75**

Nine questions to tie set. Five questions to be answered. Short answer type questions are recommended. There may be several parts in a question and different units may be mixed in questions. Two questions to be answered· from group 'A' and three questions to be answered from group 'B'. While setting questions the entire syllabus may be covered as far as possible.

Group-A

Physical (Four questions) 25 Marks

1. **Thermodynamics :** Spontaneous and non-spontaneous process, necessity of second lawof thermodynamics, Caranot cycle and its efficiency, .Clausius inequality, entropy, entropy change of an ideal gas, entropy of mixing, Helmholtz energy and Gibb's energy, their variation with pressure and temperature, Gibbs helmholtz equation, Clausius-Clapeyron equation and its application incolligative properties.
2. **Solutions :** Types of solutions, solutions of gases in liquids, Henry's law, solutions of liquids in liquid, Raouft's law, vapour pressure of ideal solution, free energy, volume and enthalpy, change for an idea solution, entropy of mixing for an ideal and non-deal solution, Duhem Margules equation, variation of total vapour pressure with variation of composition of the liquid phase, azeotropic mixture, Principle of steam distillation and fractional distillation.
3. **Surface Chemistry :** Types of adsorption, Langmuir's adsorption isotherm and Adsorption and catalysis, Effect of temperature and pressure on surface reaction with reference to heterogenous catalysis, classification, preparation and purifjcation of colloidal sols, their optical and electrical properties, hardy-Schulze law, Gel, Synthesis, thixotropy, Association of colloidal electrolytes, soaps, micelles, emulsions.
4. **Distribution Law :** Nernst distribution law, its thermodynamic derivation and limitations factors affecting partition-coeificient, essential coriditions for validity of distribution law, Modification of distribution law for association, dissociation and solvent participation. Applications : Complex formation between *KI* and 1_2, $CuS0_4$ and NH_3, solvent extraction process.

Group-B

Organic (Five questions) 50 marks.

1. **Stereochemistry of Organic Compounds :**

   Optical lsomerism: Elements of symmetry, molecular chirality,stereogenic centre, optical activity, Enantiomers & their properties, Chiral and achiral molecules with stereogenic centres. Diastereomers and meso compounds. Resolutions of recemic mixture. Relative and absolute configurations. Representation of configurations by Fischer and Flying Wedge formulae. Threo and erythro nomenclature of diastereomers having two chiral centres. Sequence rules, D, L. and R.S systems of nomenclatural.

   Geometrical Isomerism : Restricted rotation about double bond, Geometrical isomerism about $C = C$ and $C =$ N,Specificationof configuration by cistrans and *E-Z* system. Basic Idea about geometrical Isomerissm in alicyclic compounds.

   Conformational Isomerism : Conformational analysis of ethane, propane and n-butane, Representation of conformations by Newmann and Sawholse projection formulae. Difference between configuration and conformation, conformations of cyclohexane and its monosubstituted derivatives.
2. **Active Methylene Compounds :** Acidity of -hydrogens. Preparation of ethyl acetoacetate and diethyl malonate and their applications to organic, synthesis, Keto enol tautomerism of ethyl acetoacetate and -dicarboxyl compounds.
3. **Hydroxy Acids :** General method of preparation and properties of α, and γ-hydroxy acids with special reference to lactic, tartaric & citric acids ..Structure of tartaric and citric acids.
4. **Carbohydrates:** Classification and nomenclature. **Glucoset** : open-chain structure. Mechanism of osazone formation. Conversion of glucose into fructose and vice-versa. Chain lengthening and chain shortening of aldoses. Configurations of D & L- Glucose. Determination of ring size of Glucose & Fructose, Cyclic structures of D

glucose: -& -D-glucose granoses & furanases. Mutarotation, Metarotation of Glucose.

5. **Aromatic Chemistry:** Aromaticity : The Huckel rule. Aromatic, nonaromatic and antiaroma structure of benzene, resonance and resonance energy of benzene. Electrophilic aromatic substitution : general pattern of the mechanism, role of a and α and - complexes,. Mechanism of nitration, halogenation, sulphonation and Friedel-Craft reactions. Directing influence of substituents in aromatic substitution and their activating and deactivating effects, ortho-para ratio in substitution reaction.
   General methods of preparation and reactions of arenenes and monofunctional benzene derivative like amines, phenoles, aldehydes, ketones, carboxylic and sulphonic acid. Synthesis of organic compounds via diazonium salts.
6. **Name reactions and their mechanism :** (i) Cannizzaro (ii) Aldol condensation (iii) Reimer - tiemann (iv) Sanmayer (v) Perkin reaction (vi) Reformatsky reaction (vii) Wurti-Fitting reaction (vii) Wolff-Kishnar (ix) Knoevenogal reaction (x) Williamson ether synthesis.

Help Book : UniverSity Guess Paper to Chemistry (Hons.) IV

PRACTICAL

Time: 6 Hours **Full Marks : 50**

One exercise will be performed in the examination out of items 1 or 2. Item 3 is compulsory.

1. **Volumetric Analysis :** (i) Preparation & standardisation of potassium permaganate and sodium thiosulphate solution.
   (ii) Estimation of cast in chalk using permanganate.
   (iii) Estimation of Fe^{2+} using dichlromate
   (iv) Estimation of Ce^{2+}*ion* using thiosulphate.
2. **Gravimetric Analysis:**
   (i) Estimation of Ba^{2+} as barium sulphate
   (ii) Estimation of Cu^{2+} as nickel dimethyl glyoximate 20
3. **Organic Qualitative Analysis :** Identification of monofunctional compound. Determination of melting point and preparation of suitable derivative. 20
4. Note book 05
5. Viva-voce 05

Help Book: University Prayogik Chemistry.

CHEMISTRY (Sub. & Gen.)

Time: 3 Hours **Full Marks: 75**

Nine questions to be set and five of them to be answered selecting maximum of two questions from any group A, B and C.

Group-A

Physical (Three questions) 25 Marks.

1. **Thermodynamics :** Thermodynamic terms, statement and mathematical formulation of first law of thermodynamics, enthalpy and heat capacities at constant pressure and volume, relationship between *Cp* and *Cv,* work done in adiabatic and isothermal changes. Joule-Thomson effect and μ for ideal and real gases.
   Thermochemistry: standard state, enthalpy of formation, Hess's law, heat of reaction at constant pressure and constant volume, enthalpy of neutralization, Kirchoff's equations, necessity of second law, second law - its statement, entropy, Cannot cycle, efficiency, entropy changes for an ideal gas at constant pressure,constant volume and constant temperature.
2. **Phase Rule:** Phase rule and meaning of phase component and degree of freedom, one component system-water, triple point, two component system- *Zn-Cu* system $FeCl_2 + H_2O$, freezing mixtures, azeotropes - $HCI + H_2O$, ethanol + H_2O, principle of steam, distillation, efflorescence and deliquescence.
3. **Electrochemistry :** Migration of ions, Kohlrausch's law, Ostwald's dilution law, and its verification, transport number and its measurement, abnormal transport number, Buffer solution and its pH, hydrolysis of salts and calculation of hydrolysis constant along with *Ka, Kb* and *Kw.* theory of indicators, pH diagram and indicator range, chemical cells and concentration cells with and without transference, reversible and irreversible electrodes, hydrogen and calomel electrodes, E.M.F. of a cell.
4. **Kinetics and Catalysis :** Order of general reactions, rate law and reaction mechanisms. Expression for rate constant for first and second order reactions, their half-life period determination of order of reactions temperature dependence of order of reaction, Arrhenius equation, *activation* energy, catalysis, homogeneous and heterogeneous catalytic reactions, effect of catalyst on reaction rate, auto catalyst, industrial catalyst, promotor, inhibitor.

Group- B

Inorganic (Three questions) 25 Marks.

5. **Chemistry of Elements of First Transition Series :** Characteristics of d-block elements, comparative study of

ionic radii, oxidation states, oxidizing and reducing properties, magnetic behaviour and complex forming tendency of ions with respect to coordination numbers (4 and 6) and thier stereochemistry;

6. **Oxidation Potential Diagram and Oxidising and Reducing Properties:** Oxidation state diagrams for oxidized and reduced systems for hydrogen, sulphur, nitrogen, manganese and chromium systems along with their redox potentials and their stability in water, in acid and alkaline media. Application of oxidation potential diagrams.
7. **Coordination Compounds:** Double salts and coordination compounds, Werner's theory-primary and secondary valency, experimental verification including isomerism, nomenclature of complex compounds, EAN rule, chelates and inner complexes, valence bond theory of M-L bonding and its limitations, spin-only magnetic moments and stereochemistry, study of complex formation for solubility of compounds and inner complex salts with DMG and 8-hydroxy quinoline, EDTA.
8. **Radioactivity :** Nuclear transformation, binding forces at the nucleaus, nuclear stability, radioactive equilibrium, nuclear isomerism, radio active series, artificial radioactivity, isotope effect and isotope exchange reaction, nuclear fission and fusion reactions, moderators.

Group-C

Organic (Three questions) **25 Marks.**

9. **Reaction Mechanism :** Types of organic reactions, types of reagents, reactive intermediates-carbocalions, carbanionsand free radicals.
10. **Hydroxyacids:** Isolation, synthesis and properties of lactic, tartaricand citric acids, optical isomerism in lactic and tartaric acids.
11. **Carbohydrated :** Carbon chain and ring structures of glucose and fructose, methods of their intercorwersion, chain lengthening and chain shortening of aldoses, osazone formation.
12. **Active Methylene Compounds :** Active methylene group, keto-enol tautomerism, preparation and synthetic applications of ethyl acetoacetate and diethyl malonate.
13. **Aromaticity Chemistry:** Aromaticity, the Huckel rule, aromatic ions, structure of benzene including valence bond and m.o. pictures, aromatic electrophilic substitution-general pattern of the mechanism-Craft reaction, directive influence of functional groups orientation, study of nitrobenzene, aniline, phenol, benzenediazonium chloride, benzoaldehyde, acetophenone, benzoic acid, benzene sulphoric acid.

Help Book: University Guess Paper to Chemistry (Subsidiary & General).

PRACTICAL

Time: 6 Hours **Full Marks: 25**

1. Volumetric Analysis:
   (i) **Acidmetry alkalimetry:** Estimation of. mixture of sodium carbonate and sodium bicarbonate
   (ii) Oxidation and reduction titration using oxalic acid and potasium permanganate, mixture of sulphuric acid and oxalic acid and estimation of Ca in calcium carbonate. 10
2. Determination of functional groups in a given organic compounds : aldehyde, ketone, carboxylic acids and arnines. 10
3. Record and Viva-voce 05

Help Book: University Prayogik Chemistry.

ZOOLOGY (Hons.) Paper - III

Time: 3 Hours **Full Marks: 75**

CHORDATA

Group-A

Objective type questions (1 X 15) with alternative short answer requiring questions (3 X 5).

Group-B

1. Origin and evolution of chordates.
2. Bionomics, general characters and classification of the following groups (living) upto orders- *Protochordata, Cyclostomata, Pisces, Amphibia, Reptilia, Aves and Mammalia.*
3. Study of the following types: (a) Urochordata 0 Herdmania and Salpa (b) Cephalochordata-Amphioxus (c) Cyclostomata-Petromyzon (d) Pisces- (i) Scoliodon and Labeo or any bony fish (ii) Distribution, general organisation and affinities of Dipnoi.

Group-C

4. Amphibia - Neoteny
5. Reptilia - (i) Garden Lizard (ii) Feeding and biting mechanism in snakes
6. Aves - (i) Columba (ii) Flight adaptation in birds (iii) Origin of birds.
7. Mammals - (i) Characters distribution and affinities of Prototheria and Metatheria (ii) General organisation of primates.

Help Book: University Guess Paper to Zoology (Hons.) III

ZOOLOGY (Hons.) Paper-IV

(Comparative Vertebrate, Anatomy and Embryology)

Time: 3 Hours **Full Marks: 75**

Group-A

Objective type questions (1 x 15) with alternative short -answer requiring questions (3 x5).

Group-B

Comparative Anatomy:

Study of the following organ system in major vertebraie groups.

(i) Integument- its derivatives and functions. (ii) Gastrointestinal tract (iii) Respiratory system (iv) Heart and Aortic arches (vi) Kidney, urinogenital ducts and gonads.

Group-C

Embryology: (i) Fertilization (ii) Egg types of early cleavage (iii) Development of Amphioxus (upto the formation of Coelom) (iv) Development of chick (upto three germinal layers) (v) Structure, development and functions of extra embryonic membranes in Chick. (vi) Placenta in mammals - Development, types and functions. (vii) Organogenesis of Heart, Brain and Eye in chick embryo.

Help Book : University Guess Paper to Zoology (Hons.) IV

PRACTICAL

Time: 6 Hours **Full Marks: 50**

Dissections **10 Marks.**

1. (i) Scoliodon or any Bony fish - Afferent and efferent branchial vessel; V. Vii and IX, X cranial nerves; Internal ear; (ii) Frog - Cranial nerves (V, VII, IX, X) (iii) lizard - Arterial and Venous system (ix) Pigeon - Arterial and venous system, air sacs, flight muscles (with the origin and insertion of tendons). (v) Mammals - Neck nerve, Urino-genital organs.
2. **Mounting** **5 Marks.**
   Ampulla of Lorenzini, scales of fishes, feathers, Blood film, Mounting of chick embryo (24 & 48 hours).
3. Permanent stained preparation of paraffin sections provided. **5 Marks**
4. **Spotting** **20 Marks**
   (i) Museum specimens **2 Marks**
   (ii) Slides - Histology and Embryology **4 (2+2) Marks**
   (iii) Bones - limb -1 Girdle -1 Skull-1 Vertebra - 1
5. **Record and field work** **5 Marks**
6. **Viva** **5 Marks**

Help Book : University Prayogik Zoology.

ZOOLOGY (Sub. & Gen.)

Five questions are lobe set from each group. Students shall answer five questions attempting not more Ihan three from any group.

Group-A (CHORDATA)

1. **Bionomics:** General characters and classification (up to orders only) of living Chordates of the following groups- Protochordate, Cyclostomata, Pisces, Amphibia, Reptilia, Aves and Mammalia.
2. **Study of the following types :**
   (i) Urochordata-Herdmania (including reterogressive metamorphosis).
   (ii) Cephalochordata-Amphioxus.
   (iii) Fishes-Scolidon Type Study: Differences with that of a Bony fish.
   (iv) Reptilia-Biting and feeding mechanism of Snakes.
   (v) Aves-Columba : Flight adaptations, elementary idea of bird migration and Sanctuaries of India.
   (vi) Mammals-Characters, distribution and affinities of Prototheria and Metatheria.
3. Comparative study of the following,inVertebrates : Integument, Heart, Arotic Arches and Brain.

Group-B (EMBRYOLOGY)

1. (i) Types of vertebrate eggs and their early cleavage.
   (ii) Development of Amphioxus (Up to tM fonnaiton of Coelom*)* and chick (Up to 3 germ layers).
   (iii) Placenta in Mammals - Their development, types and functions.
2. **Blochemistry, Physiology and Endoctrinology :**
   (i) Structure and classification of Protein, Carbohydrates and fats.
   (ii) Physiology of Digestion, Excretion and Respiration in mammals.
   (iii) Histophysiology of the following Endocrine glands in mammals : Islets of langerhans, Testis, Ovary, Thyroid, Adrenal and Pituitary.

Help Book: University Guess Paper to Zoology (General & Subsidiary).

PRACTICAL

Time: 6 Hours **Full Marks: 25**

1. **Dissection:** **7 Marks.**
   Scoliodon-Different and Efferent branchial Arteries, Cranial nerves (IV, VII) & (IX, X) intenal ear, Eye muscles & their nerbe supply, Urinogenital system.
   Columba- Flight muscles, Arterial and venous system.
2. **Mounting (Permanent stalned preparation)** **4 Marks.**
   Scales of fishes, Pacten & Filoplume Feather of birds, Ampulla of Lorenzini.
3. **Spotting** **6 Marks.**
   Museum specimen-1 Bones-3
   (Limb, Girdle, Skull, Vertebrae of varanus and fowl) Slides. **2 Marks.**
4. Endocrinology and Embryology **2 X 2=4 Marks.**
   (i) Identification of permanent slides of the various development stages of Frog and Chick.
   (ii) Identification and comment upon the histological structure of various Endocrine glands.
5. **Practical Records** **4 Marks.**
   Help Book: University Prayogik Zoology.

BOTANY (Hons.) Paper-III

Time: 3 Hours **Full Marks: 75**

Ten questions to be set, four from Group A and six from Group B,
five to be answered, two from Group Aatld threefrom Group B.

Group-A

Gyamnosperum

1. Comparative study of the morphological, anatomical, embryological features, economic importance and affinities of Gymnosperms with reference to the following taxa.
   Pinus, Taxus and Gnetum.
2. Fossils - Definition, conditions for fossilization, modes of preservation.
3. Type- Lyginopteris and Cycadeoldea.

Group-B

1. Principles of plant taxonomy and a knowledge of classifications of parts as proposed by Linnaeus, Bentham and Hooker, Engler and Pranti and Hutchinson.
2. Intemational Code of Botanical nomenclature and its application. Modern trends in plant taxonomy with reference to embryology, cytology and phytochemistry.
3. A comparative account, diagnostic features, floral ranges and relationship of the following families:
   Ranunculaceae, Annonaceae. Nyctaginaceae, Apocyanaceae, Polygonaceae, Caryophyllaceae, Euphorbiaceae, Cucurbitaceae, Verbenaceae, Boraginaceae, Lamiaceae, Scrophulariaceae, acanthaceae, Commelinaceae, Cyperaceae, Poaceae, Orchidaceae.
4. Mendelian principles and its modification.
   Help Book : University Guess Paper to Botany (Hons.) III

BOTANY (Hons.) Paper-IV

(Anatomy, 'Embryology of Angiosperms & Applied Botany)

Time: 3 Hours **Full Marks: 75**

Ten questions to be set, four from group A and three each from group B and C.
Five to be answered at least one from each group.

Group-A

ANATOMY

1. Organization of root apex and shoot apex.
2. Root-stem transition.
3. Mechanical tissue.
4. Periderm.
5. Organization of tissue in relation to environment (Ecological Anatomy). Anomolous secondary growth in Bignonia, Nyctanthes, Achyranthes, Boerhaavia, Tecoma, Dracaena.

Group-B

EMBRYOLOGY

1. Various developmental processes in microsporogenesis, male gametophyte, megasporogenesis, female gametophyte, fertilization, apomixis, endosperm, embryogeny and polyembryony.
2. Importance of anther and embryoculture.

Group-C

1. Impotant medicinal plants of Binar.
2. **Systematic positlon botanical name 'and economic importance of the following:**
   (i) Oil Seeds - Mustard, Sunflower, Linseed, Seasamum and Ground nut.
   (ii) Pules - Gram, pigeon-peas, Green gram (mung), Lentil (Masoor) and Pea
   (iii) Cereals - Rice, Wheat, Barley, Maize and Ragi.
   (iv) Fruits - Litchi, Mango, Banana, Guavaand Makhana.
   (v) Vegeiables - Potato, Brinjal, Cauliflower, Spinach and Ladies finger.
   (vi) Timber - Teak, sal, Sisharn, Jamun, Mahogani.
3. Principles of plant tissue culture and its significance.
4. Biogas and its importance.

Help Book : University Guess Paper.to Botany (Hons.) IV

PRACTICAL

Time: 6 Hours **Full Marks: 50**

Phanerogams and Applied Botany

1 . Study of the living and the fossil Gyanosperms (Vegetative and reproductive parts). 4 Marks
2. Description and identification of an angiospermic plant upto genus only from the families prescribed in the course.
3. Embryo dissection, stigma squashing. 4 Marks
4. Identification of plants of economic importance. 4 Marks
5. Internal anatomy of primary and secondary (both normal and abnormal) of angiospermic plants. 8 Marks
6. Comment upon five spots. 10 Marks
7. Class record and field work. 7 Marks
8. **Viva voca** 5 Marks

It will be obligatory on the part of the students to take part in excursion and field works.

BOTANY (Subsidiary)

(Angiosperm, Plant Physiology & Environmental Biology)

Time: 3 Hours **Full Marks :75**

1. Angiospersm :

(A) Morphology and Taxonomy:

(i) importance of classification of angiosperms with reference to the systems of Bentham and Hooker and Hutchinson.
(ii) Biomial nomenclature.
(iii) A Comparative account of the diagnostic features and, economic importance of the following families Ranunculaceae, Convolvuiaceae, Myrtaceae, Cucurbitaceae, Euphorbiaceae, Asclepiadaceae, Acanthaceae, Polygonaceae Verbenaceae, Sccrophutartaceae, Musaceae and Poaceae.

(B) Anatomy:

(i) Tissue and tissue systems.
(ii) Meristems.
(iii) Organisation of tissues inrelation.to environment.
(iv) Initiation and activity of cambium including abnormal secendary growth in stems of Arnaranthus, Nyctanthes and Tinospora.

(C) Embryology:

(i) Life-cycle of a typical flowering plant, development of pollen, ovule and embryo sac, fertilization, endosperm and embryo.

2. **Plant Physiology :**

(i) Protoptasm - Physlcal and Chemical nature.
(ii) Osmosis-OP, DPD, TP and WP. Permeability, Plasmolysis.
(iii) Water relation-Absorption, Ascent of sap and Transpiration.
(iv) Enzymes- Nature and properties.
(v) Photosyntnesis-e- Photophosphorylation, Calvin cycle and Factors affecting photosynthesis.
(vi) Respiration-Glycolysis, Krebs cycle and Factors affecting Respiration.
(vii) Phytohorrnones - Auxlns and Gibberellins.
(viii) Photoperiodism.

3. Environmental Biology:

(i) Ecological factors. (ii) Plant communities & ecosystem

(iii) Succession (Hydrosere & Zerosere) (iv). Polh:ltion (Water and Air).

Help Book:- University Guess Paper to Botany (Subsidiary)

PRACTICAL

Time : 6 Hours **Full Marks: 25**

1. Description, diagnostic feature and identification of the plants belonging to the families included in the syllabus. 5 Marks
2. Section cutting, staining and temporary mocroscopic preparation of angiospermic stems of normal and abnormal structures. 5 Marks
3. Comment upon simple physiological experiments included in the syllabus. 5 Marks
4. To identify and comment upon five sopots. 5 Marks
5. **Practical records.** 5 Marks

BOTANY (General)

Time: 3 Hours **Full Marks : 75**

Group-A

PLANT PHYSIOLOGY & BIOCHEMISTRY

1. Physiology of water and mineral absorption.
2. Transpiration-Stomatal movement.
3. Mineral nutrition of the plants-Role of macro nutrients.
4. Enzymes-Nature, mode of action, factors affecting enzyme activity.
5. Photosynthesis-Mechanism and factors.
6. Respiration-Aerobic and anaerobic (Glycolysis Kreb's cycle and electron transport) .
7. Nitrogen metabolism; Nitrate reduction, amino acids, protein-Structure and types, Symbiotic and asymbiotic nitrogen fixation.
8. Phytohormones-Auxins and GibberelJin (discovery, structure and roles).
9. Growth-Measurement, factors affecting growth, role of light, temperature and humidity.
10. Movements-General Account.

Group-B

MICROBIOLOGY

1. A general account of bacteria, viruses and their economic importance.
2. Role of microbes in agriculture and industry.
3. **Important plant diseases of Bihar**

   Etiology, Symptoms and Control of the following-

   (i) Late blight of potato (ii) Rust of wheat.

   (iii) Red rot of sugarcane (iv) Tobacco mosaic virus.

PRACTICAL

Time: 6 Hours **Full Marks : 25**

1. Experiments in plant. physiology and biochemistry. 10 Marks
   (a) Test for carbohydrate, protein, amino acids and lipids.
   (b) Compare transpiration in mesophytic and xerophytic ieaves.
   (c) 0_2 is evolved during photosynthesis.
   (d) Compare the rate of imbibition of fatty and starchy seed.
   (e) Compare the rate of absorption and transpiration.
   (f) Moll's experiment.
2. Symptoms and morbid anatomy of the diseases prescribed in the course. 5 Marks
3. Comment upon five spots covering the courses of Paper-II. 5 Marks
4. **Class record.** 5 Marks

MATHEMATICS (Hans.) Paper- III

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

Stress should be given on *development of ideas and theories rather than on solving lengthy problems. As such, sixty percent of the questions should be from theory portion and forty percent from the problem portion.Twelve questions to be set. Six to be answered, selecting at least one from each group.*

Group-A

Real Analysis **(Four questions)**

Dedekind's construction of real numbers, Dedekind's theorem.· Sequence and its convergence, Cauchy sequence, Cauchy general principle of convergence, Monotonic sequences.

Canter's construction of real numbers.

(One question from Dedkind's and Cantor's theory of real numbers and one question from sequence portion).

Continuity and differentiability of a function of one variable, Properties and continuous and discontinuous functions, Rolle's theorem, mean value theorem, Taylor's theorem with Lagrange's and Cauchy's forms of remainder. Taylor's and Maclaurin's series of elementary functions. **(Two questions)**

Group-B

Infinite Series **(Three questions)**

Infinite series and its convergence, comparison test, Root test, Ratio test, Raabe's test, Cauchy's condensation lest, Leibnitz test for alternating series, Kummer's test, De Morgan and Bertrand's test, Higher logarithimic test, Absolute convergence.

Group-C

Abstract Algebra **(Five questions)**

Binary operation, Definition of a group, Uniqueness of identity and inverse elements in a group, Cancellation law and solvability of equations in a group, Concept of sub-group and cyclic groups, Concepts of rings, integral domain and field and their examples and general properties, Cancellation laws in a ring, divisors of zero. A finite integral domain as a field. (Three questions)

Cosets, Order of an element in a group, Lagrange's theorem, Group of residue classes, Homomorphism and Isomorphism of groups, Kernal of a group homomorphism, lsomorphism theorems for a cyclic group.

Ring of residue classes, Ring of matrices, subrings, homomorphism and ring isomorphism. (Two quesnons)

Help Book : University Guess Paper to Mathematics (Hons.) III

MATHEMATICS (Hons.) Paper-lV

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

Stress should be given on development of ideas and theories rather than on solving lengthy problems. As such, sixty percent of the questions should be from the. theory portion and forthy percent from the problem portion.

Twelve questions to be set, Six to be answered, selecting at least one from each Group.

Group- A

Vector Calculus **(Three questions)**

Product of three and four vectors, Differentiation of vector functions, differentiation of product of two vectors, Gradient, Divergence and Curl ofa vector function and simple deductions thereof, Work done by a force, moment of a localised vector about a point, scalar moment of a vector about a directed line.

Group-B

Differential Equation **(Three questions)**

Formation and solution foa differential equations, differential equations of the first order, separation of variables,homogeneous equations, exact differential equations, equations of the first order but of higher degree including Clairaut's form, orthoqonal trajectories, singular solutions, Linear differential equations of second order with constant coefficients, complementary functions and particular integral.

Group-C

Statistics **(Three questions)**

Resultant of a system of coplanar forces, equation of Jineof action-of the resultant of . coplanar forces, Conditions of equilibrium of a number of coplanar forces. (One question) Definition of virtual work, principle of virtual work, converse of the principle of virtual work for a system of particles and rigid body. (One question)

Common catenary. (One question)

Group-D

Dynamics **(Three questions)**

Rectilinear motion, uniformly accelerated motion, simpre harmonic motion, Hook's law. (One question)

Motion in a plane - components of velocity and acceleration in cartesian cordinates, radial and transeverse velocity and acceleration, tangential. and normal velocity and acceleration. (One question)

Motion of a particle under a central force, differential equation of a central orbit in reciprocal polar and pedal coordinates, Eepler's laws of motion deduced from Newton's law of gravitation. (One question)

Help Book : University Guess Paper to Mathematics (Hons.) IV

MATHEMATICS (Subsidiary)

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

Answer eight questions, selecting at least two from each group.

Group-A

Differential Calculus **(Three questions)**

Leibnitz's theorem, Taylor's series and Maclaurin's series, Partial derivatives, Euler's theorem, Indeterminate forms, Equations of Tangents and normals, Asymptotes, Formulae of radius of carvature in different co-ordinates system, Maxima and Minima of functions of single variable.

Integral Calculus **(Three questions)**

Integration by summation method, Reduction formulae, Rectification and quadriture with simple examples, Volume and surface of solid of revolution, Moment of Inertia, Simple use of double and triple integration of Gama and Beta functions.

Differential Equations **(Three questions)**

Differential equations of 1st order and 1st degree, Separation of variables, Hornoqenenus equations and Linear forms, Differential equations of first order and higher degrees, Caliraud's form, Linear differential equations of second order with constant co-efficients, Orthogonal trajectorions.

Group-B

Vector Analysis

Classification of Vectors, Triple products, Differentiation ora vector function, Differentiation of a product of two vectors, Gradient of a scaler, Divergence and curb cif a vector in Cartesiari Co-ordinates.

Group-C

Mechanics **(Two questions)**

Coplanar forces system, Necessary and sufficient condition for equilibrium of a particle, Necessary condition for a system of a particle to be in equillbrium, Definition of equipollent force system, Reduction of a general plane force system, Equation of the line of action of the resultant, Principle of virtual work.

Basic concepts of mechanics, Basic laws of mechanics, Inertial frames of reference, Work and Energy, Principles of linear momentum, Angular momentum and energy for a partiele. Conservation field and potential energy, Principle of conservation of energy for a particle.

Rectillinear motion-Uniformly accelarate motion (including connected system), Resisted motion, Harmonic Oscillator, Damped and force vibrations, Elastic springs and strings, Hooke's law, vertical and horizontal vibrations of aparticle attached to an elastic string.

Motion in a plane-components of velocity and acceleration, Cortesian, radial and transverse, tangential and normal. (Three questions)

Help Book: University Guess Paper to Mathematics (Subsidiary).

MATHEMATICS (General)

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

Stress should be given on development of ideas and theories rather than on solving problem; problems should be short and intelligent.

1. **Differential Calculus** - Four question to be set. Three questions to be answered.
2. **Integral Calculus** - Four questions to. be set. Three questions to be answered.
3. **Analytical Geometry of two dimensions** - Three questions to be set. Two questions to be answered.
4. **Analytical Geometry of three dimensions** - Three questions to be set. Two questions to be answered.

1. **Differential Calculus** **(Four questions)**

Successive differentiation, Leibnitz's theorem, Statementof Taylar's series and Maclaurin's series, expansion using them, partial derivatives, Euler's theorem, Exact differential, Tangents and Normals, Sub-Tangent, Sub-Normal, Polar sub-tangent, Polar sub-normal, intrinsic and pedal equations, Curvature, Asynptotes.

2. **Integral Calculus** **(Four questions)**

Integration of rational function formula, Definite integral as limit of a sum, Reduction formula, Rectification and quadrature, Surface and Volume of single solids of revolution, moment of Interia, centre of gravity.

3. **Analytical Geometry of two dimensions** **(Three questions)**

System of circles, Coaxial circles, Change of axis, Standard equations of parabola, Ellipse and hyperbola, Condition for the general equaton of the second degree of represent parabola, ellipse and hyperbola and reduction into standard form, Equations of tangent and normals in case of general equations (using Calculus) and their forms in case of particular conic section.

4. **Analytical Geomefry of three dimensions** **(Three questions)**

Rectangular, Spherical, Polar and Cylindrical Co-ordinates, Direction cosines, Angle between straight lines, Equations of planes and straight lines, Shortest distance between lines, Coplanar lines, Equations of sphere of cylinder.

COURSES OF STUDY
B. COM. PART-II

ACCOUNTS (Hons.) Group -A
BUSINESS LAW (Hons.) Paper - III

Ful Marks-l00 **Time-3 Hours**

Detailed study of Indian Law relating to Contracts, including bailment, pledge and agency; Sale of Goods Act, Carriage of Goods Act, Negotiable Instruments Act, Insolvency and Arbitration Acts .

An outline of Indian Partnership Act.

Help Book : University Guess Paper to Business Law.

SPECIALISED ACCOUNTING (Hons.) Paper-IV

Full Marks-100 **Time-3 Hours**

1. Profit/Loss. Prior and After incorporation, Bonus shares.
2. Amalgamation, Absorption and Reconstruction of a Company.
3. Liquidation ot a Company (Voluntary only).
4. **Holding Company :** Preparation of consilidated Balance Sheet with one subsidiary.
5. Account of Banking Company.
6. Account of non-trading institutions- Receipt arid Payment Account and Income and Expenditure Account.
7. Insolvency.

Help Book : University Guess Paper to Specilised Accounting.

CORPORATE ADMINISTRATION (lIons.) Group-B
BUSINESS LAW (Hons.) Paper - III

Full Marks-l00 **Time-3 Hours**

Detailed study of Inidian Law relating to Contracts, including bailment, pledge and agency; Sale of Goods Act, Carriage of GoodS Act, Negotiable Instruments Act, Insolvency and Arbitration Acts.

An outline of Inidian Partnership Act.

Help Book : University Guess Paper to Business Law.

COMPANY LAW & ADMINISTRATION (Hons.) Paper- IV

Detailed study of the Companies Act, 1956. Definition and meaning. Incorporation of company and connected matters; prospectus, shares and debentures; Registration of changes; Management, Audit and Accounting; Directors, Managing Directors, etc.

Meetings, resolutions and procedure-Secretaries and Treasurer, Arbitration and Compromise, Arrangements and Reconstruction Prevention of Oppression and Mismanagement, Winding up of Companies-Voluntary and compulsory- Companies incorporated outside India-Government Companies.

Administration :- Company profit and finance, Pattern of liability and assets, sources and uses of funds-loans and investments-Capital issues-Dividends. Companies incorporated out side but working in India. The Department of Company Law Administration- the Advisory Commission.

Help Book: University Guess Paper to Company Law & Administration.

BUSINESS ENVIRONMENT (HONOURS) GROUP - C
BUSINESS LAW (Hons.) Paper-III

Detailed study of Indian Law relating to Contracts, including bailment, pledge and agency; Sale of Goods Act, Carriage of Goods Act, Negotiable Instruments Act, Insolvency and Arbitration Acts. An outline of Indian Partnership Act.

Help Book : University Guess Paper to Business Law.

ECONOMIC & LABOUR LEGISLATION (Hons.) Paper- IV

Full Marks-100 **Time-3 Hours**

The Industries (Development and Regulation) Act, 1951; Capital Issues (Control) Act, 1947: Foreign Exchange Regulation Act, 1973, MRTP Act, 1969, Essential Commodities Act, 1955.

Factories Act, 1948. Workmen's Compensation Act, 1923. Industrial Disputes Act, 1947. Employees State Insurance Act, 1948. Payment of Bonus Act, 1965. Trade Union Act, 1926. Minimum Wages Act, 1953.

In the study of these laws emphasis must be placed on the philosophy behind passing the laws and their objectives.

BUSINESS FINANCE (HONOURS) GROUP - D
BUSINESS LAW (Hons.) Paper- III

Full Marks-100 **Time-3 Hours**

Detailed study of Indian Law relating to Contracts, including bailment, pledge and agency; Sale ot Goods Act; Carriage of Goods Act, Negotiable Instruments Act, Insolvency and Arbitration Acts. An outline of Indian Partnership Act.

Help Book: University Guess Paper to Business Law.

BUSINESS TAXATION (Hons.) Paper-IV

Objectives of Taxation: Canons of Taxation. Equity in Taxation-Ability of pay. Principles of Taxation, principles of Maximum Social Advantage and Principle of least Aggregate Sacrifice.

The various recognised methods of Tax Planning such as legal diversion of income ensuring maximum claim for deductions taking advantage of available reliefs and rebates; Problems arising from provision for aggregation of income under certain circumstances and legal opportunities of avoidance of such provisions.

Accounting precautions to be taken to obtain maximum tax relief;Selection of Accounting year. Problems of Capital Vs.Revenue Income, Expenditure and loss; Significance of depreciation, other similar allowances in **Planning. Introduction of Wealth Tax :-** Definitions-Assessment year,Valuation date, Asset and Net Wealth, Residence and Citizenship: Exempted Assets and Rate Structure.

Valuation of Assets :- Land and Building, Shares and investments, Interest in business and firms.

Assessment Procedure and Administration -

Return of Wealth; Type of assessment; Penalties and prosecutions, Computation of Net Wealth-Numerical problems.

Bihar Sales Tax : Basic concepts, sale, turnover, Dealer and Goods; Registration of Dealer. Exemption of licence; Determination of turnover and recovery of tax and penalties.

SUBSIDIARY & GENERAL COURSE SUBJECTS
MONEY & BANKING (Sub. & Gen.)

Full Marks - 100 **Time-3 Hours**

MONEY

1. **Money:** Definition, Functions, Importance. and Classification; Value of Money-Meaning & Determination.
2. **Index Number :** Meaning, Importance & Preparation of Simple and Weighted Index Numbers.
3. **Quantity Theory of Money :** Fisher's Equation. Cambridge & Keyne's Views.
4. **Inflation & Deflation :** Meaning, Causes, effects on different classes & methods to check them.
5. **Monetary Policy:** Objectives and need.
6. **Exchange Control:** Meaning, Objectives & methods.
7. **Foreign Exchange :** Meaning & determination of exchange rate-Outline of Purchasing Power Parity Theory & Balance of Payment Theory-Causes of changes in exchange rates.
8. **Gold Standard :** Meaning, kinds & break down of gold standard; Re-introduction.
9. **I. M.F.-** Objectives & present position.

BANKING

1 . Unit Banking and Branch Banking.
2. **Commercial Banks :** Functions, Credit Creation & Investment Policy of Commercial Banks.
3. **Central Bank :** Functions, Methods of Credit Control.
4. **R.B.I. :** Function, Success & Failures.
5. Agricultural Credit & NABARD. Co-operative Banks & Rural Banks.

HelpBook : University Guess Paper to Money & Banking.

PLANNING & ECONOMIC DEVELOPMENT (Sub. & Gen.)

Full Marks-100 **Time-3 Hours**

1. **Nature of Economic System:** Capitalism, Socialism and Mixed Economy-their characteristic features-Merits & demerits of each system.
2. **Meaning, objects, scope and importance of economic planning:** Types of economic planning-Features of underdeveloped economy.
3. **Essentials of Planning. Steps in planning:** planning in India.
   Economic Development of India : Role of State in growth and industrial development in a country.
4. **Indian Agriculture:** Growth and development of Agriculture in India-Land Reforms-Subdivision and fragmentation of landholdings-Fixation of Ceiling-Consolidation of holdings and Co-operative farming-Five Year Plans and

Agriculture - Food problem and food production in India.

5. **Problems of lndustrlausation in India:** Industrial policy of the Government of India since 1948-Growth of Public Sector. Large Scale Industries-Problems and present position of Iron & Steel, Cotton, Textile, Jute & Sugar Industries, Protection to Industries, Impartance of Small Scale and Cottage Industries.
6. **Trade:** Trends and special features of foreign trade- Tarriff protection, Composition & directive since 1950, Means of Transport-Railways, Road & Air transport, Their progress after independence.

Help Book: University Guess Paper to Planning & Economic Development.

BUSINESS LAW (Gen.)

Full Marks-100 **Time-3 Hours**

Detailed study of Indian law relating to Contracts including Bailments, Pledge and Agency. Sale of goods, Carriage of goods and Affreightment.

Outline of law relating to Joint Stock Companies Partnership, Negotiable Instruments and Insolvancy.

Help Book: University Guess Paper to Business Law.