# NEW
# GUIDE TO

## Course of Study
## for

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

# SCIENCE
## &
# COMMERCE

## Revised
## Honours & Pass

# CONTENTS

**B.SC. (Honours) Part - I**



**B.Com (Honours) Part-I**



**(Subsidiary & General Course Subjects)**

# COURSE OF STUDY
# B.Sc. (Honours) Part - I

## M.I.L.
## (हिन्दी भाषियों के लिए)

**समय : 3 घंटे** **पूर्णांक : 100**

**अंकों का विभाजन :**

(क) तीनों पाठ्य पुस्तकों से एक–एक परिचयात्मक या सारांशपरक या वर्णनात्मक प्रश्न –15x3=45 अंक

(ख) पाठ्य पुस्तकों से दो अर्थ–लेखन –10x2=20 अंक

(ग) हिन्दी–व्याकरण एवम् रचना – 30 अंक

(निर्धारित अंश–लिंग–निर्णय, मुहावरे, संधि, समास, सन्धि–समाज में अन्तर, उपसर्ग–प्रत्यय में अन्तर, विपरीतार्थक शब्द, कर्त्ताकारण का 'ने' चिह्न) – 5 अंक

(घ) वाक्य शुद्धि –5 अंक

**निर्धारित पाठ्ग्रन्थ :**

1. **कितने चौराहे–**फणीश्वरनाथ रेणु
2. **काव्य भारती–**डॉ. जनक साह
3. **गद्यजीवितम –** डॉ. प्रमोद कुमार सिंह

**व्याकरण के लिए सहायक ग्रन्थ :**

आधुनिक हिन्दी व्याकरण एवं रचना–डा. बासुदेव नन्दन प्रसाद

व्याकरण भास्कर – डॉ. बचनदेव कुमार

Help Book : University Guess Paper M.I.L.

## Non-Hindi
## (हिन्दीत्तर भाषा–भाषियों के लिए)

**समय : 1.30 घंटे** **पूर्णांक : 50**

**अंकों का विभाजन**

पाठयपुस्तक के गद्य–पद्य अंशों से एक–एक आलोचनात्मक प्रश्न –15x2=30 अंक

निबंध –10 अंक

व्याकरण –10 अंक

(क) निबन्ध केवल शिक्षा, वैज्ञानिक आविष्कार, ऋतु, पर्व–त्योहार एवं देश के महान पुरुषों के जीवन से सम्बन्धित विषयों पर पूछे जायेंगे।

(ख) व्याकरण के लिंग–निर्णय, विपरीतार्थक शब्द, मुहावरा और वाक्य–शुद्धि निर्धारित किये जाते हैं।

**निर्धारित पुस्तक :** साहित्य–संचय – डा. बचनदेव कुमार

**व्याकरण के लिए सहायक पुस्तकें :**

(क) व्याकरण भास्कर – डॉ. बचनदेव कुमार

(ख) व्याकरण चन्द्रिका – डा. अवधेश्वर अरुण

**Help Book :** University Guess Paper Non-Hindi.

## ENGLISH COPOSITION

**Time : 1.30 hours** **Full Marks : 50**

(A) Rapid Reader - (Geogre Rwel - Animal Farm) 20 Marks

(B) Translation 15 Marks

(C) Grammar 15 Marks

(Prepostion-5, Narration-5, Correction-5)

**Help Book :** University Guess paper Enlgish Compostion.

## URDU COMPOSTION
### Either of the two books prescribed

1. Akhtar Quadris & Mohd. Sulaiman - Adabistan

or

2. Dr. Abdul Wassey & Dr. Q.A. Hashmi - Adabiyat

## PAPER - I
## Prose and Grammer
**Prose - 30 and Grammer - 20 Marks.**

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

**Grammer :** Azdad, Jins, Maktoob Nigari prescribed pieces.

**1. From Adabistain (Selected pieces)**
- (i) Sair Pahale Darwesh Ki - Mir Amman
- (ii) Guzara Husas Zamana - Sir Syed
- (iii) Kutub ka Mutalaya - Zakaullah Khan
- (iv) llm-o-Amar - Hali

**2. From Adabiyat (Selected pieces)**
- (i) Mahsha - Akhtar Orainwi
- (ii) Sair-E-Zindagi - Mohd. Hussain Azad.
- (iii) Rasm-o-Riwaj - Sir Syed.
- (iv) Urdu-Hindi - Shiblee

## PHYSICS (Honours) Paper —I

***The course shall consist of two theory papers of* 75 *marks each Paper-I (theory) and Paper-II (theory) The pass marks In the two theories papers taken together will be* 67 *and the examination in each paper will be* of 3 *hours duration. There will also be. one practical paper of 50 Marks. The pass marks wutbe* 23 *and the examination will be of* 6 *hours duration in the paper. The following will be the detailed. Courses.***

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

*(12 Questions be set.* 6 *to be answered one fromGroup A*, *4 from Group B and 1 from Group* C)

**Group - A (Special theory of Relativity) :** **2 questions**

Galilean Traristormetion, Inertial frame of reference, Lorentz-Fitzerald (Contration, Einstein postulates, Lorentz Transformation), & its consequences. Length contraction and time dilation. Addition of velocities; Dragging of light by moving medium, Relativistic Doppler effect for propagation of light waves, Aberation Of light, Mass-energy Relation.

**Group - B (Mechanics and properties of Matter) :**

Inertialframe otreterерrceandnon-lnterftal frame, Coriolis and centrifugal forces and their simple applications. Generalised coordinates, Constraints (holonomic & nonhoIonomic) D'Alernbert's principle and Lagrange's equations of motion, Hamilton's equation of motion and their simple of applications.

Gravitational potential and field doe to bodles ot regular geometrical shape, Motion in centralfleld, Kepler'slaws, two particle motion in a central field.

Elasticity and elastic constants, Relation between elastic constants, Bending of beams and cantilivers, Torsion of cylinder and rigidity modulus by flat spiral spring. Non flat spiral spring. Effect of temperature and pressure on elasticity.

Surface tension and surface energy, Principle of virtual work and its application to surface tension, Ripples and gravity waves, surface tenston by the method of ripples. Effect oftemperafure and pressure on surface tension.

Pefect fluids, equation of continuity, Euler's equation for perfect Fluid, Bernoutll's equation, Helmholtz Kelvin theorem on vorncity.

Viscosity of liquids, critical veloclty, Poiseulle's formula with correction, Flow of a compressible fluid through a narrow tube, Effect of temperature and pressure on viscosity.

**Group- C (Waves and Vibration) :** **2 questions.**

Differential equation of a wave, Equation of progressive waves, stationary waves, Compression waves in fluids and in extended solids.

Free damped, forced oscillations in one dimension, Fourier series and its applications to rectangular and saw tooth waves, vibratin of string.

Intensity and loudness of soundand their measurements Acoustics of buildings.

**Help Book:** *University Guess Paper to Physics (Honours) I.*

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## PHYSICS (Honours) Paper- II

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

*(12 questions to be set 6 to be answered, 2 from Group A and 4 group B)*

**Group - A (Heat)** **4 questions.**

Derivation of Maxwell's law of distribution of velocities and its experimental verification, Equipartition of energy, Mean free path.

Transport phenomena-Viscosity, conduction and diffusion, Brownian motion-Langevin and Einstein's theories and experimental determination of Avogadro's number.

Rectilinear flow of heat in a mental rod, conductivity by periodic flow method, Relation ofthermal and electrical conductivities, Vander walls equation of state.

**Group - B (Thermodynamics)** **8 questions.**

Zeroth law of thermodynamics, Definition of temperature, first and second law of thermodynamics, Carnot's engine and Carnot's theorem, Absolute scale of temperature, Claussius's inequality, Entropy changes in reversible and irreversble processes, Enthalpy, Helmholtz and Gibb's functions, Gibbs-Helmholtz equations. Maxwell's equations and its application to simple physical problems.

Thermodynamic description of phase transition. Chemical potential, Latent heat oftransition. Clapeyronquation, Ehrenfest scheme of phase transition.

Joule- Thompson effect, Liquefaction of gases with special reference to hydrogen and helium, Production and measuremet of lowtemperatere.

Black body radiation, Kirchoff's law, Stefan's law, Wien's law, Planck's law and its experimental verification. Einstein and Debye theories otspecltic neat of solids;

**Help Book:** University Guess Paper to Physics (Honours) II

## PRACTICAL

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

The course shall include the following experiments.

1. 'G' by Kater's Pendulum.
2. Young modulus by Flexure of beam.
3. Elastic constants by Searte's method.
4. Rigidity modulus by
   (i) Barton's apparatus.
   (ii) Mexwell's well's needle.
5. Moment of inertia by Fly-Wheet.
6. Surface tension by Jaeger's Method.
7. Surface tension by method of Ripples.
8. Surface tension by soap-bubble.
9. Viscocity of water by capillary flow method.

**Help Book:** *University Practical Physics*

## PHYSICS ( General & Subsidiary )

*The course shall consist of one theory paper (Paper-I theory) of* 75 *marks. The pass marks will be* 23 *and the examination will be of* 3 *hours duration in this paper. There will also be one practical paper (Paper-I practical) of 25 marks. The pass marks will be 10 and the examination will be of* 6 *hours duration in this paper.*

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

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

**Group - A : Relativity, Mechanics, Properties of Matter** **(Five questions)**

Galilean Transformation, Inertial frame of reference, Michelson-Morley experiment, Lorentz-Fitzerald contraction, Einstein postulates, Lorentz transformations and its consequences, Length contraction and time dilation, Addition of velOcities, Relativistics Doppler effect for propagation of light waves, Variation of mass with velocity, Mass energy relation.

Inertial and Non-inertial frames of references, Corioli's and centrifugalforces and their simple applications. Motion in central field, Kepler's laws, Generalised coordinates, Constraints (Holonomic + Nonholonomic), Lagrangian equation of motion and their simple applications.

Elasticity and elasflc constant.Betatlon between elastic constants, Bending of beams and cantilevers, Torsion of cylinder and rigidity modulus by flats spiral spring, Effect of temperature and pressure on elasticity.

Surface tension and surface energy, Ripples and gravity waves, Surface tension by the method of ripples, Effect of temperature and pressure on surface tension.

Perfect fluids, equation otcontlnuity, Euler's equation lor perfect fluid, Bemoulli's equation.

Viscosity of liquids, critical velocity, Poiseuille's formula with correction, Flow of a compressible fluid through a narrow tube, Viscosity of gases, Rankin method, Effect of temperature and pressure on viscosity.

**Group - B : Waves and Acoustics** **(Two questions)**

Differential equation of a wave, Equation of progressive waves, Stationary waves, Compression waves in fluid and in extended solids.

Free, damped and forced oscillations, Fourier analysis, Vibration of strings, Intensity and loudness of sound and their measurements, Accoustlcsot buildings, Ultrasonics.

**Group- C : Thermal Physics** **(Five questions)**

Maxwell's law of distribution of velocities and its experimental verification.

Degrees of freedom and equipartion of energy, Mean free path and its experimental determination. Perfect Gas equation and Vanderwaal's equation of state. laws of Thermodynamics, Absolute scale of temperature. Cornot's theorem and Carnot's cycle. Entropy and its calculation in simple cases. thermodynamic retatlons and their application to simple physical problems, Classius-Claperyon equation, Joule-Thomson Effect, Liquifaction of Gases with special reference to Helium.

Kirchoffs Law and black-body radiation, Stefan Boltzmann Law—its education and experimental verification.

**Help Book:** *University Guess Paper to Physics (General & Subsidiary)*

## PRACTICAL - Paper - I

**TIme : 6 Hours** **Full Marks : 25**

The courses shall include the following experiments:

1. Determination of 'g' bar pendulum.
2. Determination of Youngs modulus by flexure of beam.
3. Rigidity modulus by
   (i) Statical method (ii) Dynamical method.
4. Moment of inertia by inertial table and M.L of Flywheel.
5. Surface tension by jaeger's method.
6. Viscosity of liquid by capillary flow method.
7. Viscosity by Stokes method.
8. Determination of 'gamma' by constant pressure thermometer.
9. 'Gamma' of liquid by Sinker method.
10. Specific heat of solid with radiation correction.
11. Specific heat of liquid by method of cooling.
12. Thermal conductivity of copper.
13. Thermal conductivity of ebonite by Lee's disc method.
14. 'J' by Joule's calorimeter.
15. Frequency of tuning fork by Melde's experiment.

**Help Book:** *University* Guess *Paper to Practical Physics.*

## CHEMISTRY (Honours) Paper -I

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

*Nine questions to be set. Five questions 10 be answered, selecting two from group 'A' end three from group 'B'. Short answer type questions are recommended. There may be several parts in a question and different units may be mixed in questions. While setting questions the entire syfJabus may be covered as far as practicable.*

**Group-A**

**Physical Chemistry : 25 Marks** **(Four questions)**

1. **Gaseous State:** Derivation of Vander waals equation of state, critical phenomenon, Critical constants and their evaluation in terms of vander waals constants. Determination of vander waals constants, law of corresponding states, reduced equation of states, Boyle's temperature.
2. **Liquid State:** Free volume of a liquid, vapour pressure, Troutons rule, Surface tension, viscosity and their measurements, Molar volume, Parachore, Rheocore and chemical constitution, Kopp's law, internal pressure, solubility parameters, liquid crystal.
3. **Phase Equilibria:** PhaSe rule and the definition of terms, involved in it, one component system. Water and sulphursystem.two component system Ag-Pb, KI + water, eutectic point. Formation of compounds with congruent melting points, Deliquescence, efflorescence, triple point.
4. **Electrical Transport:** Conduction in electrolytic solutions, Equivalent, specific and Molar conductances, cell

constant, effect of dilution on conductance, Ionic mobility; migration of ions, Kohkausch's law, transport number and its determination by Hittorff's method, Applications of conductance measurements.

## Group-B

**Inorganic Chemistry : 50 marks** **(Five questions)**

1. **Periodic Properties:** Atomic and ionic radii, ionization potential, electron affinity and electro negativity, their trends in periodic table and application in explaining and predicting the chemical behaviours.
2. **Chemical Bonding :** Covalent Bond: V.B. theory and its limitations, Directional characteristics of covalent bond, Hybridisation and shape of inorganic molecules and ions VSEPR theory with special reference to bond and electronegativity, M.O. theory. Homonuclear and Heteronuclear diatomic molecules [CO, NO], bond strength, bond energy.
   **Dipole moment:** Percentage ionic character in HX, Molecular geometry of polyatomic molecules.
   **Ionic Solids:** Lattice energy, Born Haber cycle, solvation energy solubility of ionic solids, polarizing power and polarizibility of ions, Fajan's rule. Weak Interactions : H-bonding and vander waals forces.
3. **s-Block Elements:** Comparative study, diagonal relationship, hydrides,
4. **p-Block Elements:** Comparative study, Relationship arnong metal, nonmetal and metalloids elements of group 13-17, elementary idea of hybrides oxides and halides. Hydrides of boron. Diborane and Higher boranes. Borazine, boro hydrides, fullerenes.

**Help Book :** *University Guess Paper to Chemistry (Honours) I*

## CHEMISTRY (Honours) Paper- II

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

*Nine questions to be set. Five questions to be answered, selecting two from group j4' and three from grop B '. Short answer type questions are recommended. There rnay be several parts in a question and different units may be mixed in questions. While setting questions the entire syllabus may be covered as far as practicable.*

## Group-A

**Physical Chemistry - 25 Marks** **(Four questions)**

1. **Atomic Structure :** Black body radiation and Planck's quantum theory, Wave - particle, duality for electron and de-Broglie equation, experimental verification of de-Broglie equation by Davission and Germer experiment, de-Broglie wave associated with Bohr orbit in l+atorn, Heisenberguncertainty principle and its importance.
2. **Solid State:** Types of solids, space lattice and unit cell. Law ot rational indices - Miller and Weiss indices. Interplaner spacing in cubic system, radius ratio and coordination number, packing of particles - octahedral and tetrahedral voids.
3. **Thermodynamics:** Objectives of thermodynamics, thermodynamic terms, First law and its mathematical formulation, Internal energy, enthalpy, Cp and Cv relation, Joule-Thompson effect. Joule Thomson coefficient for ideal and real gases, Inversion temperature, work done in irreversible expansion, Reversible and irreversible adiabatic expansion of ail ideal gas.
4. **Thermo-Chemistry:** Exergonic and endergonic compounds, enthalpy of reaction at constant volume and constant pressure, enthalpy of combustion, Bomb calorimeter, enthalpy of neutraliZation and ionization, Kirchoff's law, Hess's law, bond dissociation energy.

## Group-B

**Organic Chemistry : 50 marks** **(Four questions)**

1. Estimation of nitrogen and sulphur in an organic compound. Determination of molecular mass of a carboxylic acid by silver salt method and of an organic base by chloroplatinate salt mathod.
2. **Structure and Bonding:** Hybridization and geometry of hydrocarbons bond lengths, bond angles, bond dissociation energy, localized and delocalized chemical bond, Vander Waal interactions and Hydrogen. bonding resonance, hyperconjugation, inductive & electromeric effect, their effects on properties of compounds.
3. **Mechanism of organic Reactions:** Homolysis and heterolysis of covalent bonds. Types of reagents: electrophilic & neleophilic. Types of organic reactions, energy consideration with reference to activation energy and transition state. Reactive intermediates: carbanions, carbocations and free radicals (generation, structure and stability).
4. **Alcohols:** Classification and nomenclature. Monohydric alcohols: Methods of preparation, Physical and properties. Distinction among $1^{Q}$, $2^{Q}$ and $3^{Q}$ alcohols. Preparation and properties of (i) Ethylene glycol (ii) Glycerol and (iii) Allyl Alcohol,
5. **Organometallic Compounds:** Drganomagnesium compounds :- The Grignard reagent- formation structure and application in orqantc synthesis. Basic idea about organometallics : Dimethylzing, Dimethylcadmium; Alkylithium and Lithium dialkylencuprate.
6. **Organesulphur Compounds:** Preliminary idea of organic sulphomides, sulphonics and sulphonic acids.jnethodsof

formation and chemical reactions of thiols and thioethers .

7. **Aldehydes and Ketones:** Nomenclature, Structure of the carbonyl group. general methods of preparation, propernes.ot aldehydes and ketones. **An** introduction to unsaturated aldehydes and ketones.
8. **Carboxylic acids:** General methods of preparations and properties of monocarboxylic acids and their derivatives such as ester, acid chlorides, amides and anhydrides. Methods 6fformation and chemical reactions of (i) unsaturated monocarboxylic acids and (ii) dicarboxylic acids.
9. **Organic compounds of Nitrogen:** Classification, nomenclature and structure of amines. Preparation and properties of aliphatic amines. Seperation & identification of $1^2$,$2^2$ and $3^2$ amines. Preparation, properties and estimation of urea.

**Help Book:** *University Guess Paper to Chemistry (Honours) II*

## PRACTICAL

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

Following exercises may be performed

1. Qualitative analysis of inorganic salt mixture containing four radicals. 20 Marks
2. Qualitative organic analysis
   (a) Detection of elements: N, S and halogens, functional groups. 5 Marks
   (b) Detection of functiona1 group in simple organic compounds. (aldehydes, ketones, carboxyl acid, amides, amine, phenol, nitro group and sulphonic acid group) preparation of derivative is notrequired. 15 Marks

Preparation of derivative is not required.

3. Notebook 05 marks.
4. Viva-Vice 05 Marks.

**Help Book:** *University Practical Chemistry*

## CHEMISTRY (General &. Subsidiary )

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

*Nine questions to be set and five of them to be answered selecting not more than two questions from group A, B or* C.

### Group-A

**Physical Chemistry - 25 Marks** **(Three questions)**

1. **Gaseous State:** Van der waals' equatlon of state for real gases. Principle of continuity of states, relationship between critical constants and Van der waal's constants, law ofcorrespondlnq states, liquification of gases.
2. **Solid State:** Space lattice and unit cell, law of rational indices, distance between crystal plates, diamond and graphite structures, rutile structure, fluorite structure, coordination number, radius ratio and geometry, limitations.
3. **Conductivity and E.M.F. :** Types of conductivity, effect of dilutions on conductivities, cell-constant, experimental set up for measurement of conductivity. Electromotive force, electrode potential, hydrogen electrode, calomel electrode, electromotive series and its significance.
4. **Liquid and Colloidal State:** Structural diference between solid, liquid and gas, molar volume, surface tension, viscosity, parachore and chemical constitution, inter molecular forces, classification of colloids, preparation and properties, preparation of colloidal solutions, electrical and optial properties, coagulation, stability of colloids, emulsion, gels, soap and surface active agents.

**Group-B Inorganic Chemistry - 25 Marks** **(Three questions)**

1. **Atomic Structure and Periodicity:** Special features of Bohr model like quantization of energy, expression for radius and energy of orbits, Hydrogen spectrum and its interpretation, ionization energy, wave particle duality of electron and de-Broglie equation, quantization of angular momentum as a consequence of de-Broglie relation, uncertainty-principle, variation of atomic and ionic radii, ionization energy, electron affinity among groups and periods, their applications in predicing and explaining chemical behaviour.
2. **Structure and Shape of Molecules:** Nature of covalent bond, orbital overlap, directional properties of covalent bond and hybridization, VSEPAR model for geometry of molecules/ions like $C1_2$, $H_20$, $NH_3$, CIF 3' $PCl_s$, polaritizing power, polarizability of ions, Fajan's rules, percentage ionic character, dipole moment and electro negativity difference.
3. **Study of s-Block Elements:** Comparative study and diagonal relationship of elements, meal hydrides and their properties, solvation and complex forming tendencies of ions of the elements, their importance in bio-systems.
4. **Study of p-Block Elements :** Comparative study including diagonal relationships of elements from groups 13-17, their hydrides oxides, oxy-acids and bolides of important members, preparation properties and structure of diborone, borazine and borohydrides, structure of silicates, properties of halogens, interhalogens and polyhalides, preparation, properties and bonding of xenon compounds and their structure.

## Group -C

**Organic Chemistry - 25 Marks** **(Three questions)**

1. **Idea of Electron Displacement :** Electrophiles and nucleophiles, inductive, resonance and electromeric effects, strength of acids and bases on the. basis of electron displacement.
2. Study of chemistry of alkanes, alkenes, alkynes, alkanols, alkanones, alkanoic acids and their derivatives, aliphatic amines, Emphasis may be given on their geometrical structures.
3. Simple treatment of geometrical and optical isomerism, E-z nomenclature of geometrical isomers, D-,L-configurations of optical isomers.
4. Properties and synthetic uses of Grignard reagent, reformatsky reaction.
5. Estimation of Nand S, Determination of molecular weightof organic acid by (a) AgCland base (b) $H_2PtCI_6$ methods.

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

## PRACTICAL

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

1. Analysis of cations and anions in given inorganic salt mixtures containing not more than four radicals. 12 Marks
2. Organic Preparation :
   (i) Acetylation of aniline and paratoluidine
   (ii) Hydrolysis of methyl salicylate and ethyl benzoate 08 Marks
3. Record and viva-voca. 05 Marks

**Help Book :** *University Practical Chemistry*

## BOTANY (Honours) Paper -I

*There shall be two theoretical and one practical papers in the 1 st & 2nd year examinations carrying 75 marks in each theory paper & 50 marks in each practical paper. In the 3rdyear there shall be three theory and one practical paper carrying 100 marks each. Students of all the three parts are required to participate inbotanical excursions organised by the department to enrich the laboratory and their knowledge.*

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

### Cryptogams

*Ten questions to be set, five from group,* A *and five from group B, five to be answered, at least two questions from each group.*

**GROUP-A**

1. Cell cycle, mitosis and meiosis.
2. General characters, classification upto orders, evolutionary trends and economic importance of Algae.
3. Cyanobacterial cell.
4. **Algae:** Nostoc, Volvox, Oedogonium, Drapamaldiopsis, Chara, Ectocarpus, Fucus and Polysiphonia.
5. **Lichens:** Thallus structure and economic importance.

**GROUP-B**

1. General characters, classification upto orders, evolutionary trends and economic importance of Bryophyta and Pteridophyta.
2. **Bryophyta:** Marchantia, Anthoceros, Sphagnum and Polytrichum.
3. **pteridophyta:** Psilotum, Lycopodium, Selaginella, Equisetum, Osmunda and Azolla.
4. **Fossils:** Rhynia and Calamites.

**Help Book:** *University Guess Paper to Botany (Honours) I*

## BOTANY (Honours) Paper - II

### Microbiology, Fungi and Plant Diseases.

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

*Ten questions to be set, five from group* A *and five from group B, five to be answered, at least two from each group.*

**GROUP-A**

1. Historical background of microbioloqy,
2. Tenchnique of isolation of micro-organisms and culture media preparation.
3. Modern concepts of bacterial cell.

4. Structure and nature of TMV and Bacteriophage.
5. Role of microbes in nitrogen fixation with particular reference to Bacteria and Cyanobacteria.
6. Microbial degradation of agricultural produces in storage.
7. Microbial toxins: Aflatoxin &Algaltoxins.

**GROUP-B**

1. Role of toxins in plant-pathogenesis.
2. Role of enzymes in plant-diseases.
3. Important fungal diseases of Bihar - etiology, symptoms and control of the following diseases:
   (a) Late blight of Potato.
   (b) Loose smut of Wheat.
   (c) Rust of Linseed.,
   (d) Red rot of Sugarcane.
   (e) Blast disease of Rice.
4. (a) Classification of fungi.
   (b) Heterothallism in fungi.
   (c) Degeneration of sexuality in fungi.
   (d) **Life history of :**
   (i) Synchytrium (ii) Albugo (iii) Neurospora (iv) Puccinia (v) Alternaria

**Help Book:** *University Guess Paper to Botany (Honours) II*

## PRACTICAL

**Cryptogams and Microbiology**

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

| | | |
|---|---|---|
| 1. | Morphology and structural details of the forms prescribed in the syllabus and their temporary stained microscopic slide preparations: | |
| | Algae | 5 |
| | Fungi/Lichens | 5 |
| | Bryophyta | 5 |
| | Pteridophyta | 5 |
| 2. | Study of bacterial and viral diseases arid staining technique of Gram (+) and Gram (c) bacteria | 5 |
| 3. | Study of local fungal diseases | 5 |
| 4. | Comment upon spots (5) | 10 |
| 5. | Class record and field work | 5 |
| 6. | Viva-voce | 5 |

## BOTANY (Subsidiary)

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

*Each Year: There shall be one paper consisting of theory of* 75 *marks and practical corrying* 25 *marks, each of three hours duration.*

***(Microbiology, . Thallophyta, Bryohyta, Pteridophyta, Gymnosperms, Cytology & Genetics and Economic Botany)***

**1. Microbiology:**

A general account of bacteria, viruses and their economic importance. Role of microbes in fermentation and nitrogen fixation.

2. Structure, reproduction and diagnostic features of algae, fungi and lichens based on types wherever mentioned. The development cycles on comparative basis should reflect evolutionary sequence. The students should be acquainted with economic importance of these groups.
   **Algae:** Nostoc, Chlamydomonas, Volvox,Oedogonium, Chara, Vaucheria, Fucus, and Batrachospermum,
   **Fungi:** Synchytrium, Saprolegnia, Phytophtora, Erysiphe, Beziza and Puccinia.
   **Lichens:** General Account.
3. Comparative study of morphological, antomical and reproductive features and economic importance of
   (a) Bryophyta-Marchanita, Anthoceros and Sphagnum.
   (b) Pteridophyta-Rhynia, Lycopodium, Selaginella, Equisetum and Marsilea. (c) Gymnosperm-Cycas and Pinus.

**4. Cytology and Genetics:**

1. Ultrastructure of a plant cell.
2. Mitosis: Cell-cycle and Meiosis.

3. Structure of Chromosome, Linkage & Crossing over.
5. Mendelism: Dyhibrid ratio.
5. Structure and replication of genetic material (DNA).
6. Mutation and its role.

**5. Economic Botany:**

(a) Cereals-Wheat, Maile and Rice.
(b) Pulses-Gram and Arhar.
(c) Oils-Mustard and Groundnut.
(d) Sugar and Starch-sugarcane and Potato.
(e) Spices-Coriander, Cardamom and Cloves.
(f) Beverages-Tea and Coffee.
(g) Drugs-cinchona andSyrpagandha.
(h) Fibres-Cotton and flax.

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

## PRACTICAL

**Time: 6 hours** **Full Marks : 25**

1. Morphology and structural details of forms prescribed in the syllabus.
   (a) Algae and Fungi-Temporary preparations.
   (b) Bryophyta-Temporary preparations;
   (c) Pteridophyta and Gymnosperms-permanent preparations- 5x3 = 15
2. Comment upon spots 5
3. Practical Record 5

## BOTANY (General)

**Time: 3 hours** **Full Marks: 75**

*The examiners are to set five questions from each of the groups out of which the candidate will be required to answer five questions attempting at least two questions from each group.*

### Group-A (Cryptogams)

Structure, reproduction, diagnostic features and economic importance of algae, fungi and Lichens based on the types wherever mentioned.

1. Algae: Nostoc, Oedogonium,Chara, Vaucheria, SArgassum and Batrachospermum.
2. Fungi: Albugo, Peziza, Puccinia.
3. Lichens: General account and Economic importance. Structure and life history of the following types.
4. Bryophytes: Marchantia, Anthoceros and Sphagull).
5. Preridophytes: Lycopodium, Equisetum and Marselia.

### Group-B (Phanerogams)

1. Gymnosperm Pinus (Morphology, Anatomy & reproduction).
2. Taxonomy of Angiosperms :
   (i) Classification of angiosperms with reference tothe system of Bentham and Hooker and Hutchincon.
   (ii) Elementary idea or International coding of Botanical No. menclature.
   (iii) General account of the diagnostic features and economic importance of the following families:
   Ranunculaceae Euphorbiaceae
   CucurbttaceaeApocyariaceae
   Acanthaceae Lamiaceae
   Amaranthaceae Cyperaceae and
   Poaceae Orchidaceae

**3. Anatomy:**

(i) Meristems and different types of tissue.
(ii) Initiation and activity of Cambium.
(iii) Anomalous secondary growth in Eoerhaavia, Tinspora and Dracaena.
(iv) Root-Stemtransition.

4. Embryology:
   (i) Development of Microsporogenesis, Megasporogenesis, male and female Gamchplytes, fertilisation, endosperm and embryo.
   (ii) Elementary idea about experimental embryology.

## PRACTICAL

**Time: 6 hours** **Full Marks: 25**

**Groups-Cryptogams and Phanerogams**

1. Morphology and structural details of Algae, Fungi, Bryophyta, Pteridophyta, Gymnosperms included in the syllabus and their temporary/ permanent slide preparation. 7%
2. Description of Angiospermic plant belonging to the families prescribed in the syillabus. Identification upto the family level. 5
3. Study of the primary and secondary (both normal and abnormal) structures of root and stems of angiospermic plants. 21/2
4. To identify and comment upon forms included in group I and 1/ (six spots). 5
5. Pructical record. 5

## ZOOLOGY (Honours) Paper - I

**(Non-Chordates)**

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

### Group - A

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

### Group- B

(a) General characters andclassiiication (upto orders) of the following phyla: Protoza, Porifera, Cnidaria, Ctenophora, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echindoderrnata and Hemichordata.

(b) **Detailed study of the following types :**

1. **Protoza:** Paramecium, Leishmania donovani, Entamoeba histolytica,
2. **Porifera:** Canal system in sponges, Histology of Sponges.
3. **Cnidaria:** Obelia, Aurelia, Sea Anemone.
4. **Ctenophora:** Hormiphora.
5. **Platyhelminthes:** Fasciola hepatica, Taenia Solium.
6. **Aschelminthes:** Ascaris lumbricodes, Wuchereria bancorofti.

### Group - C

7. **Annelida:** Digestive system of Pheretima, Nereis and Leech.
   Excretory system of Pheretima, Nereis and Leech.
   Blood vascular system of Pheretima, Nereis and Leech.
8. **Archiannelida** :Polygordius Structure and affimities.
   **Arthropoda:** Palaemon, Peripatus structure and affinitres. Sacculina, Insect mouth parts.
9. **Ectoprocta:** Bugula
10. **Mollusca.:** Torsion and Detorsion in Gastropoda, Respiratory system of Unio, Pila and Sepia Digestive system of Unio, Pila and Sepia.
11. **Echinodermata:** Water vascular system.
12. **Hemichordata** : Balangolossus.

**Help Book :** *University Guess Paper to Zoology(Honours) I*

## ZOOLOGY (Honours) Paper- II

**(Ecology, Animal behaviour and Biometry)**

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

*In all ten questions are to be set distributed in three Groups (Group A -1, Group B - 5 and Group C - 4), of which question number 1 (one) shall be compulsory consisting of objective type questions (1 x 15 marks) with alternative short answer (3 x 5) requiring questions and both snsl! span over the whole syllabus in the paper. Students would be required to answer five questions in all, including the compulsory one and two from each Group B & GroupC.*

### Group - A

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

### Group- B

**Ecology**

1. Concept of Biosphere (lithosphere, hyrosphere and atmosphere).
2. Ecosystem- Definition structure and function of a typical ecosystem orthe world.
3. Structure (Biotic and Abiotic) and function (energy flow, biogeochemical cycle) of fresh water, desert and forest ecosystems.
4. Ecological succession.
5. General concept of pollution, its sources and hazards
6. Wild-life conservation.

**Biometry** :

1. Mean, Median and Mode
2. Standard Deviation
3. Standard Error
4. Chi-square
5. Correlation
6. Hest
7. Normal Distribution.

**Help Book:** *University* Guess *Paper to Zoology (Honours) II*

## PRACTICAL

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

**1. Dissection:** **10**

Pheretima- Alimentary canal, Reproductive, Excretory and Nervous system. Palaemon - Alimentary canal, Nervous system

Unio, Pila - Nervous system.

**2. Permanent stained preparations of the following** **5**

Paramecium, Gemmules, Spicules, Obelia colony, Nephridia and ovary of Pheretima, statocyst of prawn, osphradium, radulla and gill of Pila, gill of Unio, Glochidium larva, larvae of Crustacea and Echinodermata, Pedicillaria.

**3. Spotting:** (Each of **two marks)** **14**

(i) Museum specimens,

(ii) Slides

(iii) Slide of vector of Kalaazar, Malaria, Filaria

**4. Ecology:**

(i) Analysis of soil/pond biota

(ii) Determination of dissolved oxygen and pH of different water samples .

(iii) Community structure. of grassland

(iv) Moisture content of soil sample

**5. Identification and commentsen two Crop pests.** **5**

**6. Record and field work.** **5**

**7. Viva** **5**

## ZOOLOGY (Gtmeral& Subsidiary )

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

*Five questions are to be set trom each group. Students shall answer five questions attempting not more than three any Group.*

### Group - A

**(Non - Chordate)**

1. Bionomics General Characters and Classification (uptoorders) of the following phyla-Protoza, Porifera, Coelenterate, Platyhelminthes. Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata, and Hemichordata.
2. Detailed study ot the structure and life - history of the following types:
   (i) Protoza - Paramecium
   (ii) Porifera - Sycon
   (iii) Cnideria - Obelia
   (iv) Platyhelminthes - Fasciola
   (v) Aschelminthes - Ascaris
   (vi) Annelida - Pheretima
   (vii) Arthropoda - Palaemon
   (viii) Molusca - Pila
   (ix) Echinodermata - Asterias
   (x) Hemichordata - Balanoglossus

### Group- B

**(Cell Biology, Genetics and Evolution)**

1. **Cell Biology and Genetics**
   (i) Gametogenesis, Fertilization and Parthenogesis.
   (ii) Ultra Structure and functions of the following cell organelles Plasma, memberane, Endoplasmic reticulum, Mitoc hondria Golgi body, Ribosomes, Chromosome, Lysosome,
   (iii) Structure and function of DNA

(iv) Mendelism
(v) Gene Mutation
(vi) Linkage and Crossing over.

**2. Evolution:**

(i) Sources of hereditary variations and their role in evolution.
(ii) Darwin's theory of natural selection and Neo-Darwinlsm.
(iii) Isolating mechanisms and their role in evolution.

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

## PRACTICAL

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

**1. Dissection** **(7)**
**Pheretima :** Reprodactive system, Nervous system, Alimentary Canal.
**Palaemon :** Alimentary Canal, Nervous system.
**Pila :** Alimentary canal, Nervous system.

2. **Mounting** (Permanent stained preparation) **(4)**
Septal nephridia, Ovary, Setae of Earthworm, Statocyst of Prawn: Radula and Osphradium of Pila.

3. **Spotting.** **(6)**
(a) Museum specimens
(b) Slides
(c) Evolution

**4. Cytology** **(4)**
Squash preparationto show stage of Mitosis (Onion root tips) and Meiosis (Grasshopper testis)
***Or,*** Giantchromosomes of ChironomousJ Drosophila larvae.

**5. Practical records** **(4)**

## MATHEMATICS (Honours) Paper-I

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

*Stress should be given on development of ideas and theories rethertnen 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

**Set Theory (Three questions)**

Cartesian product of sets, Relations, Equivalence relation, definition and examples of partial and total order relations, Countable and Uncountable sets, Countability of rational, real andalgebric numbers, Countabilityof unions and cartesian product of sets.

### Group-B.

**Matrices (Two questions)**

Sum and product of matrices, symmetric and Skew-symmetric matrices, Hermitian and Skew - Hermitian matrices, Transpose, Inverse of a matrix, Orthogonal matrices, Rank of a matrix, Solution of a system of linear equations with not more than three unknowns.

**Linear Programming (TWo questions)**

Convex sets and their properties, linear Programming problems and their graphical solutions, Theory of Simplex method.

### Group-C

**Theory of Equations (Two questions)**

Fundamental theorem of Algebra, Imaginary arid irrational roots occur in pair, Relation between roots and coefficient of a polynominals equation, Evaluation of simple symmetric function of roots of cubic and biquadratic equations.

**Trigonometry (Three questions)**

De Moivers' theorem and its applications, Complex Argument, Hyperbolic functions, Gregory's series, Summation of trigonometric series.

**Help Book:** *University Guess Paper to Mathematics (Honours) I*

## MATHEMAllCS (Honours) Paper - II

**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 protion 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 : Differential Calculus** **(Three questions)**

Successive differentiation, Leibnitz theorem; Partial differentiation, Euler's theorem; Equations of tangent and normal, Sub-tangent and Sub-normal in cartesian and polar co-ordinates, intrintic and pedal equations of a curve; Curvature, Formula for radius of carvature In different co-ordinate systems, Chord of curvature; Indeterminate form, L Hospital rule.

**Group - B : Integral Calculus** **(Three questions)**

Integration of rational and irrational functions, Integral as limit of a sum, Evaluation of definite integrals, Reduction formulas, Curve tracing, Areas of curves, Lengths of curves,Volumesand Surface areas of solids of revolution.

**Group - C : Analytical Geometry of two dimensions** **(Three questions)**

System of circles, orthogonality of circles, Radical axis, Co-axial circles. (one question)

Standard equations of parabola, ellipse, hyperbola; Condition for the general equation ofthe second degree to represent parabola, ellipse, hyperbola, and reduction into standard forms. (one question)

Polar equation of a conic section, Equation of tangent, normal, director circle, Polar asymptotes. (one question).

**Group - D : Analytical Geometry of three dimensions** **(Three questions)**

Rectangular, Spherical, Polar and Cylindrical co-ordinates,Angle between straight lines, Equations of planes and straight lines. (one question).

Skew lines, equations of skew lines, shortest distance; Volume of Tetrahadron. (One Question).

Sphere, equation of a sphere, orthogenality, condition for tangency of a plane to a given sphere; Cone, equation of a cone, angle between two generators, condition for tangency of a plane, condition that three genarators are mutually perpendicular. (One question).

**Help Book:** *University Guess Paper to Mathematics (Honours) II*

## MATHEMATICS (General & Subsidiary)

*A subsidiary course is divided into two parts, Papers I and II to be taught in the first year and second year respectively.*

**Time: 3 Hours** **Total Marks: 100**

Answer eight questions selecting at least one from each group.

### Group-A

**Set Theory and Abstract Algebra (Four questions)**

Notions of sets and their algebra. Cartesian product, Notion of relation and mapping and their classification, equivalence relation and partition of sets.

Binary operations, Notion of group, Sub-groups, Cyclic group and permutation group, Elementary concepts of Ring, Integral Domain and fields with examples.

### Group-B

**Matrices & Linear Programming** **(Four questions)**

Matrices and its algebra, Kinds of Matrices (Unitary matrix; Hermitian matrix), Transpose, Adjoint, Inverse and Orthogonal matrices, Notions of Rank of matrix.

Convex sets and their properties, L.P.P.problem and their graphical solution. Theory of, simplex method and their simple applications.

### Group-C

**Trigonometry and Real Analysis** **(Two questions )**

D'Moivers Theorem and its application, Complex arguments and Hyperbolic functions, Gregories series.

**Real Analysis** **(Three questions)**

Sequences and. their convergence, Cauchy's general principle of convergence, Convergent and divergent series of the positive terms, Comparison test, Cauchy's root test, D'Almbert's test, Alternating series, Continuity and differentiability of real function of a single real variable and simple continuity and discontinuity of a functions of single variable and their properties.

### Group-D

**Analytical Geometry of Two Dimensions** **(Two questions)**

Systems of circles, Coaxial circles, General equation of second degree and its reduction to standard forms of parabola, Ellipse and hyperbola, Equations of tangents and normals for general equation and their form in case of particular conics.

## Group-E

**Analytical Geometry -of Three Dimensions** **(Two questions)**

Relations and notions between different system of co-ordinates, Direction cosines, Angle between two straight lines, Equations of planes and straight line, Condition for coplanarity of straight lines.

**Help Book:** *University Guess Paper to Mathematics (General & Subsidiary)*

# B.Com (Honours) Part-I
# Goup - A (Accounts)

### FINANCIAL ACCOUNTING (HonS.) Paper - I

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

1. Basic Accounting Concept, Principles and conventions, An outline of books of original record, Preparation, Analysis and Interpretation of Financial Statements.
2. Consignment and Joint Venture Account.
3. Partnership-Dissolution, Amalgamation of firms and Sale of Business to Company.
4. Issue and forfeiture of. Shares.
5. Royality (Mines only), Hire-Purchase and .Instalment System of Accounts,
6. Indian Accounting System-Its distinctive features, merits and demerits, various Bahis and recording therein.

**Books recommended.:** S.M. Shukla -Advanced Accounting.
**Help Book:** *University Guess Paper* to *Financial Accounting,*

### AUDITING (Hons.) Paper - II

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

1. Definition of **Auditing -** Objects and classes, Audit Note-Book, Audit programme- Auditing as distinct from Book-Keeping and Accountancy, Qualities of a Auditor, Advantages of Auditing.
2. **Internal check-** Meaning and objects, Internal check in different departments of a business organisation.
3. **Vouchin -** Meaning and importance, Vouching of different books of original entry.
4. **Revenue and Capital expenditures-** Distinction, Different types of reserves, Methods of charging Depreciation, Verification of assets.
5. **Audit of Company Accounts-** Appointment, remuneration, duties, liabilities and rights of Company Auditors, Important case laws of the topic.
6. **Audit of final accounts of a company-** Divisible profits, Capital profits.
7. **Investigation-** Investigation of Accounts under different situations-Investigators report.

**Books recommended:** Sharma, T.R. -Auditing.
**Help Book:** University Guess Paper to Auditing.

## Group - B (CORPORATE ADMINISTRATION)
## BUSINESS ORGANISATION (Hons.) Paper- I

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

1. Meaning and importance of Business Organisation.
2. Characteristics of different forms of Business Organisation, Sole Trading, Partnership, Joint Stock Company, Co-operative and Public Enterprises.
3. **Size of Business Units-** Factors affecting the size, concept of Optimum size of a Business unit.
4. **Scientific Management and Rationalisation-** Meaning, Principles, Features, Merits and Demerits.
5. **Combination in Business-** Motives behind combination, Detailedstudy of types and forms of Business Cornblnation.
6. **Methods of remunerating Labour-** Essential elements, Advantages and disadvantages of Time Rate, Piece Rate and various incentive plans, i.e., Taylor, Emerson, Halsey, Rowan and Gantt etc., Systems of Wage payment.
7. **Organised Markets-** A brief study of the Importance, Constitution, Function and Working of Stock Exchange and Produce Exchange.
8. **Sources of Business Finance-** Short term and long term.

**Books recommended:** M.e. Shukla- Business Organisation.
**Help Book:** University Guess Paper to Business Organisation.

### COMPANY ACCOUNTS (Hons.) Paper-II

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

1. Final Account of Joint Stock Company.
2. Profit and loss prior and after in Corporation.
3. Amalgamation, Absorption and Reconstruction of Joint Stock Company.

4. Liquidation of Company (Voluntary only).
5. Preparation of consolidated Balance Sheet of Holding Company with one Subsidiary Company.

**Books recommended:** Shukla & Grewal- Advanced Accounts

## Group-C BUSINESS ENVIRONMENT
## BUSINESS ORGANISATION (Hons.) Paper-I

SAME AS GROUP-B PAPER - I

## SOCIO-POUTICAL ENVIRONMENT (Hons.) Paper- II

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

**Social structure and institutions:** Family, caste, religion and culture, their influence on industrial life and Business Community.

**Political Environment** - Political systems and organisation,political organisation in the country, Features of Indian constitution with reference to fundamental rights, Directive principles. The Financial relationship between the Central Governments and State Governments in India. Recommendations of the Finance Commission-Sarkaria Commission on the State-union relationship.

**Help Book:** *University Guess Paper to Socio-Political Evnvironment.*

## Group - D BUSINESS FINANCE
## BUSINESS ORGANISATION (Homs.) Paper-I

SAMEAS GROUP-B PAPE~-I

## PRINCPLES OF BUSINESS FINANCE (Hons.) Paper- II

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

**Introductory:** Nature and Scope of Business Finance. Finance function in Business. The traditional and modern views of Finance. The objectives oftinancial management-Profit maximization *Vs* Wealth Maximization. The Rationale of Wealth Maximization, Financial factors governing the choice of form of organisation.

**Planning for Funds:** Financial Plan-Meaning and basic considerations, Quantum of funds requirements. Factors determining fixed and working capital requirements. Estimating the need for cash, receivables and inventories. Capitalisation-Cost and Earning theories. Over capitalisation and under- captilisation-their causes, effects and remedies. Capital structures-the problem of debt equity mix-Trading on equity-Concept andttmttatlons. Factors governing methods of Financing-Risks, Income, Control and Future Financing.

**Raising of Funds:** Sources and forms of financial with special reference to India-Raising long term funds. Promotion-Steps and importance of Promotion, Types of Promoters, Company promotion in India. Underwriting of Capital issue-trends and broad features of underwriting in India. Functions and orqanisanon of Stock exchanges in India. Special Financial institutions & Industrial Financing an over all view. Raising medium-term and short-term funds. Commercial Banks and Industrial finance. Broad features and recent trends in Bank financing of Industries.

**Management of Funds:** Meaning and significance of capital Budgeting, Methods of evaluation investment opportunities-Pay back period, Rate of Return, Net Present Value and Accounting Rates of Return. Cost of Capital, Cost of equity and preference capital and of borrowings. Combined cost of Capital.

**Management of Income:** Accruals on Economic concept of Income. Internal Financing-determinants and dangers. Dividend policy-Amount, regularity andforrns of dividend payments. Factors determining the quantum of Dividend payments. Stock dividents and their purpose.

**Books recommended:** *Guthman & Dougali - Corporate Financial Polity*

## (SUBSIDARY & GENERAL COURSE SUBJECTS)

## BUSINESS ORGANISATION

SAME AS GROUP-B PAPER-I

## PRINCIPLES OF ECONOMICS

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

**Nature and** scope of **Economics** : Marshall & Robbin's definitions of Economics, Positive and Normative Economics, Nature of Economic Laws, Micro and Macro Economics.

**Theory of Demand:** Law of Demand, Elasticity of Demand, Consumer Surplus, Indifference Curve Analysis.

**Production:** Laws of Returns, Elementry idea of production, function and iso-product curve. Nature of Costs-Fixed

and Variable Costs, Total, Average and Marginal Costs.

**Theory of Product Pricing:**

**(a) Pricing and Output under Perfect competition** : Nature of Perfect competition, Pricing and output in the Market Period, Short period and Long period, Equilibrium of the Firm under Perfect competition.

**(b) Pricing of Output under Monopoly:** Meaning of Monopoly, Costs and revenues in Monopoly Analysls.Short-run and Long-run equilibrium under Monopoly, Price Discrimination under Monopoly.

**(c) National Income :** Meaning of GNP, NNP, NDPand NI Theory of Distribution, Theory of Factor Pricing - Theories of Rent, Wages, Interest and Profit.

**Books recommended:** Marshall- Principles of Economics

**Help Book:** *University Guess Paper to Principle of Economics.*

## FINANCIAL ACCOUNTING

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

1. Basic AcCounting Concept, Principles and conventions, An outline of books of original record.
2. Consignment and Joint Venture Account.
3. Partnership-Dissolution, Amalgamation of firms and Sale of Business to Company.
4. Issue and Forfeiture of Shares.
5. Royality (Mines only), Hire-Purchase and Instalment System of Accounts.

**Books recommended:** S.M. Shukla -Advanced Accounting.

**Help Book:** *University Guess Paper to Financial Accounting.*

## Subsidiary Paper For Honours Group-A

1. Business Organisation
2. Principles of Economics

## Subsidiary Paper For Honours Group-B .

1. Financial Accounting
2. Principles of Economics

## Subsidiary Paper For Honours Group-C .

1. Financial Accounting
2. Principles of Economics

## Subsidiary Paper For Honours Group-D

1. Financial Accounting
2. Principles of Economics