

Dept. of English

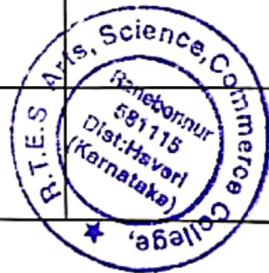
R.T.E. SOCIETY'S

ARTS, SCIENCE AND COMMERCE COLLEGE, RANEBENNUR - 581 115 DIST : HAVERI

**TIME TABLE**

FOR THE YEAR 2021 - 2022

| Time       | Monday               | Tuesday              | Wednesday            | Thursday           | Friday             | Saturday                        |
|------------|----------------------|----------------------|----------------------|--------------------|--------------------|---------------------------------|
| 8-9        |                      |                      |                      |                    | B.A I & II Sem(A)  |                                 |
| 9-10       |                      |                      |                      |                    |                    |                                 |
| 10-11      |                      | B.Com I & II Sem     | B.Com I & II Sem     |                    |                    | B.Com III & IV Sem              |
| 11-12      | B.A I & II Sem(A)    | B.A I & II Sem(A)    | B.A I & II Sem(A)    | B.A III & IV Sem   | B.A III & IV Sem   | <del>B.A III &amp; IV Sem</del> |
| 12-12.30   |                      |                      | <b>REST</b>          |                    |                    |                                 |
| 12.30-1.30 | B.Sc III & IV Sem(A) | B.Sc III & IV Sem(A) | B.Sc III & IV Sem(A) | B.Sc I & II Sem(A) | B.Sc I & II Sem(A) | B.Sc I Sem(A)                   |
| 1.30-2.30  |                      |                      |                      |                    |                    |                                 |
| 2.30-3.30  |                      |                      | B.Sc I & II Sem(A)   |                    |                    |                                 |



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## Syllabus

### B.A I Semester

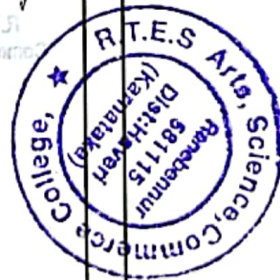
Text: Shalmala - An Anthology of Poetry and Prose.

- Prose:
1. Of Studies
  2. Our Civilization
  3. The Fortune Teller

- Poetry:
1. Seven Ages of Man
  2. Death the Leveler
  3. Night of the Scorpion

- Grammar:
1. Articles
  2. Prepositions
  3. Words used in different Parts of Speech
  4. Verb Forms (Tenses)
  5. Synonyms and Antonyms.

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## Syllabus

### B.Sc I Semester

Text: Timeless Wisdom: Board of Editors

- Prose: 1. Playing the English Gentleman
2. Let's Go Home
  3. Marriage is a Private Affairs

- Poetry:
1. A River
  2. The Road Not Taken
  3. If -

- Grammar: Articles  
Prepositions  
Words used in different parts of speech  
Verb forms (Tense)  
Synonyms  
Antonyms

## Syllabus

### B. Com I Semester

Text: Life and Learning: Bond of Editors.

Prose: 1. The Eyes are Not Here

2. The Kabuliwala

3. From Deconditioning the Blind

Poetry: 1. Sonnet 130

2. Mending Wall

3. Goodbye Party for Miss Pushpa's

Grammar: Articles

Prepositions

Words used in different parts of speech

Verb Form (Tense)

Synonym

Antonym.

## Syllabus

### B. Com III Semester

Grammar: Pair of words

Close Test

Pre-writing

Interpretation of notices

Letter writing on public issue.

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## Syllabus

B.A. II Semester

Text: Drama: Sisi Sampige - Chandrashekara  
Rambas.

Grammar: Pairs of words  
cloze Test  
Pencil Writing  
Interpretation of Notices  
Letter writing on public issues.

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## Syllabus

B.Sc III Semester

Text: Across and The Idem - Drama by G.B. Shaw.

Grammar: Pairs of words  
cloze Test  
Pencil Writing  
Interpretation of notices  
Letter writing on public issues.

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## Syllabus

B.Com IV Semester

- Grammar:
1. Framing 'WH' questions
  2. Use of Affixes
  3. Transformation of Sentences
  4. Comprehension of Passage
  5. Paragraph Writing
  6. Job Application

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## Syllabus

B.A. IV Semester

Text: The Guide, by R. K. Narayan

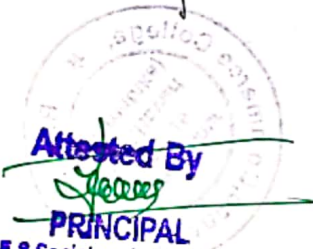


## Syllabus

### B. & IV Semester

- Grammar:
1. Posing W.H. questions
  2. Use of Affixes
  3. Transformation of Sentences  
(Active/passive voice, Direct/Indirect speech, Simple, Compound, complex Sentences, Degree of Comparison, Adjective & Interrogative Sentences).
  4. Comprehension of Passages
  5. Paragraph Writing
  6. Job Application.

Text: Ranthapur - A novel by Raja Rao



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## Syllabus

### B. A II Semester

Text: Shalmala

- Poese:
1. The Nightingale and the Rose
  2. The Canker of Wroth
  3. The Silver lining

- Poetry:
1. To India - My Native Land
  2. The Village School Master
  3. The Tiger

Grammar & Composition:

1. Correction of Errors
2. Combining Sentences with appropriate conjunctions
3. Use of Adverbs and Adjectives.
4. Dialogue Writing
5. Short speeches - 1. Welcoming 2. Introducing
3. Proposing vote of thanks 4. Teacher's Day 5. Gandhi Jayanti
6. Independence Day 7. Republic Day
6. One word substitutions 7. Collocations.

## Syllabus

B & II Semester : Text: Timeless discourses

- Prose: 1. Sparrows - K.A. Abbas  
2. An Astrologer's Day - R.K. Narayan  
3. The function of Education - J. Krishnamurti

- Poetry: 1. The World is Too Much with Us  
2. Prayer Before Birth  
3. Gandhi.

Grammar & Composition:

1. Correction of Errors
2. Combining Sentences with appropriate conjunctions
3. Use of Adverbs & Adjectives
4. Dialogue Writing
5. Short speeches: a) Welcoming b) Introducing  
c) Proposing vote of thanks d) Teacher's Day  
e) Gandhi Jayanti f) Independence Day  
g) Republic Day
6. One word Substitutions
7. Collocations

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## Syllabus

B. Com II Semester : Text: Life and Learning

- Prose: 1. On shaking hands - A.C. Gardner  
2. The Diamond Necklace - Maupassant  
3. My Brother, My Brother - Nozoh Bukke

~~Poetry: 1.~~

Grammar & Composition:

1. Correction of Errors
2. Combining Sentences with appropriate conjunctions
3. Use of Adverbs / Adjectives
4. Dialogue Writing
5. Short speeches: a) Welcoming b) Introducing  
c) Proposing vote of thanks d) Teacher's Day  
e) Gandhi Jayanti f) Independence Day  
g) Republic Day
6. One word Substitutions
7. Collocations.





Odd Sem - 2021-22

**Conspectus of Studies**

| Month   | Class                       | Topics to be covered  |
|---------|-----------------------------|---|
| October | B.A I Sem<br>'A' Division   | Introduction about NEP<br>Of Studies<br>Articles  |
|         | B.Sc I Sem<br>'A' Division  | Introduction about NEP<br>Playing The English Gentleman<br>Articles                                     |
|         | B.Com I Sem                 | Introduction about NEP<br>Eyes are not here<br>Articles   |
|         | B.A III Sem<br>'A' Division | Introduction to Chandrashekar Kam-<br>bave writes of 'Sri Sampige'<br>Scene NO. 1 to 3<br>Pair of words |
|         | B.Sc III Sem                | Introduction to G. B. Shaw<br>writer of Arms and The Man<br>Act - I<br>Pair of words                    |
|         | B.Com III Sem               | Pair of words   |



| Month    | Class         | Topics to be covered                                  |
|----------|---------------|---|
| November | B.A I Sem     | One civilization<br>Seven Ages of man<br>Prepositions |
|          | B.Sc I Sem    | Let's Go Home<br>A River<br>Prepositions              |
|          | B.Com I Sem   | The Kabulivallah<br>Sonnet-130<br>Prepositions        |
|          | B.A III Sem   | Sri Sampige<br>Scene No-4 to 8<br>Cloze Test          |
|          | B.Sc III Sem  | Arms and The Man<br>Act - II<br>Cloze Test            |
|          | B.Com III Sem | Cloze Test  |

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### Conspectus of Studies

| Month    | Class         | Topics to be covered   |  |
|----------|---------------|--|--|
| December | B.A I Sem.    | The Fortune Teller<br>Death the Leveller<br>Words used in different parts of speech            |  |
|          | B.Sc I Sem    | Marriage is a Private Affairs<br>The Road Not Taken<br>Words used in different parts of speech |  |
|          | B.Com I Sem   | from Decolonising the Mind<br>Blending wall<br>Words used in different parts of speech         |  |
|          | B.A III Sem   | Sisi Sampige<br>Scene NO-9-12<br>Precis Writing  |  |
|          | B.Sc III Sem  | Home and the Man<br>Act - III<br>Precis Writing  |  |
|          | B.Com III Sem | Precis Writing   |  |
|          |               |  |  |
|          |               |  |  |

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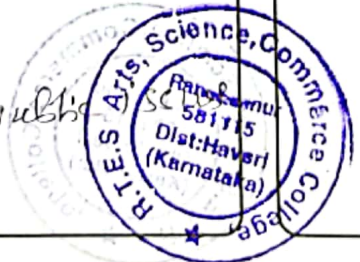
| Month   | Class         | Topics to be covered   |
|---------|---------------|--|
| January | B.A I Sem     | Night of the Scorpion<br>Verb Forms  |
|         | B.Sc I Sem    | If -<br>Verb forms   |
|         | B.Com I Sem   | Goodbye Party to Miss Pushpa. U-5<br>Verb Forms  |
|         | B.A III Sem   | Sisi Sampige<br>Scene No-12 to 14<br>Paras pretaion of notices                                 |
|         | B.Sc III Sem  | Explanation about important<br>Episodes of the play Home with Man<br>Interpretation of notices |
|         | B.Com III Sem | Paras pretaion of Notices  |

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Even Semesters - 2021-22

| Conspectus of Studies |               |  |
|-----------------------|---------------|--|
| Month                 | Class         | Topics to be covered   |
| February              | B.A I Sem     | Synonyms<br>Antonyms   |
|                       | B.Sc I Sem    | Synonyms<br>Antonyms   |
|                       | B.Com I Sem   | Synonyms<br>Antonyms   |
|                       | B.A III Sem   | Scene NO - 15 and 16<br>Letter writing on public issues  |
|                       | B.Sc III Sem  | Paraphrase - Questions & Answers<br>of the Play <i>As You Like It</i><br>Letter writing on public issues |
|                       | B.Com III Sem | Letter writing on public   |

| Month | Class        | Topics to be covered  |
|-------|--------------|---|
| May   | B.A II Sem   | <i>The Nightingale and the Rose</i><br><i>To India - My Native Land</i><br>Correction of Errors |
|       | B.Sc II Sem  | Sparrows<br><i>The world is too much with us</i><br>Correction of Errors                        |
|       | B.Com II Sem | <i>On shanking hands</i><br>Correction of Errors  |
|       | B.A IV Sem   | Introduction to <i>The Guide</i><br>chapter NO - 1 & 2  |
|       | B.Sc IV Sem  | Introduction to the Novel<br><i>Ranthapur</i> - chapter NO - 1 & 2<br>Praxis with questions     |
|       | B.Com IV Sem | Praxis with questions &<br>Use of affixes   |



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### Conspectus of Studies

| Month       | Class                | Topics to be covered  |
|-------------|----------------------|---|
| <u>June</u> | <u>B. A II Sem</u>   | The Canter of Linton<br>The Village School/Master<br>Conjunctions |
|             | <u>B. Sc II Sem</u>  | An Astrologer's Day<br>Prayer Before Birth<br>Conjunctions        |
|             | <u>B. Com II Sem</u> | The Diamond Necklace<br>Conjunctions<br>Adverbs & Adjectives      |
|             | <u>B. A IV Sem</u>   | Chapters No. 3, 4, 5 (The Guide)                                  |
|             | <u>B. Sc IV Sem</u>  | Ranthapura Chapters No. 3, 4, 5<br>Transformation of Sentences    |
|             | <u>B. Com IV Sem</u> | Transformation of Sentences                                       |

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| Month       | Class                | Topics to be covered  |
|-------------|----------------------|---|
| <u>July</u> | <u>B. A II Sem</u>   | The Silver Lining<br>The Tiger<br>Adverbs & Adjectives. Dialogue Writing      |
|             | <u>B. Sc II Sem</u>  | The Function of Education<br>Gandhi<br>Adverbs & Adjectives. Dialogue Writing |
|             | <u>B. Com II Sem</u> | My Brother, My Brother<br>Dialogue Writing                                    |
|             | <u>B. A IV Sem</u>   | The Guide - Chapter No. 6, 7 & 8.   |
|             | <u>B. Sc IV Sem</u>  | Ranthapura - Chapter No. 6, 7 & 8.<br>Comprehension & Passages                |
|             | <u>B. Com IV Sem</u> | Comprehension of Passages   |





### Conspectus of Studies

| Month         | Class               | Topics to be covered  |
|---------------|---------------------|---|
| <u>August</u> | <u>B.A.II Sem</u>   | Short speeches<br>One word Substitutions<br>Collocations                |
|               | <u>B.Sc Sem</u>     | Short speeches<br>One word Substitutions<br>Collocations.               |
|               | <u>B.Com II Sem</u> | Short speeches<br>One word Substitutions<br>Collocations                |
|               | <u>B.A.IV Sem</u>   | Chaptis NO. 9, 10 & 11  |
|               | <u>B&amp;IV Sem</u> | Kant lupma Chapti No- 9-10, 11<br>Paragraph writing<br>Job Applications |
|               | <u>B.Com I Sem</u>  | Paragraph Writing<br>Job Application                                    |

| Month | Class | Topics to be covered |
|-------|-------|----------------------|
|       |       |                      |

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# Dept. of Chemistry

R.T.E. SOCIETY'S

**ARTS, SCIENCE AND COMMERCE COLLEGE, RANEBENNUR - 581 115 DIST: HAVERI**

## TIME TABLE

FOR THE YEAR 2019 - 2020

| Time            | Monday                             | Tuesday                            | Wednesday                          | Thursday | Friday                       | Saturday                     |                    |  |
|-----------------|------------------------------------|------------------------------------|------------------------------------|----------|------------------------------|------------------------------|--------------------|--|
| 8 to 9          | Bsc III & Bsc IV sem<br>Practicals | Bsc III & Bsc IV sem<br>Practicals | Bsc III & Bsc IV sem<br>Practicals |          |                              |                              |                    |  |
| 9 to 10         |                                    |                                    |                                    |          | Bsc V & VI sem               | Bsc V & VI sem               | Bsc V sem          |  |
| 10 to 11        |                                    |                                    |                                    |          |                              |                              |                    |  |
| 11 to 12        |                                    |                                    |                                    |          |                              |                              | Bsc I sem & II sem |  |
|                 |                                    |                                    | <b>REST</b>                        |          |                              |                              |                    |  |
| 12:15 to 1:15   |                                    |                                    | Bsc IIIA & IVaA                    |          |                              |                              |                    |  |
| to 2:15 to 3:15 | Bsc III B & IV sem                 |                                    |                                    |          |                              |                              |                    |  |
| to 4:15 to 5:15 |                                    |                                    |                                    |          | Bsc V & VI sem<br>Practicals | Bsc V & VI sem<br>Practicals |                    |  |

SyllabusGaseous State

Distribn of molecular speed, Maxwell's Boltzmann law of distribn of molecular velocities, Calculn of molecular velocities of gaseous molecules, most probable and RMS velocities, Collision diameter, mean free path, collision no., Critical phenomenon, Critical constants, Andrew's isotherms, Vander waal's eqn and Critical constants & measurements of critical constants ( $T_c$ ,  $P_c$ ,  $V_c$ ), Law of corresponding states & reduced eqn of states

SyllabusLiquid State

Intermolecular forces, str of liquids (quantitative descriptns), structural differences btw solids, liquids & gases, physical properties of liquids

- Vapour pressure & enthalpy of vap<sup>n</sup> & numerical problems.
- Surface tension, surface energy, effect of temp on surface tens<sup>n</sup>, shapes of liquid drops & soap bubbles, Capillary action, determ<sup>n</sup> of  $\sigma$  of liquids by drops & soap bubbles
- Capillary actions, determ<sup>n</sup> of  $\sigma$  of liquids, determ<sup>n</sup> of viscosity of liquids by using Ostwald viscosimeter and numerical problems.
- R. Index, specific and molar refractive indices and their applic<sup>ns</sup>, determ<sup>n</sup> of R.I. of liquid using Abb's Refr



BSc III sem Syllabus  
& numerical problems

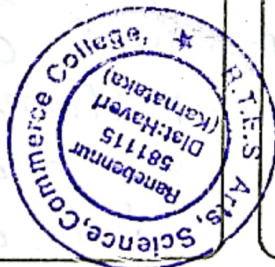
Nernst Distribn Law

Distribn law: To derivn of distribn law, Calculn of partition co-efficient. derivn from distribn law due to molecular complexity, applicns of distribn law - extn of substance from soln with derivn & numerical problems.

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BSc III sem

Syllabus

Thermodynamics.

First law of TD, Heat contents ( $q_v$  &  $q_p$ ) workdone in reversible & irreversible isothermal exp<sup>n</sup> of an ideal gas, workdone on the sys in reversible adiabatic of ideal gas ( $TV$  &  $PV$  relns), J-T effect. inver<sup>n</sup> temp, J-T expt, derivn for J-T co-efficient Kirchoff's eq<sup>n</sup> 2nd law of TD. Cycle process, Carnot's cycle, heat engine & its efficiency, Carnot's theorem, entropy & its significance. Entrop changes in reversible & irreversible process for ideal gas, free energy, dependence of free energy on pressure & temp, free energy change and spontenity of Gibb's-Helmoltz eq<sup>n</sup>, Clausius-Claupyron integrated eq<sup>n</sup> & applicns partial molar quantities, Chemical potential of an ideal gas.



## BSc III Sem Syllabus

### Photochemistry

Laws of photochemistry, Grotthuss Draper Law, Stark Einstein's law, diff blw photophysical & photochemical process  
c- examples, comp<sup>n</sup> of photochemical & thermal reacts, quantum yield of photochemical comb<sup>n</sup> of a.  $H_2$  &  $Cl_2$   
b.  $H_2$  and  $Br_2$  c. Diss<sup>n</sup> of HI. d. dim<sup>n</sup> of anthracene. Detn of quantum yield by thermo-couple method & chemical actinometer, photosentr, photostationary eqm single & triplet states, fluores<sup>n</sup>, phosph<sup>n</sup>, chemilum<sup>n</sup>, biolum<sup>n</sup>, chemical sensors, Beer Lambert's law. applic<sup>n</sup> and problems on adsorb<sup>n</sup> and molag extn co-eg<sup>n</sup>.

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## BSc IV Sem

### Adsorb<sup>n</sup> & catalyst Syllabus

Adsorb<sup>n</sup>, adsorb<sup>n</sup> isotherms Freundlich's & Langmuir's adsorb<sup>n</sup> isotherm deriv<sup>n</sup>, & their limits, multilayer theory, BET adsorb<sup>n</sup> eq<sup>n</sup> & its multipl<sup>n</sup>, Theories of catalyst & intermediate compound & adsorb<sup>n</sup> theory kinetics of acid base catalyst, general & specific Enzymes catalysis, Michael's menton eq<sup>n</sup>, bio-enzymes & industrial applic<sup>n</sup>.

### BSc IV Sem

Phase Rule: statement & expln of the terms with examples, phase comp. degree of freedom, Gibb's phase rule. Applic<sup>n</sup> of phase equilibria, for one comp. system, reduced phase rule two components systems (Zn-cd, Cu-H<sub>2</sub>O and Ag-Pb), Pattinson process of desilver<sup>n</sup>, eutectic & freezing mix<sup>n</sup> Alloys, Applic<sup>n</sup>.





## BSc IV Sem Syllabus

### Micelles

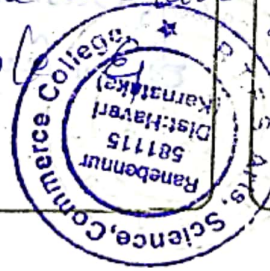
Emulsions, micro emulsions or micellar emulsions, electro kinetic effects, colloidal electrolytes, or assoc<sup>n</sup> colloids, surface active agents or surfactants, solubility of surfactant solutions.

### BSc II Sem

#### Chemical Kinetics

Rate of react<sup>n</sup>, second order react<sup>n</sup>; deriv<sup>n</sup> of second order velocity constants, when  $a=b$ , and  $a \neq b$  relation b/w half life period, order of react<sup>n</sup>, determ<sup>n</sup> of order of react<sup>n</sup> by differential eqn method and, numerical problems.

Complex React<sup>n</sup>: deriv<sup>n</sup> of rate constant for 1st order parallel, successive consecutive react<sup>n</sup>.



## Syllabus

### BSc VI Sem P-I

#### Paper I Electrochemistry

Theory of strong electrolytes, Debye-Huckel theory of weak electrolytes, Debye-Huckel Onsager eq<sup>n</sup>, relax<sup>n</sup> effect, Electrophoretic effect, viscous effect, interionic attraction theory, activity coefficients of electrolytes, mean ionic activity Coefficients of electrolytes, ionic strength of electrolyte soln, Theory of electrolyte dissociation, Arrhenius theory of ionization and its limits, migr<sup>n</sup> of ions, transport no<sup>v</sup>, Hittorf's method and moving boundary problems, conductometric titrations.

#### Paper II BSc VI Sem Molecular Spectroscopy

Interact<sup>n</sup> of EMR with matter, EMS



## Bsc Vsem Syllabus P-II

### (a) Rotational Spectroscopy:

Rotation of molecules, diatomic, rigid rotator, selection rule, derivation of energy and bond length (HCl) polyatomic molecules, linear, symmetric top, asymmetric top molecules.

### (b) Vibrational Spectroscopy P-II

vibrating diatomic molecules - Energy of diatomic molecules, force constant. vibrational spectra, harmonically vibrating diatomic molecules (HCl) & anharmonic case, Morse potential's function & d.E. vibrational & rotational spectra of diatomic molecules (only CO) group frequencies (-NH, -OH, -NH<sub>2</sub>, >C=O, >C=O), >C=O, >C=N, S-H), R-spectra group vibrational rotational Raman Spectra -

## Bsc Vsem Syllabus P-II

### (c) Electronic Spectroscopy:

Diatomic molecules: Born Oppenheimer approximation, Franck Condon principle, free dissociation, application of U.V visible spectra in organic molecules.

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BSC 1<sup>st</sup> Sem Syllabus  
Electro Motive Force (EMF) P-I

Reversible & irreversible cells, EMF of a chemical cell & its measurement by potentiometer, standard cell. types of electrodes, p. electrode, Calomel electrode, sign convn, Nernst eq<sup>n</sup>, electrochemical series. and its applicns, determ<sup>n</sup> of pH of soln by hydrogen electrode, quinhydrone & glass electrode methods, Conc cell, determ<sup>n</sup> of solubility, potentiometric titn, acid base, Calculn of  $K_a$  & redox titn. determ<sup>n</sup> of redox potential & numerical problems.



BSC 1<sup>st</sup> Sem Syllabus  
Battery technology P-I

Primary & 2<sup>o</sup> cells, lead storage battery & its applicns, Ni Cd cells, Li battery, fuel cells & their applicns. Corros<sup>n</sup> types and factors influencing corros<sup>n</sup>, theory of Corros<sup>n</sup> & Methods of preven<sup>n</sup>.

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## Conspectus of Studies

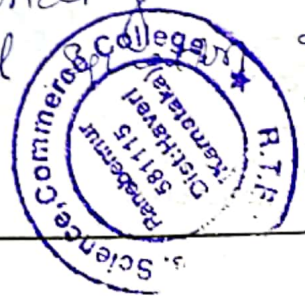
| Month     | Class                | Topics to be covered   |
|-----------|----------------------|--|
| July 2019 | 2019<br>BSc I<br>sem | <p>Gasous State</p> <p>distribution of molecular speed.</p> <p>Maxwell's Boltzmann law of distribution of molecular velocities, Calculation of molecular velocities of gaseous molecules, average, most probable and RMS velocities, collision diameters, mean free path, collision number, critical phenomena</p>   |
| July 2019 | BSc III<br>sem       | <p>Nernst's Distribution Law</p> <p>distribution law: thermodynamic derivation of distribution law, calculation of partition coefficient, deviation from distribution law due to molecular complexity (association &amp; dissociation), applications of distribution law - extraction &amp; substance from solution with derivations and numerical problems.</p> |

| Month     | Class               | Topics to be covered   |
|-----------|---------------------|--|
| July 2019 | BSc I<br>sem<br>P-I | <p><del>Electro</del> Electrochemistry</p> <p>Theory of strong electrolytes: Debye-Huckel theory of strong electrolytes, Debye-Huckel Onsager equation (no derivation) relaxation effect, electrophoretic effect, viscous effect,</p>  |
| Aug 2019  | BSc I<br>sem        | <p>Gasous state</p> <p>Critical phenomenon: Critical Constants, Andrews isotherms, Van der waal's equation and Critical Constants, measurement of Critical Constant (<math>T_c</math>, <math>P_c</math> and <math>V_c</math>). Law of Corresponding state and reduced of States.</p> |

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### Conspectus of Studies

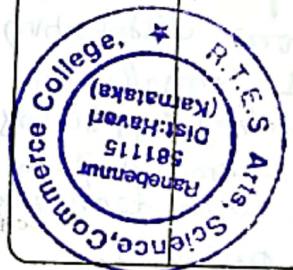
| Month       | Class          | Topics to be covered  |
|-------------|----------------|---|
| Aug<br>2019 | Bsc III<br>Sem | <p><b>Thermodynamics:</b> First law of thermodynamics, heat contents (<math>\Delta U</math> &amp; <math>\Delta p</math>), work done in reversible &amp; irreversible isotherm, expansion of ideal gas, work done on the system in reversible &amp; adiabatic of ideal gas, Joule-Thomson Effect, Joule-Thomson Experiment, derivation for Joule-Thomson coefficient, Kirchoff's Equation second law of thermodynamics, cyclic process, Carnot's cycle, Carnot's theorem, free energy: dependence of free energy on pressure and temp,</p> |
| Aug<br>2019 | Bsc IV<br>Sem  | <p><b>Electrochemistry</b><br/>                     Interionic attraction theory, activity coefficients of electrolytes, mean ionic activity coefficients of electrolyte, ionic strength of electrolyte solution. Theory of electrolyte dissociation:</p>   |

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| Month        | Class  | Topics to be covered  |
|--------------|--------|---|
| Sept<br>2019 | Bsc I  | <p><b>Liquid State</b><br/>                     Intermolecular forces, structure of liquids (quantitative description), structural differences between liquids and gases, physical properties of liquid:<br/>                     a) Vapour pressure and enthalpy of vaporization and numerical problems.<br/>                     b) Surface tension, surface energy, effect of temp on surface tension, shapes of liquid drops &amp; soap bubbles, parachor and its application &amp; problems.</p> |
| Sept<br>2019 | Bsc II | <p><b>Photochemistry</b><br/>                     Law of photochemistry, Grotthuss-Draper law, Stark-Gintner's law, difference between photophysical &amp; photochemical process, examples: quantum yield of photochemical combination of <math>I_2</math> &amp; <math>h\nu</math> and <math>Br_2</math>. c) Dissociation of <math>I_2</math>.<br/>                     d) Dimerisation of anthracene: determination of quantum yield by thermo-couple method &amp; chemical actinometer.</p>         |



### Conspectus of Studies

| Month     | Class        | Topics to be covered   |
|-----------|--------------|--|
| Aug 2019  | B.Sc III Sem | Thermodynamics.<br>Free Energy change and spontaneity of reaction, Gibbs-Helmholtz equation, Clausius-Clapeyron integrated equation and applications, partial molar quantities, chemical potential of an ideal gas.  |
| Sept 2019 | B.Sc V P-II  | Molecular Spectroscopy<br>a) Rotational Spectroscopy<br>Rotation of molecules, diatomic: rigid rotator, selection rule: derivation for expression of Energy & bond length (r <sub>0</sub> ). Polyatomic molecules: linear, symmetric top, asymmetric top molecules.<br>b) Vibrational Spectroscopy:<br>Vibrations diatomic molecules - Energy of diatomic molecules, force constant, vibrational spectra: harmonically vibrating diatomic molecule (u), & anharmonicity class, vibration & rotational spectra of diatomic molecules (only co), group frequencies, Raman Spectra: vibrational and rotational Raman Spectra. |



| Month     | Class      | Topics to be covered  |
|-----------|------------|---|
| Sept 2019 | B.Sc V P-I | Electrochemistry<br>- Arrhenius theory of ionization and its limitations. Migration of ions: transport number, Hittorf's method and moving boundary method with problems, Conductometric titrations.  |
| Oct 2019  | B.Sc I Sem | Liquid state<br>a) viscosity, effect of temp on viscosity, determination of viscosity of liquids by using Ostwald viscometer and numerical problems.<br>b) refractive index, specific & molar refractivities and their applications. Determination of refractive index of liquid using Abbe's refractometer and numerical problems. |

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| Month    | Class           | Topics to be covered  |
|----------|-----------------|---|
| Oct 2019 | Bsc III Sem     | Photo Chemistry<br>Photosensitization, photostationary equilibrium single and triplet states, fluorescence, phosphorescence, Chemiluminescence, bioluminescence, Chemical sensors, Beer Lambert's law, applications and problems on absorption and molar extinction Co-efficient. |
| Oct 2019 | Bsc IV Sem P-II | Electronic Spectroscopy<br>of atomic molecules: Born-Oppenheimer approximation, Vibrational course structure & Electronic transition and intensity Franck-Condon principle, pre-dissociation, application of UV-Visible Spectra in organic molecules.                             |

| Month    | Class      | Topics to be covered   |
|----------|------------|--|
| Dec 2019 | Bsc II Sem | Chemical Kinetic<br>Rate of reaction, second order reaction: derivation, Second order velocity constants, when $a=b$ .   |
| Dec 2019 | Bsc IV Sem | Adsorption<br>Adsorption: Adsorption isotherm (Call five types) Freundlich's & Langmuir Adsorption Isotherm (Derivation) and their limitations<br>Multilayer theory: BET Adsorption Isotherm (Eq 2 only) measurement of surface area of adsorbent<br>Gibbs Adsorption Equation and its applications. |



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### Conspectus of Studies

| Month    | Class             | Topics to be covered  |
|----------|-------------------|---|
| Dec 2019 | Bsc VI Sem<br>P-T | EMF<br>Reversible and irreversible Cells, EMF of a chemical Cell and its measurement by potentiometer, standard Cell, types of electrodes, reference electrode: Calomel Electrode sign Conventions, Nernst Equation, electrochemical series & its Applications. |
| Jan 2020 | Bsc II Sem        | Chemical Kinetics<br>when $a \neq b$ and $a = b$ , relation between half life period and order of reaction, determination of order of reaction by differential equation method & half life period method.   |

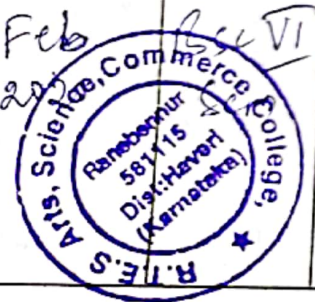


| Month         | Class             | Topics to be covered  |
|---------------|-------------------|---|
| Jan 2020      | Bsc IV Sem        | Adsorption<br>Theories of Catalysts; Intermediate Compound and Adsorption theory, kinetics of Acid-Base Catalysis: general and specific. Enzyme Catalysis, Michael's-Menten equation, Co-enzymes and industrial applications,   |
| Jan 20<br>Bsc | Bsc VI Sem<br>P-T | EMF<br>determination of pH of solution by hydrogen electrode, quinhydrone and glass electrode methods, Concentration Cell with and without transference, liquid junction potential, salt bridge & its applications. applications of Conc. Cells, determination of solubility. |

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Conspectus of Studies

| Month    | Class      | Topics to be covered   |
|----------|------------|--|
| Feb 2020 | BSc II     | Chemical Kinetics<br>Numerical problems. Complex reactions; derivations of rate constant for first order   |
| Feb 2020 | BSc IV Sem | Phase Rule<br>Statements and Explanation of the terms $\bar{C}$ Example: phase, components, degree of freedom Gibbs phase rule. Applications of phase Equilibrium for one component system.<br>E.M.F.<br>Potentiometric titration: acid-base<br>Calculation of $p_a$ and redox titration, determination of redox potential & numerical problems. |
| Feb 2020 | BSc VI     |  |



| Month      | Class      | Topics to be covered   |
|------------|------------|--|
| Feb 2020   | BSc II Sem | Chemical Kinetics<br>Derivations of rate constant for first order parallel, reversible and consecutive reactions, and remaining problems.  |
| March 2020 | BSc IV Sem | Phase Rule<br>Reduced phase rule, two component systems: (Zn-Cd) 1<br>(Cu-H <sub>2</sub> O) and Ag-Pb) 2<br>Pattinson's process of desilverization, eutectic and freezing mixtures and their applications. |

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**Conspectus of Studies**

| Month      | Class      | Topics to be covered   |
|------------|------------|--|
| March 2020 | Bsc VI Sem | Battery Technology<br>Primary and Secondary Cells, lead storage battery and its Applications, Ni-Cd Cells, Lithium battery, fuel Cells and their Applications. |
| March 2020 | Bsc IV     | Miscelles.<br>Emulsions, micro emulsions or micellar emulsions, electrokinetic effects, Colloidal Electrolytes / amphoteric Colloids.                          |

| Month      | Class      | Topics to be covered   |
|------------|------------|--|
| March 2020 | Bsc VI Sem | Battery Technology<br>.Corrosion: types and factors influencing Corrosion theory of Corrosion and methods of preventing. |
| April 2020 | Bsc IV Sem | Miscelles.<br>Surface active agents or Surfactants, solubilization of surfactant solution.                               |



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TIME TABLE

FOR THE YEAR 2017-2018

| Time            | Monday                                   | Tuesday   | Wednesday                  | Thursday   | Friday  | Saturday                          |
|-----------------|--|---|----------------------------|--|---|-----------------------------------|
| 8 to 9          |  |   |                            | ↑  | ↑   | ↑                                 |
| 9 to 10         | BSC I Pra<br>2 to 3 <sup>rd</sup> basket | BSC I Pra<br>4 to 5 <sup>th</sup> basket                                  | BSC I Pra<br>6 to 7 basket | BSC I sem<br>2 <sup>nd</sup> 3 <sup>rd</sup> basket      | BSC I sem<br>Pra<br>4 to 5 <sup>th</sup> basket | BSC I sem<br>Pra<br>6 to 7 basket |
| 10 to 11        |  |   |                            | ↓  | ↓   | ↓                                 |
| 11 to 12        |  |   |                            | ↓  | ↓   | ↓                                 |
| 12-15 to<br>1-5 | BSC II sem                               |   | <b>REST</b><br>BSC I sem   |  | BSC III <sup>rd</sup> sem                       |                                   |
| 1-15 to<br>2-15 |  | ↑   | BSC I sem                  | ↑  | BSC III <sup>rd</sup> sem                       |                                   |
| 2-15 to<br>3-15 |  | BSC II <sup>nd</sup> sem<br>Pra 3 <sup>rd</sup> 4 <sup>th</sup><br>basket |                            | BSC II sem Pra<br>1 <sup>st</sup> 2 <sup>nd</sup> basket |   |                                   |
| 3-15 to<br>5-15 |  | ↓   |                            | ↓  |   |                                   |

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## Syllabus

### BSC-1 SEMESTER

**UNIT 3: Moment of Inertia** :- Kinetic Energy of a rotating body, Definition of M.I. and radius of gyration, Perpendicular and Parallel axis theorems (derivations), M.I. of rectangular lamina, Annular ring and circular disc, (derivations), Hollow and Solid Cylinders (mention of expressions), M. I. of Flywheel (Theory and Experimental determination).  
07 Hrs  
Problems 02 hrs

**UNIT 4: Elasticity** :- Stress, Strain, Elastic limit, Hook's law, Moduli of elasticity for isotropic materials, Relation between elastic constants (Derivation), Definition of Poisson's Ratio, Work done for unit Volume in stretching a wire, Bending of Beams Neutral surface, Neutral axis, Plane of Bending, Bending Moment, Expression for bending moment (Derivation), uniform bending (mention formula), Theory of light cantilever (Derivation) and I-section girder (qualitative), Torsion expression for the couple per unit twist, Torsional pendulum, Experimental determination of "Y" by bending.

07 Hrs  
Problems 02 Hrs

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## Syllabus

### List of Experiments:

1. Bar Pendulum L vs. T and L<sup>2</sup> Vs. LT<sup>2</sup> graphs.
2. M.I. of the Fly-Wheel
3. Verification of Parallel axes theorem of Moment of Inertia using Bar Pendulum.
4. Verification of Perpendicular axes theorem of Moment of Inertia using Torsional Pendulum.
5. Bifilar Suspension.
6. Young's Modulus of the material of a wire using Searls' Apparatus.
7. Y- by Uniform bending- Load depression Graph.
8. Torsion Pendulum – Rigidity of Modulus.
9. Co-efficient of viscosity of liquid by Stoke's method.
10. Surface Tension by Jeager's Method / Quincke's method.
11. Radius of Capillary tube by mercury pellet method.
12. Use of CRO – Measurement of AC voltage and frequency for sine and square waves.
13. Use of multimeter (demonstration)





## Syllabus

### B.Sc-II Semester

**UNIT 2: Thermodynamics** Heat engines: Otto engine, Otto cycle, expression for efficiency, Diesel engine, Diesel cycle, expression for efficiency & Carnot's theorem  
Entropy: Concept of entropy, change in entropy in reversible & irreversible processes, entropy-temperature diagram, second law of thermodynamics. Maxwell's relations-derivation of Maxwell's relations, applications to – 1) Clausius-Clapeyron's equation, 2) Clausius equations (specific heat of saturated vapours) 10 hrs  
Problems 02 hrs

### PHY 2.2 : Physics Lab – II List of experiments:

1. Volume Resonator
2. Frequency of AC using Sonometer
3. Velocity of sound through wire using sonometer
4. Use of CRO – study of Lissajous figures
5. Lee's method of determination of thermal conductivity of rubber
6. Thermal conductivity of poor conductor (perspex)
7. Y- by Uniform bending- Load depression Graph.
8. Torsion Pendulum – Rigidity of Modulus.
9. Co-efficient of viscosity of liquid by Stoke's method.
10. Surface Tension by Jaeger's Method / Quincke's method.
11. Radius of Capillary tube by mercury pellet method.
12. Use of CRO – Measurement of AC voltage and frequency for sine and square waves.
13. Use of multimeter (demonstration)

## Syllabus

### B.Sc- III Semester

**UNIT 1: Fermat's principle:** Statement & explanation, derivation of laws of reflection & Snell's law. Sign convention, refraction at a spherical surface. Abbe's sign convention (derivation), Lagrange's law & Helmholtz relation (derivation). Aplanatic points & surfaces (qualitative). 04 hrs  
Problems 02 hrs

**Transient currents:** Theory of growth & decay of current through RL circuit. Theory of charging & discharging of capacitor through RC circuit. Time constants of RL & RC circuits. Measurement of high resistance by leakage method.

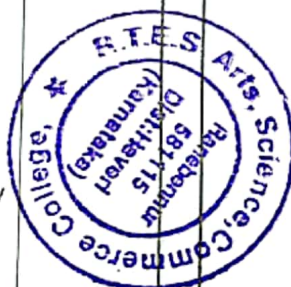
05 hrs

Problems

02 hrs

### List of experiments:

1. Calibration of spectrometer
2. Dispersive curve and dispersive power
3. Goniometer
4. Turn table
5. Total internal reflection
6. Determination of magnetic field along the axis of a coil
7. Helmholtz galvanometer
8. Determination of the constants of B.G.
9. Determination of high resistance by leakage method
10. Measurement of capacity by method of mixtures
11. Measurement of capacity by absolute method.
12. R-C time constant



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## Syllabus

### B.Sc-IV Semester

#### Unit -2 : Diffraction :

Fresnel class : Fresnel theory of half period zones considering plane waves, rectilinear propagation of light. Zone plate, construction . theory, expression for focal length and comparison with convex lens.

04 hrs

Problems

01 hrs

Frounhoffer class : Composition of "n" numbers of SHM's of same amplitude & period and having their phases increasing in arithmetic progression. Diffraction at a single slit & at a double slit (qualitative ). Plane transmission grating & its theory. Absent spectra & dispersive power of grating. Resolving power: R.P. of prism & grating.

09 hrs

Problems

02 hrs

#### List of experiments:

1. Newton's rings
2. Biprism-Determination of wavelength of monochromatic light.
3. R.P. of a prism
4. R.P of telescope
5. R.P. of grating
6. Diffraction at a wire or aperture using laser
7. Polarimeter
8. Series/ Parallel Resonance (LCR Circuit)
9. Capacity by De Sauty's method (AC)
10. Determination of L & C by equal voltage method
11. Determination of dielectric constant of liquid
12. Measurement of emf of a thermocouple at various temperatures and verification of any one law of thermoelectric effect

## Syllabus

### B.Sc- V Semester paper-2

Power Supplies; Power Supplies with filters (C, L, LC and  $\pi$ -section), Qualitative idea of Peak inverse voltage, efficiency, Ripple factor, Zener diode: characteristics and its use in voltage regulation

04hrs

Transistors : DC h-parameters and their determination, performance of transistor as an amplifier (CE mode only) and its frequency response, Brief explanation of positive and negative feedback. Transistor as an oscillator, Hartley and Phase shift oscillators (Qualitative only); FET: Types, characteristics and parameters. FET as an amplifier (CS mode, qualitative). LDR characteristics.

08 hrs

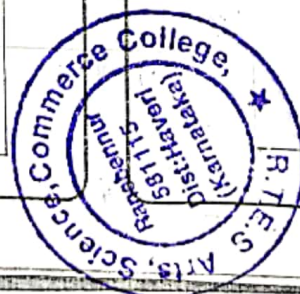
Problems

02 hrs

#### List of experiments: I -Set

1. Analysis of molecular spectra ( Rotational spectra)
2. Study of hydrogen spectrum - determination of Rydberg constant
3. Planck's constant using Photo cell
4. Thevenin and Norton's theorems using Wheatstone's net
5. High pass filter
6. Construction of multi range voltmeter
7. Full wave bridge rectifier with  $\pi$ -section filter
8. Hartely Oscillator
9. Colpits Oscillator.
10. FET Amplifier
11. Photoconductive cell (LDR)

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# Syllabus

## List of experiments; II Set

1. Planck's constant using Photo cell
2. Thevenin's and Norton's theorems using Wheatstone's net
3. High pass filter
4. Construction of multi range voltmeter
5. Full wave bridge rectifier with  $\pi$ -section filter
6. FET Amplifier
7. Photoconductive cell (LDR)

## B.Sc- VI Semester

PHY 6.2: Astrophysics;-, Astrophysics Units of stellar distances: light year and parsec; luminosities of stars, apparent and absolute magnitudes, examples; stellar spectra, H-R diagram, binary stars, stellar masses, stellar temperatures, equations of stellar structure, linear density model for stars, formation and evolution of stars (qualitative); end stages of stars – white dwarfs, neutron stars and black holes (qualitative). Different types of telescopes and their characteristics.

Problems

10 hrs

01hrs

## List of experiments: I -Set

1. Analysis of x-ray diffraction spectra
2. Electrical and thermal conductivity of copper to determine Lorenz number.
3. Hall effect
4. Determination of resistivity of a semiconductor by four probe method.
5. Characteristics of GM counter.
6. GM tube (dead time).
7. Voltage Multipliers using diodes and capacitors.

# Syllabus

8. V-I Characteristics of three LED's (emitting different colors).
9. Study of DTL gates.
10. Use of IC 7400 (basic gates)
11. Solar cell characteristics (a) Open circuit voltage (b) Short circuit current.

## Paper-2 List of experiments: II- Set

1. Planck's constant using Photo cell
2. Thevenin and Norton's theorems using Wheatstone's net
3. High pass filter
4. Construction of multi range voltmeter
5. Full wave bridge rectifier with  $\pi$ -section filter
6. FET Amplifier
7. Photoconductive cell (LDR)

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| month                          | class              | Topics to be covered  |
|--------------------------------|--------------------|---|
| 18 <sup>th</sup> June-<br>2018 | BSc semester-I     | <p><b>UNIT 3: Moment of Inertia;</b>- Derivation of Kinetic Energy of a rotating body, Definition, factors and units of M.I. and radius of gyration.</p> <p><b>List of Experiments for BSc semester- I</b></p> <ol style="list-style-type: none"> <li>1. Bar Pendulum L vs. T and L2 Vs. LT2 graphs.</li> <li>2. M.I. of the Fly-Wheel</li> <li>3. Verification of Parallel axes theorem of Moment of Inertia using Bar Pendulum.</li> <li>4. Bifilar Suspension.</li> <li>5. Y- by Uniform bending- Load depression Graph.</li> <li>6. Torsion Pendulum – Rigidity of Modulus.</li> <li>7. Co-efficient of viscosity of liquid by Stoke's method.</li> <li>8. Use of CRO – Measurement of AC voltage and frequency for sine and square waves.</li> </ol> |
|                                | B.Sc. Semester-III | <p><b>Transient currents:</b> Introduction about transient circuits and currents, Theory of growth &amp; decay of current through RL circuit.</p> <p><b>List of experiments for BSc semester III</b></p> <ol style="list-style-type: none"> <li>1. Calibration of spectrometer</li> <li>2. Dispersive curve and dispersive power</li> <li>3. Goniometer</li> <li>4. Turn table</li> <li>5. Determination of magnetic field along the axis of a coil .</li> <li>6. Helmholtz galvanometer</li> <li>7. Determination of high resistance by leakage method</li> <li>8. R-C time constant</li> </ol>  |
|                                | B.Sc. Semester-V   | <p><b>Transistors:</b> introduction about transistors, construction, working. DC h-parameters and their determination,</p>  |

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List of experiments for BSc semester V-  
PAPER-1

1. Planck's constant using Photo cell
2. Thevenin's and Norton's theorems using Wheatstone's net
3. High pass filter
4. Construction of multi range voltmeter
5. Full wave bridge rectifier with  $\pi$ -section filter
6. FET Amplifier
7. Photoconductive cell (LDR)

PAPER-2

1. VI-Characteristics of semiconductor diode.
2. VI-Characteristics of Zener diode.
3. Verification of Thevenin's and Norton's theorem (Ladder Network).
4. Full wave rectifier with L and C filter.
5. Full wave bridge rectifier.
6. Zener diode as voltage regulator and comparison with IC 78xx.
7. Transistor characteristics (CE), dc h-parameters.
8. Construction of Multi range Voltmeter

July-2018

BSc I semester

statements and derivations of Perpendicular and Parallel axis theorems (derivations), Derivations of M.I of rectangular lamina, Annular ring and circular disc, (derivations), M.I of Hollow and Solid Cylinders (mention of expressions),

BSc III semester

Definition of RL time constant, its physical significance .Theory of charging & discharging of capacitor through RC circuit. Time constants of RC circuits, its physical significance. Theory, derivation and experimental Measurement of high resistance by leakage method. & Problems

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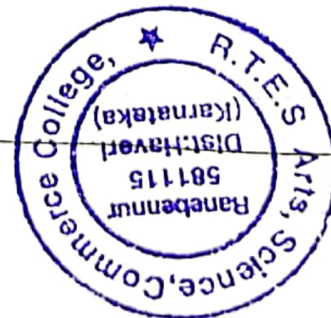
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|                    |  |  |
|--------------------|--|--|
|                    | <u>BSc V semester</u>  | performance of transistor as an amplifier (CE mode only) with h-parameters and its frequency response, Brief explanation of positive and negative feedback, differences between positive and negative feedback . Explanation of LC tank circuit and Transistor as an oscillator, explanation, construction and working of Hartley. Principle and working of Phase shift oscillators with circuit diagram (Qualitative only);   |
| <u>August-2018</u> | <u>BSc I semester</u><br><br><u>BSc III semester</u><br><br><u>BSc -V semester</u> | <p>M. I. of Flywheel (Theory and Experimental determination) &amp; Problems</p> <p>UNIT 4: Elasticity :- explanation of Stress, Strain, Elastic limit, state and explain Hook's law, Moduli of elasticity for isotropic materials (Young's modulus, bulk modulus, Rigidity modulus), Relation between elastic constants (Derivation), Definition of Poisson's Ratio, its maximum and minimum value, derivation of Work done for unit Volume in stretching a wire, Theory, derivation and experimental Measurement of high resistance by leakage method. &amp; Problems</p> <p>UNIT 1: Fermat's principle: Statement &amp; explanation, derivation of laws of reflection &amp; Snell's law. Sign convention for refraction through the spherical surface, derivation for refraction at a spherical surface (relation between <math>n</math>, <math>u</math>, <math>v</math> &amp; <math>R</math>).</p> <p>FET: Types, construction, characteristics and parameters. FET as an amplifier (CS mode, qualitative). Definition, construction, working and uses of LDR characteristics &amp; Problems</p> <p>Power Supplies; Introduction about Power Supplies with block diagram,</p> |

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|-----------------------|--|---|
| <p>September-2018</p> | <p><u>BSc I semester</u></p><br><br><br><p><u>BSc III semester</u></p><br><br><br><p><u>BSc VSemester-</u></p> | <p>definitions of Bending of Beams Neutral surface, Neutral axis, Plane of Bending, Bending Moment, Expression for bending moment (Derivation), uniform bending (mention formula), Theory of light cantilever (Derivation) and explanation of I-section girder (qualitative),</p> <p>Derivation of DerAbbe's sign convention (derivation), Derivations of Lagrange's law &amp; Helmholtz relation (derivation).</p> <p>types of filters and their explanation (C, L, LC and <math>\pi</math>-section), Qualitative idea of Peak inverse voltage, efficiency, Ripple factor,</p> |
| <p>October-2018</p>   | <p>BSc I semester;-</p><br><br><p>BSc -III semester</p><br><br><p>BSc -V Semester</p>                          | <p>Torsion expression for the couple per unit twist, explanation of Torsional pendulum, Experimental determination of "Y" by bending &amp; Problems</p> <p>Explanation of Aplanatic points &amp; surfaces (qualitative) &amp; problems</p> <p>definition, construction, working of Zener diode: characteristics and its use in voltage regulation</p>   |

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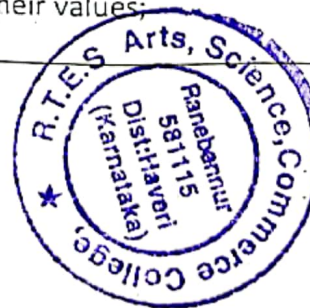
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| Month                                   | Class                | Topics to be covered  |
|---|----------------------|---|
| 20 <sup>th</sup><br>December<br>-2018;- | B.Sc-II<br>Semester  | <p>UNIT 2: Thermodynamics'- definition, main types of Heat engines , its efficiency :</p> <p>PHY 2.2 : Physics Lab – II List of experiments:</p> <ol style="list-style-type: none"> <li>1. Volume Resonator</li> <li>2. Frequency of AC using Sonometer</li> <li>3. Velocity of sound through wire using sonometer</li> <li>4. Use of CRO – study of Lissajous figures</li> <li>5. Specific heat by cooling</li> <li>6. Verification of Stefan's Law.</li> <li>7. Determination of Stefan's constant</li> <li>8. 'J' by electrical method – radiation correction by graphical method</li> </ol> |
|   | B.Sc-IV<br>Semester  | <p>Unit -2 : Diffraction :Definition of diffraction of light with examples and types diffraction.</p> <p>List of experiments:</p> <ol style="list-style-type: none"> <li>1. Newton's rings</li> <li>2. R.P. of a prism</li> <li>3. R.P of telescope</li> <li>4. R.P. of grating</li> <li>5. Polarimeter</li> <li>6. Series/ Parallel Resonance (LCR Circuit)</li> <li>7. Capacity by De Sauty's method (AC)</li> <li>8. Determination of L &amp; C by equal voltage method</li> </ol>   |
|   | B.Sc- VI<br>Semester | <p>Astrophysics; - In Astrophysics Units of stellar distances: astronomical unit, light year and parsec definitions with their values:</p>  |

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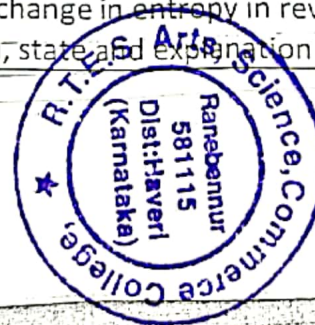


|                         |                         |   |
|-------------------------|-------------------------|---|
|                         |                         | <p>List of experiments:</p> <ol style="list-style-type: none"> <li>1. Determination of resistivity of a semiconductor by four probe method.</li> <li>2. Characteristics of GM counter.</li> <li>3. GM tube (dead time).</li> <li>4. Voltage Multipliers using diodes and capacitors.</li> <li>5. Study of DTL gates.</li> <li>6. Use of IC 7400 (basic gates)</li> <li>7. Solar cell characteristics (a) Open circuit voltage (b) Short circuit current.</li> </ol> <p>List of experiments: paper 2</p> <ol style="list-style-type: none"> <li>1. Planck's constant using Photo cell</li> <li>2. Thevenin and Norton's theorems using Wheatstone's net</li> <li>3. High pass filter</li> <li>4. Construction of multi range voltmeter</li> <li>5. Full wave bridge rectifier with <math>\pi</math>-section filter</li> <li>6. FET Amplifier</li> <li>7. Photoconductive cell (LDR)</li> </ol> |
| <u>January - 2019;-</u> | <u>B.Sc-II Semester</u> | construction and working of Otto engine using Otto cycle, expression for efficiency Otto engine, construction and working of using Diesel cycle, expression for efficiency Diesel engine. Expression for efficiency & Carnot's theorem  |
|                         | <u>B.Sc-IV Semester</u> | Fresnel class : Fresnel theory of half period zones considering plane waves, rectilinear propagation of light. Construction , working, Zone plate, construction . Theory, expression for focal length and comparison with convex lens And Problems .  |
|                         | <u>B.Sc-VI Semester</u> | Explanation of luminosities of stars, explanation and derivation of apparent and absolute magnitudes with problems about magnitudes, examples; stellar spectra, H-R diagram,  |
| <u>February- 2019;-</u> | <u>B.Sc-II Semester</u> | Entropy: Concept of entropy, change in entropy in reversible & irreversible processes, entropy-temperature diagram, state and explanation of second law of thermodynamics.  |

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|---------------------|--|---|
|                     | <u>B.Sc-IV Semester</u><br><br><u>B.Sc- VI Semester</u>                                | Maxwell's relations-derivation of Maxwell's relations,<br><br>Frounhoffer class : Composition of "n" numbers of SHM's of same amplitude & period and having their phases increasing in arithmetic progression. Diffraction at a single slit & at a double slit (qualitative ).<br><br>binary stars, stellar masses, stellar temperatures, equations of stellar structure, linear density model for stars, formation and evolution of stars (qualitative); |
| <u>March - 2019</u> | <u>B.Sc-II Semester</u><br><br><u>B.Sc- IV Semester</u><br><br><u>B.Sc-VI Semester</u> | Problems about thermodynamics<br><br>problems about Fresnel's diffraction<br><br>Differences between refracting Telescope and reflecting Telescope. Differences between Newton's Telescope and Cassigranian Telescope.  |
|                     |  |   |

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TEACHER'S WORK DIARY

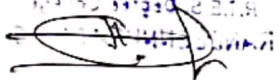
Date: 18-06-2018 to 15-10-2018

CLASS AND TOPICS COVERED

Dept. of Physics

| Time             | Monday                     | Tuesday  | Wednesday                  | Thursday   | Friday   | Saturday                                       |
|------------------|----------------------------|--|----------------------------|--|--|--|
| 8 to 11          |                            |  |                            | BSc - 1st Sem<br>Prn with x  | BSc 1st Sem Prn<br>4th & 5th batches<br>with y | BSc 1st Sem Prn<br>3rd & 4th batches<br>with x |
| 11 to 12         |                            |  |                            | 2nd & 3rd batches  |  |  |
| 12-15 to<br>1-15 | BSc V <sup>th</sup><br>Sem |  | BSc 1 <sup>st</sup><br>Sem |  | BSc 3 <sup>rd</sup><br>Sem                     |  |
| 1-15 to<br>2-15  |                            |  |                            |  |  |  |
| 2-15 to<br>3-15  |                            | BSc - 5 <sup>th</sup> Sem<br>Practical<br>3 <sup>rd</sup> & 4 <sup>th</sup> batches with x |                            | BSc - 5 <sup>th</sup> Sem Prn<br>1 <sup>st</sup> & 2 <sup>nd</sup> batches<br>with y |  |  |
| 3-15 to<br>5-15  |                            |  |                            |  |  |  |

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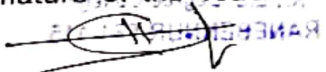
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**TEACHER'S WORK DIARY** Date : 20 - 12 - 2018 to 07 - 04 - 2019

**CLASS AND TOPICS COVERED**

| Time             | Monday                     | Tuesday  | Wednesday                  | Thursday   | Friday                           | Saturday                         |
|------------------|----------------------------|--|----------------------------|--|----------------------------------|----------------------------------|
| 8 to 11          |                            |  |                            | ↑<br>Bsc-2 <sup>nd</sup> sem prn                         | ↑<br>Bsc-2 <sup>nd</sup> sem prn | ↑<br>Bsc-2 <sup>nd</sup> sem prn |
| 11 to 12         |                            |  |                            | 2 <sup>nd</sup> & 3 <sup>rd</sup> batches<br>with X<br>↓ | 4 & 5 batches<br>with Y<br>↓     | 6 & 7 batches<br>with X<br>↓     |
| 12-15 to<br>1-15 | Bsc 6 <sup>th</sup><br>Sem |  | Bsc 2 <sup>nd</sup><br>Sem |  | Bsc 4 <sup>th</sup><br>Sem       |                                  |
| 1-15 to<br>2-15  |                            | Bsc 6 <sup>th</sup> sem prn<br>5 <sup>th</sup> & 4 <sup>th</sup> batches<br>with X |                            | ↑  |                                  |                                  |
| 2-15 to<br>3-15  |                            | ↓  |                            | Bsc-6 <sup>th</sup> Sem prn<br>1 & 2 batches<br>with Y   |                                  |                                  |
| 3-15 to<br>5-15  |                            | ↓  |                            | ↓  |                                  |                                  |

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# Syllabus

## BSC-1 SEMESTER

**UNIT 3: Moment of Inertia** :- Kinetic Energy of a rotating body, Definition of M.I. and radius of gyration, Perpendicular and Parallel axis theorems (derivations), M.I of rectangular lamina, Annular ring and circular disc, (derivations), Hollow and Solid Cylinders (mention of expressions), M. I. of Flywheel (Theory and Experimental determination).

07 Hrs

Problems

02 hrs

**UNIT 4: Elasticity** :- Stress, Strain, Elastic limit, Hook's law, Moduli of elasticity for isotropic materials, Relation between elastic constants (Derivation), Definition of Poisson's Ratio, Work done for unit Volume in stretching a wire, Bending of Beams Neutral surface, Neutral axis, Plane of Bending, Bending Moment, Expression for bending moment (Derivation), uniform bending (mention formula), Theory of light cantilever (Derivation) and I-section girder (qualitative), Torsion expression for the couple per unit twist, Torsional pendulum, Experimental determination of "Y" by bending.

07 Hrs

Problems

02 Hrs

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# Syllabus

## List of Experiments:

1. Bar Pendulum L vs. T and L2 Vs. LT2 graphs.
2. M.I. of the Fly-Wheel
3. Verification of Parallel axes theorem of Moment of Inertia using Bar Pendulum.
4. Verification of Perpendicular axes theorem of Moment of Inertia using Torsional Pendulum.
5. Bifilar Suspension.
6. Young's Modulus of the material of a wire using Searls' Apparatus.
7. Y- by Uniform bending- Load depression Graph.
8. Torsion Pendulum – Rigidity of Modulus.
9. Co-efficient of viscosity of liquid by Stoke's method.
10. Surface Tension by Jaeger's Method / Quincke's method.
11. Radius of Capillary tube by mercury pellet method.
12. Use of CRO – Measurement of AC voltage and frequency for sine and square waves.
13. Use of multimeter (demonstration)

# Syllabus

## B.Sc-II Semester

**UNIT 2: Thermodynamics** Heat engines: Otto engine, Otto cycle, expression for efficiency, Diesel engine, Diesel cycle, expression for efficiency & Carnot's theorem  
Entropy: Concept of entropy, change in entropy in reversible & irreversible processes, entropy-temperature diagram, second law of thermodynamics. Maxwell's relations-derivation of Maxwell's relations, applications to – 1) Clausius-Clapeyron's equation, 2) Clausius equations (specific heat of saturated vapours) 10 hrs  
Problems 02 hrs

### PHY 2.2 : Physics Lab – II List of experiments:

1. Volume Resonator
2. Frequency of AC using Sonometer
3. Velocity of sound through wire using sonometer
4. Use of CRO – study of Lissajous figures
5. Lee's method of determination of thermal conductivity of rubber
6. Thermal conductivity of poor conductor (perspex)
7. Y- by Uniform bending- Load depression Graph.
8. Torsion Pendulum – Rigidity of Modulus.
9. Co-efficient of viscosity of liquid by Stoke's method.
10. Surface Tension by Jeager's Method / Quincke's method.
11. Radius of Capillary tube by mercury pellet method.
12. Use of CRO – Measurement of AC voltage and frequency for sine and square waves.
13. Use of multimeter (demonstration)

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# Syllabus

## B.Sc- III Semester

**UNIT 1: Fermat's principle:** Statement & explanation, derivation of laws of reflection & Snell's law. Sign convention, refraction at a spherical surface. Abbe's sign convention (derivation), Lagrange's law & Helmholtz relation (derivation). Aplanatic points & surfaces (qualitative). 04 hrs  
Problems 02 hrs

**Transient currents:** Theory of growth & decay of current through RL circuit. Theory of charging & discharging of capacitor through RC circuit. Time constants of RL & RC circuits. Measurement of high resistance by leakage method. 05 hrs

Problems 02 hrs

### List of experiments:

1. Calibration of spectrometer
2. Dispersive curve and dispersive power
3. Goniometer
4. Turn table
5. Total internal reflection
6. Determination of magnetic field along the axis of a coil
7. Helmholtz galvanometer
8. Determination of the constants of B.G.
9. Determination of high resistance by leakage method
10. Measurement of capacity by method of mixtures
11. Measurement of capacity by absolute method.
12. RC time constant





## Syllabus

### B.Sc-IV Semester

#### Unit -2 : Diffraction :

**Fresnel class :** Fresnel theory of half period zones considering plane waves, rectilinear propagation of light. Zone plate, construction . theory, expression for focal length and comparison with convex lens.

Problems 04 hrs  
01 hrs

**Frounhofer class :** Composition of "n" numbers of SHM's of same amplitude & period and having their phases increasing in arithmetic progression. Diffraction at a single slit & at a double slit (qualitative ). Plane transmission grating & its theory. Absent spectra & dispersive power of grating. Resolving power: R.P. of prism & grating.

Problems 09 hrs  
02 hrs

#### List of experiments:

1. Newton's rings
2. Biprism-Determination of wavelength of monochromatic light.
3. R.P. of a prism
4. R.P of telescope
5. R.P. of grating
6. Diffraction at a wire or aperture using laser
7. Polarimeter
8. Series/ Parallel Resonance (LCR Circuit)
9. Capacity by De Sauty's method (AC)
10. Determination of L & C by equal voltage method
11. Determination of dielectric constant of liquid
12. Measurement of emf of a thermocouple at various temperatures and verification of any one law of thermoelectric effect

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## Syllabus

### B.Sc- V Semester paper-2

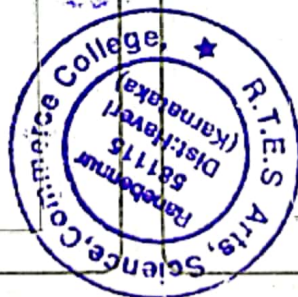
**Power Supplies; Power Supplies with filters (C, L, LC and  $\pi$ -section), Qualitative idea of Peak inverse voltage, efficiency, Ripple factor, Zener diode: characteristics and its use in voltage regulation**

04hrs  
**Transistors :** DC h-parameters and their determination, performance of transistor as an amplifier (CE mode only) and its frequency response, Brief explanation of positive and negative feedback. Transistor as an oscillator, Hartley and Phase shift oscillators (Qualitative only); FET: Types, characteristics and parameters. FET as an amplifier (CS mode, qualitative). LDR characteristics.

Problems 08 hrs  
02 hrs

#### List of experiments: I -Set

1. Analysis of molecular spectra ( Rotational spectra)
2. Study of hydrogen spectrum - determination of Rydberg constant
3. Planck's constant using Photo cell
4. Thevenin and Norton's theorems using Wheatstone's net
5. High pass filter
6. Construction of multi range voltmeter
7. Full wave bridge rectifier with  $\pi$ -section filter
8. Hartely Oscillator
9. Colpits Oscillator.
10. FET Amplifier
11. Photoconductive cell (LDR)



# Syllabus

## List of experiments; II Set

1. Planck's constant using Photo cell
2. Thevenin's and Norton's theorems using Wheatstone's net
3. High pass filter
4. Construction of multi range voltmeter
5. Full wave bridge rectifier with  $\pi$ -section filter
6. FET Amplifier
7. Photoconductive cell (LDR)

## B.Sc- VI Semester

**PHY 6.2: Astrophysics;-:** Astrophysics Units of stellar distances: light year and parsec; luminosities of stars, apparent and absolute magnitudes, examples; stellar spectra, H-R diagram, binary stars, stellar masses, stellar temperatures, equations of stellar structure, linear density model for stars, formation and evolution of stars (qualitative); end stages of stars – white dwarfs, neutron stars and black holes (qualitative). Different types of telescopes and their characteristics.

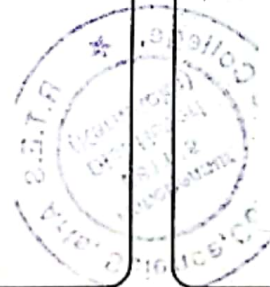
10 hrs

Problems

01hrs

## List of experiments: I -Set

1. Analysis of x-ray diffraction spectra
2. Electrical and thermal conductivity of copper to determine Lorenz number.
3. Hall effect
4. Determination of resistivity of a semiconductor by four probe method.
5. Characteristics of GM counter.
6. GM tube (dead time).
7. Voltage Multipliers using diodes and capacitors.



# Syllabus

8. V-I Characteristics of three LED's (emitting different colors).
9. Study of DTL gates.
10. Use of IC 7400 (basic gates)
11. Solar cell characteristics (a) Open circuit voltage (b) Short circuit current.

## Paper-2 List of experiments: II- Set

1. Planck's constant using Photo cell
2. Thevenin and Norton's theorems using Wheatstone's net
3. High pass filter
4. Construction of multi range voltmeter
5. Full wave bridge rectifier with  $\pi$ -section filter
6. FET Amplifier
7. Photoconductive cell (LDR)

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| month                      | class                     | Topics to be covered  |
|----------------------------|---------------------------|---|
| 18 <sup>th</sup> June-2018 | <u>BSc semester- I</u>    | <p><b>UNIT 3: Moment of Inertia;</b>- Derivation of Kinetic Energy of a rotating body, Definition, factors and units of M.I. and radius of gyration.</p> <p><b>List of Experiments for BSc semester- I</b></p> <ol style="list-style-type: none"> <li>1. Bar Pendulum L vs. T and L2 Vs. LT2 graphs.</li> <li>2. M.I. of the Fly-Wheel</li> <li>3. Verification of Parallel axes theorem of Moment of Inertia using Bar Pendulum.</li> <li>4. Bifilar Suspension.</li> <li>5. Y- by Uniform bending- Load depression Graph.</li> <li>6. Torsion Pendulum – Rigidity of Modulus.</li> <li>7. Co-efficient of viscosity of liquid by Stoke's method.</li> <li>8. Use of CRO – Measurement of AC voltage and frequency for sine and square waves.</li> </ol> |
|                            | <u>B.Sc. Semester-III</u> | <p><b>Transient currents:</b> Introduction about transient circuits and currents, Theory of growth &amp; decay of current through RL circuit.</p> <p><b>List of experiments for BSc semester III</b></p> <ol style="list-style-type: none"> <li>1. Calibration of spectrometer</li> <li>2. Dispersive curve and dispersive power</li> <li>3. Goniometer</li> <li>4. Turn table</li> <li>5. Determination of magnetic field along the axis of a coil .</li> <li>6. Helmholtz galvanometer</li> <li>7. Determination of high resistance by leakage method</li> <li>8. R-C time constant</li> </ol>  |
|                            | <u>B.Sc. Semester-V</u>   | <p><b>Transistors:</b> introduction about transistors, construction, working. DC h-parameters and their determination,</p>  |

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|                  |                         |   |
|------------------|-------------------------|---|
|                  |                         | <p><b>List of experiments for BSc semester V-</b></p> <p><b>PAPER-1</b></p> <ol style="list-style-type: none"> <li>1. Planck's constant using Photo cell</li> <li>2. Thevenin's and Norton's theorems using Wheatstone's net</li> <li>3. High pass filter</li> <li>4. Construction of multi range voltmeter</li> <li>5. Full wave bridge rectifier with <math>\pi</math>-section filter</li> <li>6. FET Amplifier</li> <li>7. Photoconductive cell (LDR)</li> </ol> <p><b>PAPER-2</b></p> <ol style="list-style-type: none"> <li>1. VI-Characteristics of semiconductor diode.</li> <li>2. VI-Characteristics of Zener diode.</li> <li>3. Verification of Thevinin's and Norton's theorem (Ladder Network).</li> <li>4. Full wave rectifier with L and C filter.</li> <li>5. Full wave bridge rectifier.</li> <li>6. Zener diode as voltage regulator and comparison with IC 78xx.</li> <li>7. Transistor characteristics (CE), dc h-parameters.</li> <li>8. Construction of Multi range Voltmeter</li> </ol> |
| <u>July-2018</u> | <u>BSc I semester</u>   | statements and derivations of Perpendicular and Parallel axis theorems (derivations), Derivations of M.I of rectangular lamina, Annular ring and circular disc, (derivations), M.I of Hollow and Solid Cylinders (mention of expressions),  |
|                  | <u>BSc III semester</u> | Definition of RL time constant, its physical significance .Theory of charging & discharging of capacitor through RC circuit. Time constants of RC circuits, its physical significance. Theory, derivation and experimental Measurement of high resistance by leakage method. & Problems   |



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|                    | <u>BSc V semester</u>   | performance of transistor as an amplifier (CE mode only) with h-parameters and its frequency response, Brief explanation of positive and negative feedback, differences between positive and negative feedback . Explanation of LC tank circuit and Transistor as an oscillator, explanation, construction and working of Hartley. Principle and working of Phase shift oscillators with circuit diagram .(Qualitative only);  |
| <u>August-2018</u> | <u>BSc I semester</u>   | M. I. of Flywheel (Theory and Experimental determination) & Problems<br><b>UNIT 4: Elasticity</b> ;- explanation of Stress, Strain, Elastic limit, state and explain Hook's law, Moduli of elasticity for isotropic materials (Young's modulus, bulk modulus, Rigidity modulus), Relation between elastic constants (Derivation), Definition of Poisson's Ratio, its maximum and minimum value, derivation of Work done for unit Volume in stretching a wire,<br>Theory, derivation and experimental Measurement of high resistance by leakage method. & Problems<br><b>UNIT 1: Fermat's principle:</b> Statement & explanation, derivation of laws of reflection & Snell's law. Sign convention for refraction through the spherical surface, derivation for refraction at a spherical surface (relation between n, u , v & R). |
|                    | <u>BSc III semester</u> | <b>UNIT 1: Fermat's principle:</b> Statement & explanation, derivation of laws of reflection & Snell's law. Sign convention for refraction through the spherical surface, derivation for refraction at a spherical surface (relation between n, u , v & R).  |
|                    | <u>BSc -V semester</u>  | FET: Types, construction, characteristics and parameters. FET as an amplifier (CS mode, qualitative). Definition, construction, working and uses of LDR characteristics & Problems<br><b>Power Supplies;</b> Introduction about Power Supplies with block diagram,   |

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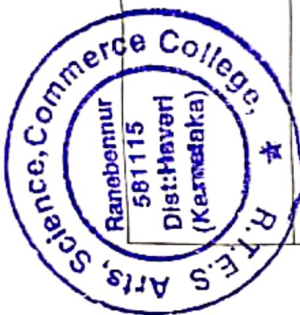
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| <u>September-2018</u> | <u>BSc I semester</u><br><br><br><br><br><br><br><u>BSc III semester</u><br><br><br><br><br><br><br><u>BSc VSemester-</u>     | <p>definitions of Bending of Beams Neutral surface, Neutral axis, Plane of Bending, Bending Moment, Expression for bending moment (Derivation), uniform bending (mention formula), Theory of light cantilever (Derivation) and explanation of I-section girder (qualitative),</p> <p>Derivation of DerAbbe's sign convention (derivation), Derivations of Lagrange's law &amp; Helmholtz relation (derivation).</p> <p>types of filters and their explanation (C, L, LC and <math>\pi</math>-section), Qualitative idea of Peak inverse voltage, efficiency, Ripple factor,</p> |
| <u>October-2018</u>   | <u>BSc I semester;-</u><br><br><br><br><br><br><br><u>BSc -III semester</u><br><br><br><br><br><br><br><u>BSc -V Semester</u> | <p>Torsion expression for the couple per unit twist, explanation of Torsional pendulum, Experimental determination of "Y" by bending &amp; Problems</p> <p>Explanation of Aplanatic points &amp; surfaces (qualitative) &amp; problems</p> <p>definition, construction, working of Zener diode: characteristics and its use in voltage regulation</p>   |




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| Month                                   | Class                              | Topics to be covered   |
|---|------------------------------------|--|
| 20 <sup>th</sup><br>December<br>-2018;- | <u>B.Sc-II</u><br><u>Semester</u>  | <p><b>UNIT 2: Thermodynamics'</b> - definition, main types of Heat engines , its efficiency :</p> <p><b>PHY 2.2 : Physics Lab – II List of experiments:</b></p> <ol style="list-style-type: none"> <li>1. Volume Resonator</li> <li>2. Frequency of AC using Sonometer</li> <li>3. Velocity of sound through wire using sonometer</li> <li>4. Use of CRO – study of Lissajous figures</li> <li>5. Specific heat by cooling</li> <li>6. Verification of Stefan's Law.</li> <li>7. Determination of Stefan's constant</li> <li>8. 'J' by electrical method – radiation correction by graphical method</li> </ol> |
|   | <u>B.Sc-IV</u><br><u>Semester</u>  | <p><b>Unit -2 : Diffraction</b> :Definition of diffraction of light with examples and types diffraction.</p> <p><b>List of experiments:</b></p> <ol style="list-style-type: none"> <li>1. Newton's rings</li> <li>2. R.P. of a prism</li> <li>3. R.P of telescope</li> <li>4. R.P. of grating</li> <li>5. Polarimeter</li> <li>6. Series/ Parallel Resonance (LCR Circuit)</li> <li>7. Capacity by De Sauty's method (AC)</li> <li>8. Determination of L &amp; C by equal voltage method</li> </ol>  |
|   | <u>B.Sc- VI</u><br><u>Semester</u> | <p><b>Astrophysics;</b> - In Astrophysics Units of stellar distances: astronomical unit, light year and parsec definitions with their values;</p>  |



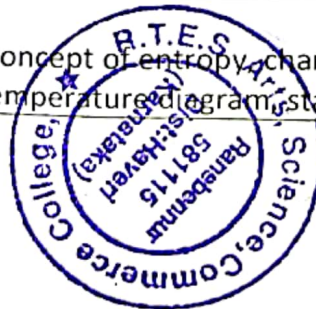
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|                            |                         |   |
|----------------------------|-------------------------|---|
|                            |                         | <p><b>List of experiments:</b></p> <ol style="list-style-type: none"> <li>1. Determination of resistivity of a semiconductor by four probe method.</li> <li>2. Characteristics of GM counter.</li> <li>3. GM tube (dead time).</li> <li>4. Voltage Multipliers using diodes and capacitors.</li> <li>5. Study of DTL gates.</li> <li>6. Use of IC 7400 (basic gates)</li> <li>7. Solar cell characteristics (a) Open circuit voltage (b) Short circuit current.</li> </ol> <p><b>List of experiments: paper 2</b></p> <ol style="list-style-type: none"> <li>1. Planck's constant using Photo cell</li> <li>2. Thevenin and Norton's theorems using Wheatstone's net</li> <li>3. High pass filter</li> <li>4. Construction of multi range voltmeter</li> <li>5. Full wave bridge rectifier with <math>\pi</math>-section filter</li> <li>6. FET Amplifier</li> <li>7. Photoconductive cell (LDR)</li> </ol> |
| <u>January - 2019;-</u>    | <u>B.Sc-II Semester</u> | construction and working of Otto engine using Otto cycle, expression for efficiency Otto engine, construction and working of using Diesel cycle, expression for efficiency Diesel engine. Expression for efficiency & Carnot's theorem  |
|                            | <u>B.Sc-IV Semester</u> | <b>Fresnel class :</b> Fresnel theory of half period zones considering plane waves, rectilinear propagation of light. Construction , working, Zone plate, construction . Theory, expression for focal length and comparison with convex lens And Problems .   |
|                            | <u>B.Sc-VI Semester</u> | Explanation of luminosities of stars, explanation and derivation of apparent and absolute magnitudes with problems about magnitudes, examples; stellar spectra, H-R diagram,  |
| <u>February &amp; 2019</u> | <u>B.Sc-II Semester</u> | Entropy: Concept of entropy, change in entropy in reversible & irreversible processes, entropy-temperature diagram, state and explanation of second law of thermodynamics.  |

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|---------------------|--------------------------|--|
|                     | <u>B.Sc-IV Semester</u>  | Maxwell's relations-derivation of Maxwell's relations,   |
|                     | <u>B.Sc- VI Semester</u> | Frounhoffer class : Composition of "n" numbers of SHM's of same amplitude & period and having their phases increasing in arithmetic progression. Diffraction at a single slit & at a double slit (qualitative ). |
|                     | <u>B.Sc- II Semester</u> | binary stars, stellar masses, stellar temperatures, equations of stellar structure, linear density model for stars, formation and evolution of stars (qualitative);  |
| <u>March - 2019</u> | <u>B.Sc- IV Semester</u> | Problems about thermodynamics  |
|                     | <u>B.Sc- VI Semester</u> | problems about Fresnel's diffraction   |
|                     |                          | Differences between refracting Telescope and reflecting Telescope. Differences between Newton's Telescope and Cassigranian Telescope.  |

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Dept. of Economics.

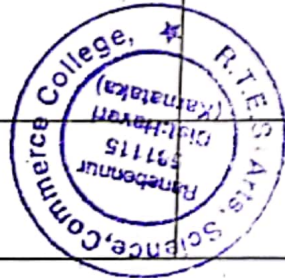
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ARTS, SCIENCE AND COMMERCE COLLEGE, RANEBENNUR - 581 115 DIST: HAVERI

TIME TABLE

FOR THE YEAR 2019 - 2020

| Time             | Monday                       | Tuesday                      | Wednesday   | Thursday     | Friday            | Saturday               |
|------------------|------------------------------|------------------------------|-------------|--------------|-------------------|------------------------|
| 8 to 9           |                              |                              |             | B. com<br>I. |                   |                        |
| 9 to 10          |                              |                              |             |              |                   |                        |
| 10 to 11         | B.A. V <sup>th</sup><br>P-I. | B.A. V <sup>th</sup><br>P-I. |             |              | B.A. VI           | B.A. V-II<br>Paper-II. |
| 11 to 12         | B.A. I.                      | B.A. II.                     | B.A. I.     |              |                   |                        |
|                  |                              |                              | <b>REST</b> |              |                   |                        |
| 12-15 to<br>1-15 |                              | B.A. III                     | B.A. III    | B.A. I.      | -                 | B.A. III               |
| 1-15 to<br>2-15  |                              |                              |             |              | B.A. III          | B.A. I.                |
| 2-15 to<br>3-15  |                              |                              |             |              | B.A. V<br>Paper I | B.A. V -<br>Paper-I.   |



*(Signature)*

ರಾ.ಶಾ.ಶಿ. ಸಂಸ್ಥೆಯ ಕೆಲಸ, ವಿಜ್ಞಾನ ಪಾಲಿಟೆಕ್ನಿಕ್  
ಪದವಿ ಮತ್ತು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ, ರಾಣಬೆನ್ನೂರು

# Micro Economics :

## Syllabus

B.A. Economics : First semester

Unit - I: Theory consumer's Behaviour

nature and scope of Economics;  
Demand - meaning, Determinants and Law of Demand. Elasticity of Demand, Types and measurements, supply meaning, Determinants and Law of supply, Elasticity of supply, Price Determination, Theory of consumer Behaviour cardinal Utility Approach, ordinal utility Approach - Theory of Indifference curve and Its properties, consumer's Equilibrium - Price consumption curve and Income consumption curve, Price Effect, Income Effect, and substitution Effect Inferior goods and

## Syllabus

Perfect Goods Derivation of Demand curve.  
Unit - II: Production, costs and Revenue.

Production Function - short run and Long run :  
Law of variable proportions, Returns to scale  
Characteristics of Isoquants and Isocost line  
Least cost combination of factors, Cost Function -  
Different concepts of costs, short-run and Long run  
cost Analysis : Economics and Dis Economics of scale, concepts of Total, Average and Marginal Revenue, Break - even - analysis.

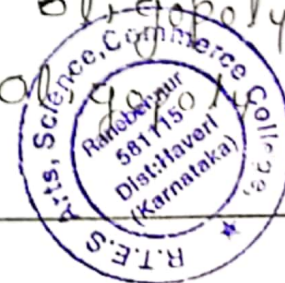
Unit - III: Market structure and product Price

Perfect competition - Equilibrium of the firm and Industry, Monopoly, Equilibrium of the firm, Price discrimination, monopolistic competition - meaning and characteristics short run and Long run Equilibrium of the firm and Group Equilibrium, Excess capacity oligopoly - Features  
Types of oligopoly

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Unit IV<sup>th</sup>: Factor Pricing and Distribution: Marginal

Productivity Theory of Distribution.  
Ricardian and modern Theories of Rent. Marginal Productivity Theory of Distribution. Quasi-rent: Wage Determination: Theories of Profit-Dynamic Theory, Risk and Uncertainty Theory and Schumpeterian Theory of profit.

Unit V : General Equilibrium and Welfare Economics: Partial and

General Equilibrium: meaning and measurement of welfare. Welfare criteria: of social welfare Function.

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MACRO ECONOMICS

Unit - I<sup>st</sup> Introduction to Macro Economics, meaning, scope and Importance of macro Economics, National Income Accounting: Concepts of National Income GDP, G.V.P. G.N.P. N.N.P National Income at factor cost P.I. D.I. P.C.I (Illustrate with numerical examples); Methods and Difficulties in measuring National Income: Circular Flow of Income.

Unit - II: Classical Theory of Employment.

Classical Theory of Employment. Assumptions and Full-Employment-Equilibrium; Say's Law of Market. Wage-Price Flexibility.

Unit - III: Keynesian Economics.

Keynesian Theory of Employment - concept of Effective Demand and its Determinants. Keynes Psychological Law of consumption. Consumption Function - Average propensity to consume & Marginal propensity to consume and Factors Determining consumption Function: saving Function.



## Syllabus

Average propensity to save and marginal propensity to save Determinants of savings Investment Function - Marginal Efficiency of Capital and Factors Influencing the MEC (Illustrate with numerical examples)

Unit-IV: Theory of Multiplier and Accelerator: Multiplier - meaning

working and limitation. Accelerator - meaning working and limitation (Illustrate with numerical examples)

Unit-V: Business Cycles and Inflation:

Business Cycles - meaning. Features Phases and Control of Business cycles: Theories of Business cycles

Inflation and Deflation - meaning, Type, ~~causes~~ causes. Effects, calculation

of inflation and control of Inflation,

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B.A. III<sup>rd</sup> semester: Monetary Economics

## Unit-I: Money. Syllabus

Unit-I: Money. Meaning Functions - supply of money - M1, M2, M3, M4. Metallic standard - meaning of mono-metallism & Bimetallism - Paper Standard - merits & Demerits.

Unit-II: Value of money: meaning & construction of index numbers, simple & weighted Index Numbers. Theories of

value of money - cash Transactions

Approach & cash Balances Approach.

Unit-III: Inflation & Deflation: Inflation

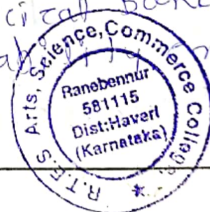
meaning - Types - causes - effects - control of Deflation. meaning of

Inflationary gap. Deflationary gap.

Unit-IV: Money & money market: components of money market, commercial

Banking Functions, Balance Sheet

of Commercial Bank, Liquidity vs profitability, credit creation.



## Syllabus

Unit: I: Central Bank - meaning  
Functions - methods of credit  
control - Qualitative & Quantitative  
controls, objectives of monetary policy  
Role of central Bank in Economic  
Development.

## International Economics:

Unit - I<sup>st</sup>: Nature and Importance of  
International Trade. - Domestic and  
Foreign Trade - Theories of Inter-  
International Trade. Comparative  
cost Theory, modern Theory of  
International Trade. Terms of Trade.

Unit - II: Free Trade vs protection  
arguments for and against  
trade and protection.

## Syllabus

methods of trade barriers - Tariffs  
& Quotas, etc.

Unit - III: Balance of Trade  
and Balance of Payments -  
meaning causes for Disequilibrium  
in the balance of payment -  
methods of correcting disequilibrium  
in the balance of payment.

Unit - IV: meaning - Rate of Exchange

Fixed and Flexible Exchange  
Rates - Purchasing power parity  
Theory. Exchange control.  
Meaning, objectives and methods  
of exchange control.

Unit: V: International Economic  
organizations - IMF, IBRD and  
I.C.T.O. objectives, functions and  
performance.

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**Syllabus**

Module I: Introduction to macro Economics: Macro Economics meaning Uses & limitations, National Income Definitions, methods of

Estimations concepts of national Income, G.N.P, NNP, NI, DI, DPI, & DPI. Difficulties in the calculation of National Income.

Module - II: Theory of Employment Say's Law of market, Pigou's modifications.

Module III: Keynesian Economics, Keynesian Theory of Employment, Effective Demand & Its Development, Determination - Consumption Function

Average & Marginal propensity to consume.

**Syllabus**

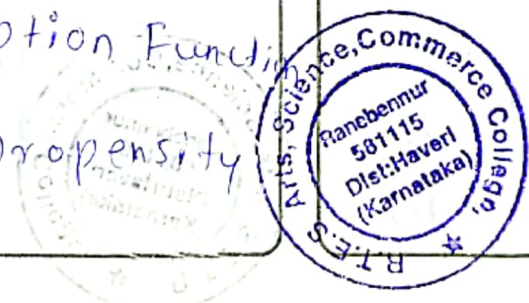
Factors Affecting Consumption Function: Investment Function, marginal Efficiency of capital liquidity preference Theory of Interest Theory of Multiplier, Module IV: Acceleration principle.

meaning, working - limitations - Interaction of Multiplier & Accelerator.

Module V: Trade cycles, meaning Features phases of Trade cycles.

Theories of Trade cycles. Hawtrey, Keynes, & Schumpeter's

Theories of Trade Cycles, Control of trade cycles.



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**Syllabus**

module I: Introduction to Public Economics. Nature and scope of public finance. Distinction between public finance and private finance - principle of maximum social advantage.

module II: Public Revenue:

Sources of public revenue  
Taxation - canons of taxation  
Characteristics of good tax system.  
Impact, Incidence and shifting of tax  
Types of Taxation progressive Regressive  
proportional - Direct and Indirect  
taxes - merits and Effects of tax  
production and distribution  
taxable capacity, meaning and determination

**Syllabus**

III Public Expenditure: meaning and types - principle of public Expenditure. Causes for increase in public Expenditure. - Effects of public Expenditure on production and distribution.

module IV: Public debt, meaning purpose and types of public debt. burden of public debt. methods of repayment of public debt.

Module V: Budgeting, meaning and components of budget - Revenue deficit and Fiscal deficit, Fiscal Policy meaning and objectives - deficit financing.

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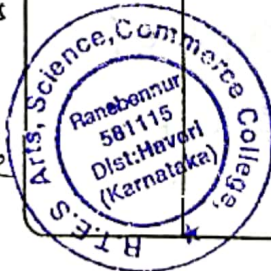


## Conspectus of Studies

| Month         | Class                    | Topics to be covered   |
|---------------|--------------------------|--|
| <u>July</u>   | B.A. I <sup>st</sup> sem | <p><u>Module-I: Theory consumer's Behaviour</u><br/>                     Behaviour: Nature and scope of Economics: Demand - meaning, Determinants and Law of Demand: Elasticity of Demand - Types and Measurements: supply - meaning Determinants and law of supply. Elasticity of supply. Price Determination. Theory of consumer Behaviour cardinal utility Approach. ordinal utility Approach - Theory of Indifference curve and Its Properties, consumer Equilibrium. Price consumption curve and Income consumption curve. Price Effect. Income Effect and substitution Effect. Inferior goods and Giffen goods Derivation of Demand curve.</p> <p><u>Module: II:</u><br/> <u>Production, Costs &amp; Revenue</u></p> |
| <u>August</u> | B.A. I <sup>st</sup> sem |  |

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| Month         | Class                | Topics to be covered   |
|---------------|----------------------|--|
| <u>August</u> | B.A. I <sup>st</sup> | <p>Production Function - short-run and long-run. Law of variable Proportions. Returns to scale characteristics of Isoquants and Iso cost line least cost combination of factors, cost Function - Different concepts of costs, short-run and long run cost Analysis, Economics and Diseconomies of scale. concepts of Total, Average and marginal Revenue: Break-Even analysis.</p> |
| <u>Sept</u>   | B.A. I <sup>st</sup> | <p><u>Module-III: Market structure and Product Pricing: Perfect competition - Equilibrium of the firm and Industry; monopoly - Equilibrium of the firm. Price discrimination, monopolistic competition - meaning and characteristics, short run &amp; Long-run Equilibrium of the firm and group Equilibrium Excess capacity. oligopoly - Features and Types of oligopoly.</u></p> |



Conspectus of Studies

| Month | Class               | Topics to be covered   |
|-------|---------------------|--|
| Oct:  | B.A.I <sup>st</sup> | <p>Module: I<sup>th</sup> Factor Pricing and Distribution: Marginal Productivity Theory of Distribution, Ricardian and Modern Theories of Rent Quasi-rent, wage Determination Theories of Profit, Dynamic Theory, Risk and Uncertainty Theory and Schumpeterian Theory of Profit.</p> <p>Module: II<sup>th</sup>: General Equilibrium and welfare Economics: Partial and general Equilibrium: Meaning and Measurement of welfare; Pareto's welfare criteria: concept of social Welfare Function.</p> |

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| Month  | Class                 | Topics to be covered  |
|--------|-----------------------|---|
| July   | B.A.II <sup>nd</sup>  | <p>Module I<sup>st</sup>: Money: meaning Function - supply of money M1, M2, M3, M4, metallic standard meaning of mono-metallic standard. - meaning of mono metallism &amp; Bi metallism - Paper standard - merits &amp; Demerits.</p>   |
| August | B.A.III <sup>rd</sup> | <p>Module II: value of money meaning &amp; construction of index numbers simple and weighted Index numbers - Theories of value of money - Cash transactions Approach &amp; Cash Balances Approach</p> <p>Module III: Inflation &amp; Deflation, Inflation - meaning - Types, Causes - Effects - control of Inflation.</p> |

  
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


### Conspectus of Studies

| Month       | Class    | Topics to be covered  |
|-------------|----------|---|
| <u>Sept</u> | B.A. III | <p><u>Deflation</u>: meaning - Types - causes - Effects - control of Deflation. meaning of Inflationary Gap. Deflationary Gap.</p> <p><u>Module - IV</u>: <u>money and money market</u>: components of money market. commercial Banking Functions. Balance sheet of commercial Bank. Liquidity vs Profitability. credit creation.</p> |
| <u>Oct</u>  | B.A. III | <p><u>Module V</u>: <u>Central Bank</u>: meaning - Functions - methods of credit control qualitative and Quantitative controls objectives of monetary policy. Role of central Bank in Economic Development.</p>   |

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| Month         | Class                 | Topics to be covered   |
|---------------|-----------------------|--|
| <u>July</u>   | B.A. IV <sup>th</sup> | <p><u>Module I</u>: <u>Introduction to macro Economics</u>: macro-Economics-meaning uses &amp; Limitation, National Income Definitions methods of Estimations concepts of National Income, GNP, NNP, NI, DI, DPI, &amp; Difficulties in the calculation of National Income.</p>                                  |
| <u>August</u> | B.A. IV <sup>th</sup> | <p><u>Module II</u>: <u>Theory of Employment</u><br/>         Say's law of market. Pigou's modifications.</p> <p><u>Module III</u>: <u>Keynesian Economics</u>. Keynesian Theory of Employment. Effective Demand &amp; Its Determination. consumption Function Average &amp; marginal Propensity to consume.</p> |
|               | B.A. IV <sup>th</sup> | <p><u>Module IV</u>: <u>Factors Affecting consumption Function</u>. Investment Function. Marginal Efficiency of capital - liquidity.</p>   |

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 (Karnataka)

## Conspectus of Studies

| Month       | Class          | Topics to be covered  |
|-------------|----------------|---|
| <u>Oct.</u> | <u>B.A. II</u> | <p>Preference Theory of Interest<br/>Theory of Multiplier.<br/>Module: <u>IV<sup>th</sup></u>; <u>Acceleration</u><br/><u>Principle</u>: meaning - working<br/>- limitations - Interaction of<br/>Multiplier &amp; Accelerator.<br/>Module <u>V</u>: <u>Trade cycles</u>:<br/>meaning Features - Phases of<br/>Trade cycles. Theories of<br/>Trade cycles. Haw tray,<br/>Keynes &amp; Schumpeter's<br/>Theories of Trade cycles<br/><del>Control</del> Control of Trade cycles.</p> |



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| Month        | Class                       | Topics to be covered   |
|--------------|-----------------------------|--|
| <u>Jan.</u>  | <u>B.A. II<sup>th</sup></u> | <p>Module: <u>I</u>: Nature and<br/>Importance of International<br/>Trade - Domestic and<br/>Foreign Trade. - Theories<br/>of International Trade.<br/>comparative cost Theory.<br/>modern Theory of International<br/>trade - Terms of Trade.</p> |
| <u>Feb.</u>  | <u>B.A. II</u>              | <p>Module - <u>II</u> Free Trade vs<br/>protection - Arguments<br/>for and against Free<br/>Trade and protection<br/>methods of trade barriers<br/>- Tariffs, Quotas etc.</p>  |
| <u>march</u> | <u>B.A. II</u>              | <p>Module <u>III</u>: public<br/>Expenditure meaning<br/>and Types principles<br/>of public expenditure</p>  |



**Conspectus of Studies**

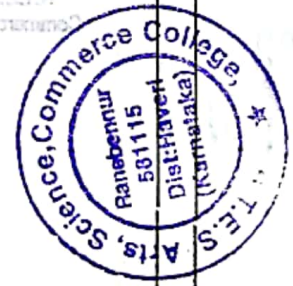
| Month | Class   | Topics to be covered   |
|-------|---------|--|
| Apr   | B.A. VI | <p>causes for increase in public expenditure - effects of public expenditure on production and distribution.</p> <p><u>Exchange control</u>: meaning objectives and methods of exchange control.</p> <p><u>Module-IV</u>: International Economics organizations IMF, IBRD, and WTO. objectives, functions and performance.</p> |

| Month | Class   | Topics to be covered  |
|-------|---------|---|
| Jan   | B.A. VI | <p><u>Module-I</u>: Introduction to public Economics. nature and scope of public finance. Distinction between public finance and private finance - principle of maximum social advantage</p>  |
| Feb   | B.A. VI | <p><u>Public Revenue</u>: sources of public revenue - Taxation - canons of taxation - characteristics of good tax system - Impact. Incidence and shifting of tax - Types of Taxation progressive Regressive proportional Direct and Indirect taxes.</p> |

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| Conspectus of Studies |               |  |
|-----------------------|---------------|--|
| Month                 | Class         | Topics to be covered   |
| <u>Mar</u>            | <u>B.A.VI</u> | merits and Effects of tax on production and distribution Taxable capacity meaning and determinants<br><u>Public Expenditure</u> ; meaning and types - principles of public Expenditure - causes for increase in public Expenditure - Effects of public Expenditure on production and distribution. |
| <u>Apr</u>            | <u>B.A.VI</u> | <u>public debt, meaning</u> ; purpose and types of public debt. burden of public debt.   |

| Month      | Class         | Topics to be covered  |
|------------|---------------|---|
| <u>Apr</u> | <u>B.A.VI</u> | methods of repayment of public dept.<br><u>module(v)</u> ; Budgeting meaning and components of budget. Revenue deficit and Fiscal deficit - Fiscal Policy meaning and objectives - deficit Financing. |

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