DEVI AHILYA VISHWAVIDYALAYA, INDORE
UNDER GRADUATE SEMESTER WISE SYLLABUS
Syllabus of B.Sc. Pharmaceutical Chemistry
Session 2015-2016 & Onwards

SCHEME OF MARKS

B.Sc. II Year

Semester III
Medicinal Chemistry 100 marks
Practical 50 marks

Semester IV
Chemistry of Natural Products 100 marks
Practical 50 marks

15 Marks CCE + 85 Marks Semester Examination = 100 Marks for Each Paper

B.Sc. Semester III

<table>
<thead>
<tr>
<th>Paper Title</th>
<th>Max. Marks</th>
<th>Min. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicinal Chemistry</td>
<td>85</td>
<td>28</td>
</tr>
<tr>
<td>Practical</td>
<td>50</td>
<td>17</td>
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<tr>
<td>CCE</td>
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</table>

B.Sc. Semester IV

<table>
<thead>
<tr>
<th>Paper Title</th>
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<tbody>
<tr>
<td>Chemistry of Natural Products</td>
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<tr>
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</tr>
</tbody>
</table>
| UNIT I | **General Anesthetics**: Definition, Stages of Anesthesia, Classification and Theories of General Anesthetics, Preparation, Mode of action, Therapeutic uses and Adverse Effects of Compounds - Thiopental Sodium, Halothane, Cyclopropane.  
**Local Anesthetics**: Definition, Classification and Theories of Local Anesthetics (five Theories), Preparation, Mode of action, Therapeutic uses and Adverse Effects of Compounds - Procaine, Benzocaine, Lignocaine HCl, Diperodon HCl. |
| UNIT II | **Hypnotics and Sedatives**: Definition, Classification and Structure Activity Relationship of barbiturates, Preparation, Mode of action, Therapeutic uses and Adverse Effect of Compounds - Barbitone Sodium, Allobarbiton, Hexabarbitons, Glutethimide.  
**Tranquilizers**: Definition, Classification, Preparation, Mode of action, Therapeutic use and adverse effect of Compounds - Chlorpromazine HCl, Chlor Diazepoxide, Diazepam  
**Anticonvulsants**: Definition, Classification, Preparation, Mode of action, Therapeutic uses and Adverse Effect of Compounds - Phenobarbital, Phensuximide. |
| UNIT III | **Antihypertensive**: General Introduction, Causes and types of hypertension, Classification of antihypertensive, Mode of action of Calcium channel blockers, Preparation, Mode of action, Therapeutic uses and Adverse effect of Compounds – Tolazoline HCl, Propranolol HCl, Methyl Dopa, Guanethidine sulphate, Captopril  
**Adrenergic Agents**: Classification, Adrenergic hormone, Structure Activity Relationship of Phenylethylamine analogs, Ephedrine, Pseudoephedrine HCl, Metaraminol, Naphazoline HCl.  
**Cholinergics and Anticholinesterases**: Preparation, Mode of action, Therapeutic uses and Adverse effect of Compounds – Acetylcholine, Carbachol, Edrophonium, Pyridostigmine. |
| UNIT IV | **Non Steroidal Anti-Inflammatory Drugs**: Definition, Types of Pain, Classification of NSAID, Structure Activity Relationship of Indole Acetic Acid derivatives, Structured Activity Relationship of Salicylic acid derivatives. Preparation, Mode of action, Therapeutic uses and adverse effect of Compounds - Indomethacin, Tolmetin Sodium.  
**Diuretics**: Anatomy and Physiology of Kidney, Mechanism of Urine Formation, Classification of Diuretics, Preparation, Mode of action, Therapeutic uses and Adverse effect of Compounds – Furosemide, Acetazolamide, Chlorthiamide, Spironolactone. |
UNIT V  Drugs Acting on Respiratory Systems, Expectorants and Antitussives : Classification and Mechanism of action, Potassium glucosulphate, Terpine hydrate, Noscapine.

Antiasthmatics Drugs : Classification, Causes of Asthma, Preparation, Mode of action, Therapeutic uses and Adverse Effect of Compounds – Salbutamol, Terbutaline.

Autooids : Histaminics and Antihistaminics, Chemistry of histamine, Pharmacological action of histamines, Classification of Antihistaminics, Structure Activity Relationship of Ethanolamine derivatives, Diphenylhydramine Hcl, Mepyramine, Pheniramine maleate.

BOOKS RECOMMENDED

5. R.S. Gaud and Dr. G.D. Gupta, Practical Pharmaceutesics, CBS Publishers and Distributors, New Delhi.
8. John H. Block, John m. Beak, Jr., Organic Medicinal and Pharmaceutical Chemistry, Lippincot Williams & Wilkins.
11. Dr. C.S. Shah, Dr. J.S. Qadry, Pharmacognosy, B.S. Shah Prakashan.
13. Paul M Dewick, Medicinal natural products (A biosynthesis approach)II edition, 

\[\text{108} \]
\[\text{30 7 2014}\]
Max. Marks / अधिकतम अंक : 50
Class / कक्षा : B.Sc / बी.एस.सी
Semester / सेमेस्टर : III
Title of Subject Group / विषय समूह का शीर्षक : Pharmaceutical Chemistry
Paper Title/प्रश्न पत्र शीर्षक : Practical
Compulsory / अनिवार्य : Compulsory

Particular / विवरण
Examination: 4 hours

I Preparation of Organic Compounds: 12 Marks
   (a) Phenyl Benzoate  (b) 1-Phenyl Azo-β-naphthol (c) Phthalimide
   (d) Benzilide (e) Hippuric Acid (f) Naphthyl acetate (g) Succinic anhydride
   (h) Di-azo-amino benzene (i) 2,4-Dinitro toluene (j) 2,4,6-Tribromo aniline
   (k) p-acetanisidide.

II Isolation: 12 Marks
   (a) Starch from potatoes (b) Hippuric from Cow’s urine
   (c) Calcium citrate from Lemon juice. (d) Solanin from Potatoes.

III Identification of Plant Products: 06 Marks

III Identification of Drugs: 06 Marks

IV Viva -voce 06 Marks

V Practical record 08 Marks
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>UNIT V</td>
<td>Polynuclear Aromatic Hydrocarbon: Chemistry of Naphthaline, Anthracene and Phenanthracene. Steroids: Isolation, Nomenclature, Chemistry of Cholesterol, Ergosterol, Stigmastester</td>
</tr>
</tbody>
</table>
BOOKS RECOMMENDED

5. R.S. Gaud and Dr. G.D. Gupta, Practical Pharmaceutics, CBS Publishers and Distributors, New Delhi.
8. John H. Block, John M. Beak, Jr., Organic Medicinal and Pharmaceutical Chemistry, Lippincot Williams & Wilkins.

30/7/2019
B.Sc (Graduate) semester wise Syllabus
2015-2016 & Onwards

Max. Marks / अधिकतम अंक : 50
Class / कक्षा : B.Sc / बी.एससी
Semester / सेमेस्टर : IV
Title of Subject Group / विषय समूह का शीर्षक : Pharmaceutical Chemistry
Paper Title/प्रश्न पत्र शीर्षक : Practical
Compulsory / अनिवार्य : Compulsory

Particular / विवरण
Examination: 4 hours

I Assay:
   (a) Ampicillin
   (b) Aspirin
   (c) Benzoic acid
   (d) Citric acid
   (e) Sodium Bicarbonate

II Isolation:
   (a) Casein from Milk
   (b) Lactose from Milk
   (c) Hesperdin from Orange peel
   (d) Lycopene from Tomatoes

III TLC of Drugs:
IV Viva - voce
V Practical record

12 Marks
12 Marks
12 Marks
06 Marks
08 Marks
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Session 2016-2017 & Onwards

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<td>Paper: Medicinal chemistry</td>
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<th>Semester VI</th>
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<tr>
<td>Drug Analysis</td>
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<tr>
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15 Marks CCE+ 85 Marks Semester Examination= 100 Marks for Each Paper

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<tr>
<td>Internship (Project)</td>
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B.Sc (Graduate) semester wise Syllabus
2016-2017 & Onwards

Max. Marks / अधिकतम अंक : 85
Class / कक्षा : B.Sc / बी.एस.सी
Semester / सेमेस्टर : V
Title of Subject Group / विषय समूह का शीर्षक : Pharmaceutical Chemistry
Paper Title / प्रमुख पत्र शीर्षक : MEDICINAL CHEMISTRY
Compulsory / अनिवार्य : Compulsory

UNIT I

UNIT II
(a) Antibiotics: Introduction, Classification and uses of Penicillin and Semisynthetic Penicillins: Study of structures and uses of Streptomycin, Neomycin, Kanamycin. Tetracycline - SAR and uses.
(b) Antitubercular Drugs: Introduction, Synthesis and Mode of action of PAS, INH, Ethambutol, Ethionamide.
(c) Classification of Antibiotics: like macrolides, Aminoglycosides, Fluoroquinolones and broad-spectrum antibiotics.

UNIT III
(a) Cardiovascular Drugs: Introduction, Classification of Cardiovascular Drugs, Cardiovascular Diseases, Synthesis, Mode of Action, Uses and Side Effects of Amyl Nitrate, Sorbitrate, Verapamil, Atenolol.
(b) Drugs acting on cardiovascular system: Cardiac glycoside, Anti-Arrhythmic agents, Anti-Anginal drugs, Anti-Hypertensive, Anti-Hyperlipidemic drugs.
### UNIT IV

(a) **Antiviral**: Introduction, Replication and Transformation, Classification. Synthesis and Uses of Amantidine HCl, Idoxuridine, Methisazone, Anti-HIV agents.

(b) **Antimalaria:** Classification, SAR of 4-Aminoquinolines and 8-Aminoquinolines. Synthesis, Mode of action and uses of Chloroquine, Amidoquine, Pamaquine, Pyrimethamine.

### UNIT V

(a) **Antineoplastic Agents**: Classification, pathophysiology of cancer. Synthesis and Mode of action of 5-Flourouracil, 6-Thioguanine, Thiopeta, Melaphalan, Busulfan.

(b) **Antiamoebics**: Synthesis and uses of Bialyl Unical, Metronidazole, Mentamide, Iodoquino1

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**Books Recommended**

2. John H_Block, John M. Block, Jr., Organic Medicinal and Pharmaceutical Chemistry, Lippincot Williams & Wilkins.

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\[\text{Date: 20 Feb 2019}\]
Max. Marks / अधिकतम अंक : 50
Class / कक्षा : B.Sc / बी.एस.सी
Semester / सेमेस्टर : V
Title of Subject Group / विषय समूह का शीर्षक : Pharmaceutical Chemistry
Paper Title/प्रमाण पत्र शीर्षक : PRACTICAL
Compulsory / अनिवार्य : Compulsory

Particular / विवरण

Examination: 4 Hours

I. Preparations and Synthesis:
   (i) Vicks.
   (ii) Eosin.
   (iii) Cold Cream.
   (iv) 7-Hydroxy-4-Methyl Coumarin.
   (v) Sodium Chloride Injection.

II. Assay:
   (i) Lithium Carbonate.
   (ii) Ammonium Chloride.
   (iii) Citric Acid

III. Analysis of Solid dosage forms by Instrumentation:
   (i) Friability,
   (ii) Dissolution Time,

IV. Chromatography:
   (i) TLC
   (ii) Column Chromatography.

V. Viva-voce:

VI. Practical Record:

[Signature]
30/11/2014
<table>
<thead>
<tr>
<th>UNIT</th>
<th>Topic</th>
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<tbody>
<tr>
<td>UNIT I</td>
<td>Chromatography: Principles of Separation Processes and Application of such Techniques Viz Thin Layer Chromatography, Gas Chromatography, Paper Chromatography, Ion Exchange Chromatography and HPLC.</td>
</tr>
<tr>
<td>UNIT III</td>
<td>Spectroscopic Method: Principle, Instrumentation and Applications of NMR and Mass Spectroscopy, UV-Vis, IR.</td>
</tr>
<tr>
<td>UNIT IV</td>
<td>Statistical Validation: Errors: Introduction, Classification. Statistical Validation: Distribution of Random Numbers, Significant Figures, Comparison of Results, Methods of Least Square, method of collection of data, graphical representation of data, frequency, polygon, histogram, measure of central tendency, mean, median, mode, dispersion, standard deviation, variance.</td>
</tr>
</tbody>
</table>
Books Recommended

5. Gurdeep Raj, Advanced Inorganic Practical, Goyal Publishing House, Meerut (U.P.)
8. J.M. Hollas, Modern Spectroscopy, John Wiley
10. G. Aruldas, Molecular structure and spectroscopy, Phi Learning Pvt. Ltd.
B.Sc (Graduate) semester wise Syllabus
2016-2017 & Onwards

Max. Marks / अधिकतम अंक : 50
Class / कक्षा : B.Sc / बी.एससी
Semester / सेमेस्टर : VI
Title of Subject Group / विषय समूह का शीर्षक : Pharmaceutical Chemistry
Paper Title / प्रेस्न पत्र शीर्षक : Practical
Compulsory / अनिवार्य : Compulsory

Particular / विवरण
Examination: 4 Hours

I. Preparations and Synthesis:
   (i) Methyl Red.
   (ii) Benzil
   (iii) Benzoic Acid
   (iv) Dextrose Injection
   (v) Calamine Lotion
   (vi) Vanishing Cream

II. Assay:
   (i) Milk of Magnesia.
   (ii) Ascorbic Acid

III. Analysis of Solid dosage forms by Instrumentation:
   (i) Weight Variation,
   (ii) Hardness.
   (iii) Disintegration Time.

IV. Chromatography:
   (i) o and p - Nitro Aniline by TLC.
   (ii) Inorganic ions by Radial Chromatography.

V. Viva-voce:

VI. Practical Record:

12 Marks
12 Marks
06 Marks
06 Marks
06 Marks
08 Marks

Signature
30-7-2019