FACULTY OF AGRICULTURE & FORESTRY

SYLLABUS

For

B.Sc. AGRICULTURE (HONS.)
(Semester I – VI)
Session: 2014-15
&
Part–IV
(ANNUAL SYSTEM)
Examination: 2014-15

GURU NANAK DEV UNIVERSITY
AMRITSAR

Note: (i) Copy rights are reserved.
Nobody is allowed to print it in any form.
Defaulters will be prosecuted.

(ii) Subject to change in the syllabi at any time.
Please visit the University website time to time.
**Scheme of Studies & Examination**

**Semester-I**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods per Week</th>
<th>Total Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agron.104</td>
<td>Introductory Agriculture</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>2.</td>
<td>Agromet 102</td>
<td>Introductory Agrometerology</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>3.</td>
<td>Micro 101</td>
<td>Elementary Microbiology</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>4.</td>
<td>Soils 103</td>
<td>Introduction to Soil Science</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>5.</td>
<td>Eco.101</td>
<td>Principles of Agricultural Economics</td>
<td>4</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>6.</td>
<td>Bot 103/</td>
<td>Basic Botany/</td>
<td>2</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Maths 104</td>
<td>Basic Maths–I</td>
<td>4</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>7.</td>
<td>Eng.102</td>
<td>Communication Skills in English</td>
<td>4</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>8.</td>
<td>Punjabi Compulsory / Basic Punjabi (Mudhli Punjabi)</td>
<td>4</td>
<td>0</td>
<td>50</td>
<td>--</td>
</tr>
</tbody>
</table>

**Note:**

1. Mathematics for those students who have passed 10+2 (Medical)
2. Botany for those students who have passed 10+2 (Non Medical)
3. Punjabi Compulsory/Basic Punjabi ((Mudhli Punjabi) for those students who have not passed 10+2 with Punjabi subject.)
### Scheme of Studies & Examination

#### Semester-II

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods per Week</th>
<th>Total Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agron 106</td>
<td>Water Management and Micro Irrigation</td>
<td>4 3</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>2.</td>
<td>CSE 101</td>
<td>Introduction to Computer Application</td>
<td>3 3</td>
<td>25 25</td>
<td>50</td>
</tr>
<tr>
<td>3.</td>
<td>Ext. 101</td>
<td>Dimensions of Agriculture Extension</td>
<td>4 3</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>4.</td>
<td>PBG 103</td>
<td>Principles of Genetics</td>
<td>4 3</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>5.</td>
<td>Soils 104</td>
<td>Soil Chemistry, Soil Fertility and Nutrient Management</td>
<td>4 3</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>6.</td>
<td>Veg. 101</td>
<td>Vegetable Production Technology</td>
<td>4 3</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>7.</td>
<td>Zoo 103/ Maths 108</td>
<td>Basic Zoology/ Basic Maths–II</td>
<td>2 2</td>
<td>25 25</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 0</td>
<td>50 --</td>
<td>50</td>
</tr>
<tr>
<td>8.</td>
<td>Eng. 103</td>
<td>Communication Skills in English</td>
<td>35 15</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Punjabi (Compulsory) / Basic Punjabi (Mudhli Punjabi)</td>
<td>50</td>
<td>--</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

### Note:

1. Mathematics for those students who have passed 10+2 (Medical)
2. Botany for those students who have passed 10 +2 (Non Medical)
3. Punjabi Compulsory/Basic Punjabi ((Mudhli Punjabi) for those students who have not passed 10+2 with Punjabi subject).
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods per week</th>
<th>Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B.Sc.Agri. Agron-203</td>
<td>Principles of Agronomy-1 (Kharif Crops)</td>
<td>4 3</td>
<td>50 25 75</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>B.Sc.Agri. Bot-206</td>
<td>Crop Physiology</td>
<td>4 3</td>
<td>50 25 75</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>B.Sc.Agri.Ent.-204.</td>
<td>Fundamentals of Insect Morphology and Systematics</td>
<td>4 3</td>
<td>50 25 75</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>B.Sc. Agri. Ext.-201</td>
<td>Extension Methodologies and Communication Skills for Transfer of Technology</td>
<td>4 3</td>
<td>50 25 75</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>B.Sc Agri. FPM-202</td>
<td>Farm Power and Machinery</td>
<td>4 3</td>
<td>50 25 75</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>B.Sc Agri. Soil-204</td>
<td>Manures and Fertilizers</td>
<td>4 0</td>
<td>50 00 50</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>B.Sc Agri. Hort.-203</td>
<td>Production Technology of Fruit Crops</td>
<td>4 3</td>
<td>50 25 75</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>B.Sc Agri. Soil-203</td>
<td>Soil Physics and Erosion Management</td>
<td>4 3</td>
<td>50 25 75</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>B.Sc Agri. Pl.Path-201</td>
<td>Plant Pathogens and Principles of Plant Pathology</td>
<td>4 3</td>
<td>50 25 75</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>ESL-221*</td>
<td>Environmental Studies (EVS)</td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>36 24</strong></td>
<td><strong>450 200</strong></td>
<td><strong>650</strong></td>
</tr>
</tbody>
</table>

**Note:** *The marks of Paper ESL-221 (Semester - III) (Environmental Studies will not be added in the Total Marks.*
### Semester-IV

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods per week</th>
<th>Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B. Sc. Agri. Agron-204</td>
<td>Principal of Agronomy-II (Rabi Crops)</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>B. Sc. Agric. Eco-202</td>
<td>Production Economics, Farm Management and Agricultural Finance</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>B.Sc.Agri.Ent.-205</td>
<td>Insect Ecology and Integrated PestManagement</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>B.Sc. Agri. Ext.-202</td>
<td>Fundamentals of Rural Sociology and Educational Psychology</td>
<td>4</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>B. Sc Agri. LPM-205</td>
<td>Livestock Production and Management</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>B. Sc Agri. PBG-202</td>
<td>Principles of Seed Technology</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>B. Sc Agri. Pl.Path-202</td>
<td>Diseases of Field Crops and their Management</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>8</td>
<td>B. Sc. Agri. Agron-205</td>
<td>Organic Farming</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>9</td>
<td>B.Sc. Agri. SWE 101</td>
<td>Fundamentals of Soil and Water Conservation Engineering</td>
<td>4</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>ESL-222*</td>
<td>Environmental Studies (EVS)</td>
<td></td>
<td></td>
<td>50</td>
</tr>
</tbody>
</table>

**Total** 36 24 450 200 650

**Note:** *The marks of Paper ESL-222 (Semester - IV) (Environmental Studies will not be added in the Total Marks.*
## Semester-V

<table>
<thead>
<tr>
<th>Course</th>
<th>Subject</th>
<th>Period Per week</th>
<th>Marks</th>
<th>Internal Assessment</th>
<th>Total Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron-302</td>
<td>Practical Crop Production-I (Kharif Crops)</td>
<td>0 3</td>
<td>0 20</td>
<td>0 05</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Biotech-310</td>
<td>Principles of Plant Biotechnology</td>
<td>4 3</td>
<td>40 20</td>
<td>10 05</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>Chem-302</td>
<td>Chemistry of Agrochemicals, Plant Products and Growth Regulators</td>
<td>2 3</td>
<td>20 20</td>
<td>05 05</td>
<td>25 25</td>
<td>50</td>
</tr>
<tr>
<td>Econ-303</td>
<td>Agricultural Marketing, Trade and Prices</td>
<td>4 3</td>
<td>40 20</td>
<td>10 05</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>Ent-302</td>
<td>Insect Pests of Crops and stored Grain</td>
<td>4 3</td>
<td>40 20</td>
<td>10 05</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>FT-302</td>
<td>Introduction to Food Science and Post Harvest Value Addition</td>
<td>4 3</td>
<td>40 20</td>
<td>10 05</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>Forst-301</td>
<td>Introductory Forestry</td>
<td>4 3</td>
<td>40 20</td>
<td>10 05</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>Biochem-301</td>
<td>Elementary Biochemistry</td>
<td>4 3</td>
<td>40 20</td>
<td>10 05</td>
<td>50 25</td>
<td>75</td>
</tr>
<tr>
<td>PBG-303</td>
<td>Principles of Plant Breeding</td>
<td>4 3</td>
<td>40 20</td>
<td>10 05</td>
<td>50 25</td>
<td>75</td>
</tr>
</tbody>
</table>

**Total** 30 27 300 180 75 45 375 225 600
### Semester- VI

<table>
<thead>
<tr>
<th>Course</th>
<th>Subject</th>
<th>Period Per week</th>
<th>Marks</th>
<th>Internal Assessment</th>
<th>Total Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agron-303</td>
<td>Practical Crop Production-II <em>(Rabi Crops)</em></td>
<td>0 3 0 0 20 0 5 25</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mgt.-303</td>
<td>Fundamentals of Agribusiness Management and Entrepreneurship Development</td>
<td>4 0 40 0 10 0 50 0 50</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stat-301</td>
<td>Basic Statistics</td>
<td>4 3 40 20 10 0 50 25 0 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EST-302</td>
<td>Renewable Energy</td>
<td>4 3 40 20 10 0 50 25 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flori.-301</td>
<td>Flower Cultivation and Landscape Gardening</td>
<td>4 3 40 20 10 0 50 25 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pl.Path.-303</td>
<td>Diseases of Horticultural Crops and Their Management</td>
<td>4 3 40 20 10 0 50 25 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBG-304</td>
<td>Breading of Field and Horticulture Crops</td>
<td>4 3 40 20 10 0 50 25 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFE-304</td>
<td>Protected Cultivation and Post Harvest Technology</td>
<td>4 3 40 20 10 0 50 25 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hort.-301</td>
<td>Post Harvest Management of Fruits and Vegetables</td>
<td>4 3 40 20 10 0 50 25 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total** 32 24 300 180 75 45 375 225 600
### Scheme of Studies

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>B.Sc. Agric. F.M</td>
<td>Farm Management &amp; Production Economics</td>
<td>4 3</td>
<td>80 40</td>
<td>20 10</td>
<td>100 50</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>B.Sc. Agric. Ento.</td>
<td>Economic Entomology</td>
<td>4 3</td>
<td>80 40</td>
<td>20 10</td>
<td>100 50</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>B.Sc. Agric. Ext.</td>
<td>Agricultural Extension</td>
<td>4 3</td>
<td>80 40</td>
<td>20 10</td>
<td>100 50</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>B.Sc. Agric. Stats.</td>
<td>Agricultural Statistics</td>
<td>4 3</td>
<td>80 40</td>
<td>20 10</td>
<td>100 50</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>B.Sc. Agric. Oleri &amp; Flori.</td>
<td>Olericulture, Floriculture &amp; Landscaping.</td>
<td>4 3</td>
<td>80 40</td>
<td>20 10</td>
<td>100 50</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elective (I, II &amp; III) Separate list of each elective (Agron, Soil, Hort &amp; Agric. Econ.)</td>
<td>12 12</td>
<td>240 80</td>
<td>60 20</td>
<td>300 100</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>32 27</td>
<td>640 280</td>
<td>160 70</td>
<td>800 350</td>
<td>1150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

## Scheme of Studies

### (For Agronomy Elective)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods per Week</th>
<th>Marks Assessment</th>
<th>Total Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>B.Sc. Agric.</td>
<td>Seed Production Technology</td>
<td>4 6</td>
<td>80 40 20 10</td>
<td>100 50</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Elect-I Agron.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>B.Sc. Agric.</td>
<td>Ecology and Crop Physiology.</td>
<td>4 6</td>
<td>80 40 20 10</td>
<td>100 50</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Elect-II Agron.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>B.Sc. Agric.</td>
<td>Crop Production under Special Situation: Soil Fertility and Fertilizer Use</td>
<td>4 --</td>
<td>80 -- 20 --</td>
<td>100 --</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Elect-III Agron.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### (For Soil Elective)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods per Week</th>
<th>Marks Assessment</th>
<th>Total Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>B.Sc. Agric.</td>
<td>Systematic Study of Soils in Relation to Geology, Genesis, Classification Hydrology &amp; Erosion.</td>
<td>4 6</td>
<td>80 40 20 10</td>
<td>100 50</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Elect-I Soil.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>B.Sc. Agric.</td>
<td>Fundamentals of Soil Chemistry, Fertility, Biology &amp; Bio-Chemistry including Water &amp; Fertilizer Testing.</td>
<td>4 6</td>
<td>80 40 20 10</td>
<td>100 50</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Elect-II Soil.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>B.Sc. Agric.</td>
<td>General Chemistry Physical</td>
<td>4 --</td>
<td>80 -- 20 --</td>
<td>100 --</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Elect-III Soil.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

Scheme of Studies

(For Horticulture Elective)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods per Week</th>
<th>Marks</th>
<th>Int. Assessment</th>
<th>Total Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B.Sc. Agric. Elect-I (Hort.)</td>
<td>Fundamentals of Fruit Production.</td>
<td>4 6</td>
<td>80</td>
<td>40</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>B.Sc. Agric. Elect-II (Hort.)</td>
<td>Systematic Pomology, Propagation &amp; Nursery Management.</td>
<td>4 6</td>
<td>80</td>
<td>40</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>B.Sc. Agric. Elect-III (Hort.)</td>
<td>Fruit Growing.</td>
<td>4 --</td>
<td>80</td>
<td>--</td>
<td>100</td>
<td>--</td>
</tr>
</tbody>
</table>

(For Agric. Economics Elective)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods per Week</th>
<th>Marks</th>
<th>Int. Assessment</th>
<th>Total Marks</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>B.Sc. Agric. Elect-I (Agric. Econ.)</td>
<td>Economic Problems of Indian Agriculture &amp; Rural Sociology.</td>
<td>4 6</td>
<td>80</td>
<td>40</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>B.Sc. Agric. Elect-II (Agric. Econ.)</td>
<td>Agricultural Marketing &amp; Co-operation.</td>
<td>4 6</td>
<td>80</td>
<td>40</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>B.Sc. Agric. Elect-III (Agric. Econ.)</td>
<td>Micro &amp; Macro Economics</td>
<td>4 --</td>
<td>80</td>
<td>--</td>
<td>100</td>
<td>--</td>
</tr>
</tbody>
</table>
Agron. 104: Introductory Agriculture

Time: 3 Hours

Max. Marks: 75
  Theory: 50
  Practical: 25
  Periods per Week 4+3

Instructions for the Paper Setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

Identification of various crops, and their seeds; Weeds- identification and Control measures; Working of Agricultural implements: Calibration of seed drills; Identification, computation of Doses and methods of application of fertilizer; farm visit for acutance with field problems.
Agromet. 102: Introductory Agrometeorology

Time: 3 Hours

Max. Marks: 75
Theory: 50
Practical: 25
Periods per week 4+3

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

Micro 101: Elementary Microbiology

Max. Marks: 75
Theory: 50
Practical: 25

Periods per week 4+3

Time: 3 Hours

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

Soils 103: Introduction to Soil Science

Time: 3 Hours

Max. Marks: 75
Theory: 50
Practical: 25
Periods per week 4+3

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

Practical
Econ. 101: Principles of Agricultural Economics

Time: 3 Hours

Max. Marks: 50

Periods per week 4+0

Instructions for the Paper Setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Bot. 103: Basic Botany

Time: 3 Hours

Max. Marks: 50
Theory: 25
Practical: 25
Periods per week 2+2

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

Salient features of each group of plant kingdom, morphology and modification of root, stem and leaf, flower and types of inflorescence, structure of various types of seeds and fruits, cell structure and tissue types, structure of monocot and dicot root, stem and leaf, permanent slides, characteristic features of economically important families.
Instructions for the Paper Setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

Course Contents:

1. **Reading Skills**: Reading Tactics and strategies; Reading purposes–kinds of purposes and associated comprehension; Reading for direct meanings; Reading for understanding concepts, details, coherence, logical progression and meanings of phrases/expressions.

   **Activities:**
   
   a) Active reading of passages on general topics
   b) Comprehension questions in multiple choice format
   c) Short comprehension questions based on content and development of ideas

2. **Writing Skills**: Guidelines for effective writing; writing styles for application, resume, personal letter, official/business letter, memo, notices etc.; outline and revision.

   **Activities:**
   
   a) Formatting personal and business letters.
   b) Organising the details in a sequential order
   c) Converting a biographical note into a sequenced resume or vice-versa
   d) Ordering and sub-dividing the contents while making notes.
   e) Writing notices for circulation/boards

**Suggested Pattern of Question Paper:**

The question paper will consist of five skill-oriented questions from Reading and Writing Skills. Each question will carry 10 marks. The questions shall be phrased in a manner that students know clearly what is expected of them. There will be internal choice wherever possible.

10x5=50 Marks
i) Multiple choice questions on the language and meanings of an unseen passage.

ii) Comprehension questions with short answers on content, progression of ideas, purpose of writing etc. of an unseen passage.

iii) Personal letter and Official/Business correspondence

iv) Making point-wise notes on a given speech/ technical report  OR

Writing notices for public circulation on topics of professional interest

v) Do as directed (10x1= 10 Marks) (change of voice, narration, combination of 2 simple sentences into one, subject-verb agreement, using appropriate tense, forms of verbs.

Recommended Books:


2. The Written Word by Vandana R Singh, Oxford University Press
1. विभाग भाषा (विभाग भाषा के माध्यम से विभाग भाषा से मार्गदर्शन),
   (मैथ. डा. मॉर्टन ग्लास, पूर्व मॉर्टन ग्लास खण्डेड), वाशु राज्य टेस्ट पूरीतिष्ठति, 
   अभीष्टता।
   लेख : परिलक्षण पृष्ठभुक्त, ब्रह्म सिद्धांत दे थिरे विच, राजी सर्की, राजाचार्य पृष्ठभुक्त 
   अधे अच्छ, डेढः : धिरे दिलीप सिंह।
2. पृष्ठ दे भाषा दलग्राह (साहित्य ग्राहणी),
   वाशु राज्य टेस्ट पूरीतिष्ठति, अभीष्टता।
   लेख : दे. ओडी. मात्रियान, घरे गुरुभाष अली अंं, मेंड मिथ, दिखाइल युध, 
   आंती महेंद्र मिथ।
3. पैदा तकलीफ़
4. पैदा पत्र वे पृष्ठभुक्त दे डीउत।
5. (ठ) पृष्ठभुक्त पृष्ठभुक्त : पृष्ठभुक्त अवव, पृष्ठभुक्त माध्यम दे एची, माध्यम, विभाग, मद।
   (अ) घासा दलग्राहान : घासा दे टवाली धुप, घासा अधे धुप-घासा दे भूत्, पृष्ठभुक्त 
   दुर्घटनाने दे पहाड़-दुर्घटना।
6. भाषा घासा दे अभिव्यक्त
   (ठ) पृष्ठभुक्त घासा दे उठ खुंडे
   (अ) छुटी घासा दे उठ खुंडे

अंक-डिट अधे परीक्षावर लक्टी उद्धितियं:

1. धिरे दिशाय दे माहा नां । धिरे दिशाय दिशाय (दे दिश दिश) ।  
   10 अंक
2. धिरे दिशाय : माहा, दिशाय-दमु, दमु-दमु दे धिरे  
   10 अंक
3. पैदा दलग्राह : धिरे दिशाय दे धिरे दिश दे पैदा दलग्राह  
   5 अंक
4. पैदा दे दे पृष्ठ धरे धंय धुंडा दे डीउता।  
   5 अंक
5. ढेख कह महा धमा दे धिरे दिशाय दे कहा दे ढेख कह महा धमा  
   10 अंक
6. ढेख 6 दिश महा धमा दे पृष्ठभुक्त धमा अधे छुटी घासा दे
   मार्टिफार, भूत्वां के मान, मार्टिफार घरे सत्व पृष्ठ तरडी,
   सिरे दिश दिशाय दे दे दे डीउत डेढः डेढः।  
   5×2=10 अंक
भूगोली पंजाबी
(In lieu of Compulsory Punjabi)
प्रति-ब्यूम

समय : 2 घंटे
हेलें अंक : 50

1. भूगोली भाषा : समवेत अंधे मेंधें नाम घाट, भूगोली लिपि : समवेत, भूगोली वर्षभाग; वैद्य
अंधी, अंधि बृह, मृत दूलं (वे अ दू), क्षाः भागज़, पैठ लिं बिंडी बालो दूलं, पैठ लिं बैठ हाले
दूलं, बिंडी, टिप्पी, अंधव।

2. भूगोली भाषाबाहुली अंधे दृश्यालं; मृत वी बृह अंधे दृश्यालं (रूप-रूप हृदय मृत); मृत अंडे लक्ष भागज़
; विज्ञानान्त वी बृह अंडे दृश्यालं; बैठ लिं बैठ हाले दूलं (वे, ते, रे) रा दृश्यालं; ल अंडे रा रा
दृश्यालं; रे, ते, रे, रे रा दृश्यालं; पैठ लिं बिंडी हाले दूलं रा दृश्यालं।

3. भूगोली घटन-घटन अंधे तयारः मापावल मापः दिखावा मृत (विदेह भा) ; मृत अंडे विज्ञानान्त (विदेह भा)
; विज्ञानान्त अंडे मृत (विदेह भा) ; विज्ञानान्त मृत विज्ञानान्त (विदेह भा) ; भूगोली माप दूलं ; बिञ्ज-बिञ्जार,
बिञ्ज-बिञ्ज दूलं; लिं दूलं वी भूगोली मापावलं; घट-घट अंडे मापावलं तयार मंबपिड़।
1. पहिले पृष्ठित हिंदें पंथकी बण्ण अन्दे गुरुभूषण जिसकी छोटी बटलब अन्दे उद्दीपक कल मर्गित 5-5 अंगें दे दश विभाजक धरत मुख पुंक्त सट्टो। अंगें दी बंद अंतिम दिन-दिन ता दे-दे अंगें दे हेटे प्रमाण हिंद जीडी ना मलती है।

2. दूसरे पृष्ठित हिंदें पुणकी आवेगावरी अन्दे विषय राल मर्गित 5-5 अंगें दे दिन विभाजक धरत पुंक्त सट्टो। अंगें दी बंद अंतिम दिन-दिन ता दे-दे अंगें दे हेटे प्रमाण हिंद जीडी ना मलती है।

3. तीसरे पृष्ठित हिंदें पंथकी सवत-बटलब अन्दे सवत उदल राल मर्गित 5-5 अंगें दे दे विभाजक धरत पुंक्त सट्टो। अंगें दी बंद अंतिम दिन-दिन ता दे-दे अंगें दे हेटे प्रमाण हिंद जीडी ना मलती है।

4. हिंद बंदें दी पंथकी समकाली राल मर्गित दिन-दिन अंबें दे शेन (अपसैलेंट) धरत पुंक्त सट्टो।

5. प्रमाण दी बण्ण मलत अन्दे मधुमत लंबी सट्ट।
Agron. 106: Water Management and Micro Irrigation

Time: 3 Hours

Max. Marks: 75
Theory: 50
Practical: 25
Periods per week 4+3

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

Practical
CSE 101: Introduction to Computer Application

Time: 3 Hours

Max. Marks: 50
Theory: 25
Practical: 25
Periods per week 3+3

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

Ext. 101: Dimensions of Agricultural Extension

Time: 3 Hours

Max. Marks: 75
Theory: 50
Practical: 25
Periods per week 4+3

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

PBG 103: Principles of Genetics

Time: 3 Hours Max. Marks: 75
Theory: 50
Practical: 25
Periods per week 4+3

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

Practical
Soils 104: Soil Chemistry, Soil Fertility and Nutrient Management

Time: 3 Hours

Instructions for the Paper Setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

Veg. 101: Vegetable Production Technology

Time: 3 Hours

Max. Marks: 75
Theory: 50
Practical: 25

Periods per week 4+3

Instructions for the Paper Setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

Zoo. 103: Basic Zoology

Time: 3 Hours

Max. Marks: 50
Theory: 25
Practical: 25
Periods per week 2+2

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Practical

Math. 108: Basic Mathematics-II

Time: 3 Hours
Max. Marks: 50
Periods per week 4+0

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

COMMUNICATION SKILLS IN ENGLISH
(For Colleges (Regular & Private))

Time: 3 Hours
Max. Marks: 50
Theory Marks: 35
Practical Marks: 15

Course Contents:

1. **Listening Skills**: Barriers to listening; effective listening skills; feedback skills. Attending telephone calls; note taking.

   **Activities**:
   a) Listening exercises – Listening to conversation, News and TV reports
   b) Taking notes on a speech/lecture

2. **Speaking and Conversational Skills**: Components of a meaningful and easy conversation; understanding the cue and making appropriate responses; forms of polite speech; asking and providing information on general topics.
   The study of sounds of English, stress and intonation
   Situation based Conversation in English
   Essentials of Spoken English

   **Activities**:
   a) Making conversation and taking turns
   b) Oral description or explanation of a common object, situation or concept
   c) Giving interviews

**Suggested Pattern of Question Paper**:
The question paper will consist of seven questions related to speaking and listening Skills. Each question will carry 5 marks. The nature of the questions will be as given below:

**Two** questions requiring students to give descriptive answers.

**Three** questions in the form of practical exercise requiring students to give an appropriate response to a question, a proposal, a proposition, an invitation etc. For Example, the paper setter may give a proposition and ask the students to agree or disagree with it or introduce a character giving invitation and ask the students to accept or refuse it etc.

**Two** questions requiring students to transcribe simple words in IPA symbols, marking stress and marking intonation.

**Practical /Oral Testing**
Marks: 15

**Course Contents**:
1. Oral Presentation with/without audio visual aids.
2. Group Discussion.
3. Listening to any recorded or live material and asking oral questions for listening comprehension.

**Questions**:
1. Oral Presentation will be of 5 to 10 minutes duration. (Topic can be given in advance or it can be of student’s own choice). Use of audio visual aids is desirable.
2. Group discussion comprising 8 to 10 students on a familiar topic. Time for each group will be 15 to 20 minutes.

**Note**: Oral test will be conducted by external examiner with the help of internal examiner.
B.Sc. AGRICULTURE (HONS.) Semester – II

पैट्रोलियम (खानाबाही)

संख्या : 3 पृष्ठे
खंड भाग : 50
पृष्ठ-चूँकि अंतर पृष्ठ-मापानें

1. विभाग का भाग (शिक्षाधृतकर्ता के समाबेस-शिक्षाधृतकर्ता सेवाओं का क्षण)

(मध्य. वा. माहितिपत्र सिप्स, यू. माहितिपत्र सिप्स विधेय), वापस लान्य देख पुरीतिष्किंतिटी.

(शेख : माहिति देख संय गतिज, अंतः, अंपल्टा देख लाड़ देख स्वध्याय, अनिविरुद्ध अंतर स्टिल्लरेंट, भूलीय अध्यापक।

2. उपस्थित देख वापस।

(शेख : माहिति देख संय गतिज, अंतः, अंपल्टा देख लाड़ देख स्वध्याय, अनिविरुद्ध अध्यापिक।

3. माहिति-वापस अंतर माहिति वापस : पहिला, भूमि देख संय गतिज

4. माहिति भूमि

5. वेबस वापस

6. वेबस देख संय गतिज

7. माहिति अंतर अध्यापक

अंब-छंद अंतर शिक्षाधृतकर्ता जीवन घटिलाइयाँ:

1. बिमे शिक्षाधृतकर्ता देख संय गतिज भूमि देख संय गतिज (दे देख देख) । 10 अंब

2. देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज । 10 अंब

3-4. 3-4 देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज । 10 अंब

5. संय गतिज : भूमि देख संय गतिज देख संय गतिज देख संय गतिज । 05 अंब विचार नहीं।

6. संय गतिज देख संय गतिज देख संय गतिज । 05 अंब

7. देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज देख संय गतिज । 05 अंब

5+5= 10 अंब
भूविदि पंजाबी
(In lieu of Compulsory Punjabi)
पाठ-ब्यूरो

मात्र: डिग्री पंटे

पंजाबी सम्प-ब्यूरो
मंजुवड अथवा भिमवड सम्प
पिन्द दवैं दी पंजाबी सम्पत्ती

पंजाबी राज-ब्यूरो
मध्यकल राज : विभवी
मंजुवड राज : विभवी
भिमवड राज : विभवी
पंजाबी लगवं दी दवैं दे विदित सम्पत्ति पृष्ठमा

भूविदि पंजाबी
सिटी पंटे
पेड़ दवव
अर्थ अथवा मुदक्के

पुरातत्त्व पंजाबी

पुरातत्त्व में कीमः
पंजाबी सम्प ब्यूरो : मंजुवड मंजुवड ; सम्पत्ति सम्प (मिलें लेख मंजुवड) ; देवधर सम्पद/दुरुस्ती
(मिलें पूर वात/वत वर), भिमवड सम्पदं दी ब्यूरो/विभवी ; अल्लुल्लु दवणं (मिलें बुध-ब्रह्मा),
मिलें दवणं दवणं (मिलें इम्ला), पंजाबी सम्प वचन ; पंजाबी वचन, विभवी सम्पद/सम्पत्ति विभवी दे
वचन ; पिन्द दवैं दी पंजाबी सम्पत्ती ; हाउंट, अभीमनं, मोमसं, बालीडी तर विपिएड।
पंजाबी राज-ब्यूरो : वर वव वर विभवी ; मध्यकल राज, विभवी, वुसकरसं, आविभवचरं; मंजुवड अथवा भिमवड राजं दीघं विभवी ; मुंजुवड अथवा आविभव वरुक्त; समति
(उद्देश्य) अथवा अविभव (पी/वि) देवधरं दी दवैं; पंजाबी दवणं दी दवैं दे विदित सम्पत्ति/विभवीयसंपत्ति पृष्ठमा ; पवित्र, वरदवति, विभवी, विभवी, सण्धि मणि/समथम विभवी, विभवी
विभवी, वाटिवर मववहं विभवी, रेमंडं तर विभवी।
पिन्द पुरातत्त्व विभवी सिटी पंटें (सिटी/सबडी), पेड़ दवव अथवा अथवा भिमवड विभवी स्रोत दवैं
दवणं दवणं दे विभवी सम्पत्ती पेड़ं दववहं नविभवी माखें।
पहले पृष्ठ हिंदी हिंदी पंजाबी माध्यम बटन अंडे माध्यम उत्तर तल मजूरिया 5-5 अंकों दे हिंदी
विद्यावर खुसर पुंजी सर्वोत्तम। अंकों दी इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंक दे इंग्रजी में 5-5 अंक दे इंग्रजी में 5-5 अंक दे इंग्रजी में 5-5 अंक दे इंग्रजी में 5-5 अंक दे इंग्रजी में 5-5 अंक दे इंग्रजी में 5-5 अंक दे इंग्रजी में 5-5 अंक दे इंग्रजी में 5-5 अंक दे ।
हिंदी दवें दी मसाली तल मजूरिया टिप-टिप अंब दे पैस (अभ्यासाविवरण) खुसर पुंजी सर्वोत्तम।
इंग्रजी दवें दी मसाली तल मजूरिया टिप-टिप अंब दे पैस (अभ्यासाविवरण) खुसर पुंजी सर्वोत्तम।
अंकों दी इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे।
पंजाबी दवें दी मसाली तल मजूरिया टिप-टिप अंब दे पैस (अभ्यासाविवरण) खुसर पुंजी सर्वोत्तम।
अंकों दी इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे इंग्रजी में 5-5 अंकें हे।
Agron. 203 Principles of Agronomy-I (Kharif Corps)

Time: 3 Hours                                           Max. Marks: 75
                          Theory= 50
                          Practical = 25
                          Periods per week 4+3

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Agron. 203 Principles of Agronomy-I (Kharif Crops)

Bot. 206 Crop Physiology

Time: 3 Hours

Max. Marks: 75
Theory = 50
Practical = 25
Periods per week 4+3

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Bot. 206 Crop Physiology


Ent. 204 Fundamentals of Insect Morphology and Systematics

Time: 3 Hours                                           Max. Marks: 75
Theory= 50                                                 Practical = 25
     Periods per week 4+3

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Ent. 204 Fundamentals of Insect Morphology and Systematics


Ext.201 Extension Methodologies and Communication Skills for Transfer of Technology

Time: 3 Hours                                           Max. Marks: 75
Theory= 50                                            Practical = 25
Practical = 25                                          Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Ext.201 Extension Methodologies and Communication Skills for Transfer of Technology

Practical: Simulated exercises on communication. Developing a project based on identified problems in a selected village. Organization of group discussion and method demonstration. Visit to Krishi Vigyan Kendra. Planning and script writing for radio and television talks. Planning and preparation of visual aids and agricultural information materials. Handling of public address system.
FPM 202: Farm Power and Machinery

Time: 3 Hours                                           Max. Marks: 75
Theory= 50
Practical = 25
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

FPM 202 Farm Power and Machinery


Soils 204 Manures and Fertilizers

Time: 3 Hours                           Max. Marks: 50

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Soils 204 Manures and Fertilizers
Hort. 203 Production Technology of Fruit Crops

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Hort. 203 Production Technology of Fruit Crops


Soil 203 Soil Physics and Erosion Management

Time: 3 Hours                                           Max. Marks: 75
Theory= 50
Practical = 25
Periods per week 4+3

Instructions for the paper setters
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Soils 203 Soil Physics and Erosion Management

Pl. Path. 201 Plant Pathogens and Principles of Plant Pathology

Time: 3 Hours
Max. Marks: 75
Theory= 50
Practical = 25
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Pl. Path. 201 Plant Pathogens and Principles of Plant Pathology

1. The multidisciplinary nature of environmental studies:
   - Definition, scope & its importance.
   - Need for public awareness.

2. Natural resources:
   - Natural resources and associated problems:
     a) Forest resources: Use of over exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
     b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
     c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
     d) Food resources: World food problems, change caused by agriculture and overgrazing, effects or modern agriculture, fertilizer-pesticide problem, salinity, case studies.
     e) Energy resources: Growing of energy needs, renewable and non-renewable energy resources, use of alternate energy sources, case studies.

B.Sc Agriculture (Hons.) (Semester - III)
f) **Land resources**: Land as a resource, land degradation, soil erosion and desertification.
   - Role of an individual in conservation of natural resources.
   - Equitable use of resources for sustainable lifestyles.

3. **Ecosystem**:
   - Concept of an ecosystem.
   - Structure and function of an ecosystem.
   - Producers, consumers and decomposers.
   - Energy flow in the ecosystem.
   - Ecological succession.
   - Food chains, food webs and ecological pyramids.
   - Introduction, types, characteristic features, structure and function of the following ecosystems:
     a. Forest ecosystem
     b. Grassland ecosystem
     c. Desert ecosystem
     d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

4. **Social Issues and Environment**:
   - From unsustainable to sustainable development.
   - Urban problems related to energy.
   - Water conservation, rain water harvesting, watershed management.
   - Resettlement and rehabilitation of people; its problems and concerns. Case studies.
   - Environmental ethics: Issues and possible solutions.
   - Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
   - Wasteland reclamation.
   - Consumerism and waste products.
   - Environmental Protection Act:
     - Air (prevention and Control of Pollution) Act.
     - Water (prevention and Control of Pollution) Act.
     - Wildlife Protection Act.
     - Forest Conservation Act.
   - Issues involved in enforcement of environmental legislation.
   - Public awareness.
References/Books:
3. Down to Earth, Centre for Science and Environment, New Delhi.
9. Booklet on Safe Driving. Sukhmani Society (Suvidha Centre), District Court Complex, Amritsar.
Agron. 204 Principles of Agronomy – II (Rabi Crops)

Time: 3 Hours  
Max. Marks: 75
  Theory= 50  
  Practical = 25  
  Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Agron. 204 Principles of Agronomy –II (Rabi Crops)
Origin, geographic distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of rabi crops- wheat, barley, chickpea, lentil, peas, french bean, rapeseed and mustard, sunflower, safflower, linseed, sugarcane, sugarbeet, potato, tobacco and forage crops- berseem, lucerne and oats. National and International Agricultural Research Institutes in India.

Econ. - 202 Production Economics, Farm Management and Agricultural Finance

Time: 3 Hours

Max. Marks: 75
Theory= 50
Practical = 25
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Econ. - 202 Production Economics, Farm Management and Agricultural Finance
Factor Product Relationship– Determination of optimum input and output.
Farm Management– Meaning, Definition and Importance. Economic Principles applied to the organizations of farm business. Types and Systems of Farming. Farm Planning and Budgeting.
Reorganization of Co-operative Credit Structure and Single Window System.

Ent. 205- Insect Ecology and Integrated Pest Management

Time: 3 Hours

Max. Marks: 75

Theory = 50
Practical = 25

Periods per week 4+3

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Ent. 205 - Insect Ecology and Integrated Pest Management


Ext.202 Fundamentals of Rural Sociology and Educational Psychology


Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.
LPM 205 Livestock Production and Management

Time: 3 Hours                                           Max. Marks: 75
Theory= 50
Practical = 25
Periods per week 4+3

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

LPM 205 Livestock Production and Management


PBG 202 Principles of Seed Technology

Time: 3 Hours                                           Max. Marks: 75
                                               Theory= 50
                                               Practical = 25
                                               Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

PBG 202 Principles of Seed Technology

Seed testing procedures for quality assessment. Seed treatment and its importance. Seed packing and storage. Seed marketing and organzational set up.

Practical: Seed sampling principles and procedures. Determination of physical purity, germination, moisture, viability, seed health and seed vigour of field and horticultural crops. Seed dormancy and breaking methods. Grow-out tests and electrophoresis for varietal identification. Visit to seed production plots, testing laboratories, processing plants, grow-out testing farms and hybrid seed production farms.
Pl. Path. 202 Diseases of Field Crops and their Management

Time: 3 Hours

Max. Marks: 75
Theory= 50
Practical = 25
Periods per week 4+3

Instructions for the paper setters

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Pl. Path. 202 Diseases of Field Crops and their Management

Economic importance, symptoms, causal organism, epidemiology, disease cycle and integrated management of diseases of rice, sorghum, bajra, maize, wheat, barley, sugarcane, turmeric, tobacco, groundnut, sesamum, castor, sunflower, rapeseed & mustard, cotton, pulses, mentha and berseem.

Practical: Study of symptoms and host-parasite relationships of important diseases of field crops. Field visits at appropriate time during the semester.
Agron. 205 Organic Farming

Time: 3 Hours
Max. Marks: 75
Theory = 50
Practical = 25
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Agron. 205 Organic Farming
(In collaboration with Department of Soil Science, Entomology and Plant Pathology)


SWE 101 Fundamentals of Soil and Water Conservation Engineering

Time: 3 Hours                                           Max. Marks: 75
Theory= 50                                              Practical = 25
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

SWE 101 Fundamentals of Soil and Water Conservation Engineering


ESL-222: ENVIRONMENTAL STUDIES-II

Theory Lectures: 1.5 Hours/ Week                Max. Marks: 50
Time of Examination: 3 Hours

Section A (15 Marks): It will consist of five short answer type questions. Candidates will be required to attempt three questions, each question carrying five marks. Answer to any of the questions should not exceed two pages.

Section B (20 Marks): It will consist of four essay type questions. Candidates will be required to attempt two questions, each question carrying ten marks. Answer to any of the questions should not exceed four pages.

Section C (15 Marks): It will consist of two questions. Candidate will be required to attempt one question only. Answer to the question should not exceed 5 pages.

1. Biodiversity and its Conservation:
   - Definition: Genetic, species and ecosystem diversity.
   - Biogeographical classification of India.
   - Value of Biodiversity: Consumptive use; productive use, social, ethical, aesthetic and option values.
   - Biodiversity of global, National and local levels.
   - India as mega-diversity nation.
   - Hot-spots of biodiversity.
   - Threats to Biodiversity: Habitat loss, poaching of wildlife, man wildlife conflicts.
   - Endangered and endemic species of India.
   - Conservation of Biodiversity: In situ and Ex-situ conservation of biodiversity.

B.Sc Agriculture (Hons.) (Semester -IV)

2. Environmental Pollution:
   - Definition, causes, effects and control measures of:
a) Air Pollution
b) Water Pollution
c) Soil Pollution
d) Marine Pollution
e) Noise Pollution
f) Thermal Pollution
g) Nuclear Hazards
h) Electronic Waste

- Solid Waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster Management: Floods, Earthquake, Cyclone and Landslides.

3. **Human population and the environment**

- Population growth, variation among nations.
- Population explosion-Family welfare programme.
- Environment and human health.
- Human rights.
- Value education.
- HIV/AIDS.
- Women and child welfare.
- Role of information technology in environment and human health.
- Case studies.
- Road Safety Rules & Regulations: Use of Safety Devices while Driving, Do’s and Don’ts while Driving, Role of Citizens or Public Participation, Responsibilities of Public under Motor Vehicle Act, 1988, General Traffic Signs.
- Accident & First Aid: First Aid to Road Accident Victims, Calling Patrolling Police & Ambulance.
4. **Field Visits:**

- Visit to a local area to document environmental assets—river/forest/grassland/hill/mountain.
- Visit to a local polluted site—Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds.
- Study of simple ecosystems—pond, river, hill slopes etc.

**Note:** In this section the students will be required to visit and write on the environment of an area/ ecosystem/village industry/disaster/mine/dam/agriculture field/waste management/hospital etc. with its salient features, limitations, their implications and suggestion for improvement.

**References/Books:**

3. Down to Earth, Centre for Science and Environment, New Delhi.
9. Booklet on Safe Driving. Sukhmani Society (Suvidha Centre), District Court Complex, Amritsar.
Agron. 302 Practical Crop Production-I (Kharif Crops)

Time: 3 Hours                                      Max. Marks: 25
    Practical = 20
    Internal Assessment =05
    Periods per week =3

Agron. 302 Practical Crop Production-I (Kharif Crops)
Biotech. 310 Principles of Plant Biotechnology

Time: 3 Hours

Max. Marks: 75
Theory: 40
Practical: 20
Internal Assessment 10+5=15
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Biotech. 310 Principles of Plant Biotechnology

Chem-302 Chemistry of Agrochemicals, Plant Products and Growth Regulators

Time: 3 Hours

Max. Marks: 50
Theory= 20
Practical = 20
Internal Assessment 05+05=10
Periods per week 2+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Chem-302 Chemistry of Agrochemicals, Plant Products and Growth Regulators:

Organic chemistry as prelude to agro chemicals. Diverse types of agrochemicals, Botanical insecticides (neem), pyrethrum, synthetic pyrethroids, Synthetic organic insecticides, major classes- chemistry and uses of some important insecticide under each class. Herbicides-major-classes. Chemistry and uses of 2,4D, atrazine, glyphosate, butachlor, benthiocarb. Fungicides major- classes chemistry and uses of carbendizim, carboxin, captan, tridemorph and copper oxychloride. Plant growth regulators.

Practical: Argentometric and iodometric titrations- their use in analysis of important pesticides Compatibility of fertilizers with pesticides.
Econ-303 Agricultural Marketing, Trade and Prices

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Econ-303 Agricultural Marketing, Trade and Prices:

Practical: Identification of Marketing channels, Study of apni mandi, regulated markets, unregulated markets, livestock markets, Price spread analysis, Visit to market institutions. Analysis of information of daily prices, marketed and marketable surplus of different commodities.
Ent. 302 Insect Pests of Crops and Stored Grains

Time: 3 Hours

Max. Marks: 75
Theory= 40
Practical = 20
Internal Assessment 10+5=15
Periods per week 4+3

Instructions for the paper setters

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Ent. 302 Insect Pests of Crops and Stored Grains
Distribution, biology, symptoms of damage and management strategies of insect pests of rice, sorghum, maize, cotton, groundnut, sugarcane, ragi (*Eleucine coracana*), wheat, sunhemp, pulses, castor, safflower, sunflower, mustard, brinjal, bhindi, tomato, cruciferous and cucurbitaceous vegetables, potato, sweet potato, chillies, mango, citrus, grapevine, cashew, banana, pomegranate, guava, sapota, ber, apple, coconut, tobacco, coffee, tea, turmeric, onion, coriander, garlic, ginger and ornamental plants Stored grain insect pests-their biology damage and management.

Practical: Identification of insect pests, their damage symptoms and management of rice, sorghum, maize, wheat, sugarcane, cotton, pulses, solanaceous, malvaceous, cruciferous and cucurbitaceous vegetables, chilli, mango, citrus, sapota and stored grains.
FT 302 Introduction to Food Science and Post-Harvest Value Addition

Time: 3 Hours                                      Max. Marks: 75
Theory= 40                                      Practical = 20
Internal Assessment 10+5=15
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

FT 302 Introduction to Food Science and Post-harvest Value Addition

Practical: Quality assessment of cereals, fruits, vegetables, milk, egg, meat and poultry. Value added products from cereals, fruits, vegetables, milk, egg and meat. Visit to local processing units.
Forst 301- Introductory Forestry

Time: 3 Hours

Max. Marks: 75
Theory = 40
Practical = 20
Internal Assessment = 10+5 = 15
Periods per week = 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Forst. 301 Introductory Forestry

Biochem -301 Elementary Biochemistry

Time: 3 Hours                                      Max. Marks: 75
Theory= 40                                         Practical = 20
Internal Assessment 10+5=15
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.


PBG 303 Principles of Plant Breeding

Time: 3 Hours                        Max. Marks: 75
Theory= 40                           
Practical = 20                        
Internal Assessment 10+5=15          
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

PBG 303 Principles of Plant Breeding
Classification of plants, botanical description, floral biology, emasculation and pollination techniques in cereals, millets, pulses, oilseeds, fibers, plantation crops etc. Aims and objectives of Plant Breeding; Modes of reproduction. Significance in plant breeding; Modes of pollination and their genetic consequences. Methods of breeding – Introduction and Acclimatization; Selection, Johannsen’s pure-line theory, genetic basis, pure-line selection; Hybridization, aims and objectives, types of hybridization; Methods of handling segregating generations, pedigree method, bulk method, back cross method; Incompatibility and male sterility and their utilization in crop improvement; Heterosis, inbreeding depression, exploitation of hybrid vigor, development of inbred lines, single-cross and double-cross hybrids; population improvement programmes, recurrent selection, synthetics and composites; Methods of breeding vegetatively propagated crops, clonal selection; Mutation breeding; Ploidy breeding; Wide hybridization and its significance in crop improvement.

Practical: Botanical description and floral biology; Study of megasporogenesis and microsporogenesis. Fertilization and life cycle of an angiospermic plant; Plant Breeder’s kit: Hybridization techniques and precautions to be taken; Floral morphology, selfing, emasculation and crossing techniques. Field crops: rice, sorghum, maize, wheat, bajra, sugarcane, brassicas, groundnut, sunflower, sesame, red gram, bengal gram, green gram, soybean, black gram, cotton, chillies, brinjal, tomato, bhindi, onion and bottle gourd. Study of male sterility and incompatibility.
Agron. 303 Practical Crop Production-II (Rabi Crops)

Time: 3 Hours

Max. Marks: 25
Practical = 20
Internal Assessment = 05
Periods per week = 3

Agron. 303 Practical Crop Production-II (Rabi Crops)
Mgt.303-Fundamentals of Agri. Business management and Entrepreneurship development

Time: 3 Hours

Max. Marks: 50
Theory= 40
Internal Assessment =10
Periods per week 4

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Mgt.303-Fundamentals of Agri. Business management and Entrepreneurship development:

Stat.301-Basic Statistics

Time: 3 Hours

Max. Marks: 75
Thoretical = 40
Practical = 20
Internal Assessment 10+5=15
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Stat.301-Basic Statistics:

Practical: Construction of frequency distribution tables and frequency curves, computation of arithmetic mean, median, mode, standard deviation, variance and coefficient of variation for ungrouped and grouped data, SND test for means, Student’s t-test, F-test, Chi-square test. Correlation coefficient ‘r’ and its testing, Fitting of regression equations. Analysis of CRD, RBD and LSD.
EST.302-Renewable Energy

Time: 3 Hours

Max. Marks: 75
Theory= 40
Practical = 20
Internal Assessment 10+5=15
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

EST.302-Renewable Energy:


Flori. 301: Flower Cultivation and Landscape Gardening

Time: 3 Hours

Max. Marks: 75
Theory= 40
Practical = 20
Internal Assessment 10+5=15
Periods per week 4+3

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Flori. 301 Flower Cultivation and Landscape Gardening

Pl. Path. 303 Diseases of Horticultural Crops and their Management

Time: 3 Hours                                      Max. Marks: 75
Theory= 40                                        
Practical = 20                                     
Internal Assessment 10+5=15                       
Periods per week 4+3                              

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Pl. Path. 303 Diseases of Horticultural Crops and their Management

Economic importance, symptoms, causal organism, disease cycle and integrated management of diseases of citrus, mango, banana, grapevine, pomegranate, papaya, guava, sapota, ber, apple, pear, peach, plum, chilli, brinjal, okra, potato, crucifers, cucurbits, tomato, pea, beans, onion, garlic, coriander, coconut, betelvine, mulberry, coffee, tea, rose, chrysanthemum, gladiolus, marigold and jasmine.

Practical: Study of symptoms and host-parasite relationships of important diseases of horticultural crops. Field visits at appropriate time during the semester.
B.Sc. AGRICULTURE (HONS.) Semester – VI

PBG 304 Breeding of Field and Horticultural Crops

Time: 3 Hours

Max. Marks: 75

Theory = 40

Practical = 20

Internal Assessment 10+5=15

Periods per week 4+3

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

PBG 304 Breeding of Field and Horticultural Crops:

Breeding objectives and important concepts of breeding self-pollinated, cross-pollinated and vegetatively propagated crops; Study in respect of origin, distribution of species, wild relatives and forms, Cereals, (rice, wheat, maize, millets, sorghum, bajra); Pulses (red gram, green gram, black gram, soybean); Oilseeds (Groundnut, sesame, sunflower, brassicas) etc, Fibres (Cotton) etc, Vegetables (Tomato, bhindi, chilli, cucumbers); Flowers crops (Chrysanthemum, rose, gaillardia and marigold); Fruit crops (amla, guava, mango, banana, papaya); Major breeding procedures for development of hybrids/varieties of various crops; Plant genetic resources, their conservation and utilization in crop improvement; Ideotype concept in crop improvement; Breeding for resistance to biotic and abiotic stresses. Variability in pathogens and pests; Genetic basis of adaptability to unfavourable environments; Definition of biometrics, assessment of variability i.e., additive, dominance and epistasis and their differentiation; genotype x environment interaction and influence on yield/performance. IPR and its related issues.

Practical: Emasculation and Hybridization techniques; Handling of segregating generations-pedigree method, bulk method, back cross methods; Field layout of experiments; Field trials, maintenance of records and registers; Estimation of heterosis and inbreeding depression; Estimation of heritability; General and Specific Combining Ability(GCA and SCA); Estimation of variability parameters; Parentage of released varieties/hybrids; Study of quality characters; Sources of donors for different characters; Visit to seed production and certification plots; Visit to AICRP trials and programmes;
PFE-304 Protected Cultivation and Post Harvest Technology

Time: 3 Hours

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

PFE-304 Protected Cultivation and Post Harvest Technology:


Crop selection and constraints of greenhouse cultivation. Growing media, drainage, flooding and leaching, soil pasteurization, nutrient film technique (NFT)/ hydroponics.

Hort. 301 Post-Harvest Management of Fruits and Vegetables

Time: 3 Hours                                      Max. Marks: 75
Theory= 40                                      Practical = 20
Internal Assessment 10+5=15                  Periods per week 4+3

Instructions for the paper setters
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Hort. 301 Post-harvest Management of Fruits and Vegetables:
Importance. Maturity indices, harvesting and post harvest handling of fruits and vegetables. Maturity and ripening process. Factors affecting ripening and deterioration of fruits and vegetables. Chemicals used for delaying and hastening ripening. Methods of storage and low cost storage structures. Methods of packing, packaging materials and transport. Types of containers, cushioning material, vacuum packing, shrink packing, specific packing for export of mango, banana, grapes, Kinnow, sweet orange, and mandarin etc. Unit layout – selection of site and precautions for hygienic conditions.

B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

B.Sc Agric. F.M:

Farm Management and Production Economics

Time: 3 Hours

Max. Marks: 100
Theory: 80
Int. Assess: 20
Periods per week: 04

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

1. Importance, Meaning and Scope of Farm Management, its relationship with other agricultural sciences.
4. Economics Principles used in Farm management i.e. Principles of diminishing return, costs, factor substitution, product substitution, equimarginal returns and time comparison. Theory and application.
5. Categories of cost, relationship of different costs and cost functions.
6. Management of different factors of production i.e. land, labour, capital, farm power and machinery. Natural resource management especially land and water.
8. Farm Planning and Budgeting, methods of valuating farm resources, steps in farm planning and organization of farm business. Concept of linear programming.
10. Study of Economic problems in Indian Agricultural production, marketing, credit etc. Place of Agriculture in five year plans.

Suggested Readings:-

5. Production Conditions in Indian Agriculture- K. Bhardwaj.
B.Sc Agric. F.M:  

Farm Management and Production Economics  
(Practical)  

Time: 3 Hours  
Max. Marks: 50  
Practical: 40  
Int. Assess.: 10  
Periods per week (Pract): 03  

Visit to selected farms, study their layout, organization and operation. Exercise on alternate choice in farm management, preparation of layout maps. Application of basic principles of farm management, enterprise budgets, labour and farm budgets and power budgets and farm record analysis. Computerisation of land records and preparation of balance sheets.
B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

B.Sc. Agric. Ento.: Economic Entomology

Time 3 Hours

Max. Marks: 100
Theory: 80
Int. Assess.: 20

Periods per week (Theory): 4

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight and simple.
3. Not more than one question should be based on one topic.
4. The question paper should be cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory
Definition of pest. Losses from pests of Agricultural crops and their products, Natural control and factors causing outbreak of pests of Agricultural importance. Principles and methods of pest control-physical, mechanical, cultural, biological, chemical, integrated, legal supervised control, pest management, economic injury and Economic threshold. Common pesticides, their formulation and methods of application, safe handling and antidotes.

Biology, nature and extent of damage and control of the insect pests of sugarcane, cotton, cereals, Pulses, oil seeds, vegetables. Fodder, fruit trees, stored grains, Household and general insect Pests like Termites, Hairy Caterpillar, Locusts.

Study of non-insect pests like nematodes, mites, birds flying foxes, rodents, monkeys, Jackals etc. A general account of useful birds and mammals and their encouragement.

Detailed account of Apiculture, sericulture and lac-culture. Insect pests and diseases of honey bees, silkworm, lac insects and their control Predators, Parasites pollinators.

Storage of farm products, common pests and their control. Study of pest control equipments, its classification. Principles of working, care & maintenance. Pest control organisation at State and National levels with a general account of the cordiantion at the International level.

Properties of pesticides, mode of entry and action, factors affecting toxicity, compatibility, synergism, repellents attractants, hormones, chemosterilants, pheromones antifeedants.
B.Sc. Agric. Ento.: Economic Entomology
(Practical)

Time 3 Hours

Max. Marks : 50
Practical : 40
Int. Assess. : 10
Periods per week (Practical) : 3

Collection and preservation of insects. Rearing techniques and rearing of stored grain pests. Identification of various pests of field crops, vegetables, fruit trees and household products. Identification of pest damage in respect of field crops, vegetable in fruit trees. Preparation and application of various pesticides.

Study of different types of application equipment, including Sprayers, Dusters, seed disease their structure, working, handling care and maintenance practices in field operation of the pests control.

Identification of different species of honeybee and their castes. Handling and management of honeybee colonies for productive bee keeping. Extraction and processing of cocoons and their processing.
B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

B.Sc. Agric. Ext.: Agricultural Extension

Max. Marks: 100
Theory: 80
Int. Assess.: 20

Periods per week (Theory): 4

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight and simple.
3. Not more than one question should be based on one topic.
4. The question paper should be cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


C. Programme Planning and Evaluation:- Programme planning—meaning, principles, steps in programme planning. Extension evaluation—Meaning, Importance, steps in extension evaluation, types of extension evaluation.

D. Communication in Extension Education :- Meaning, Nature modes and importance of communication, problems in communication and feed back, key-elements and their effectiveness in communication process.

E. Extension Administration for Rural Development:- Nature and principles of extension administration and supervision, role and qualities of a good extension worker, supervisors, and administrator. Concept of extension organisation. Rural development Post strategies and current approaches, organisational and operational programmes in India.

F. Adoption and Diffusion of Innovations:- Adoption period, adoption process, stages in adoption process, categories of adopters characteristics of Agricultural innovations, Diffusion of innovation in a social system.

G. Rural Sociology and Caste System:- Rural sociology – Its meaning definition, scope and origin, relationship with other sciences, Rural—urban differences, caste system in India. Economic and political life of rural people, Rural social system beliefs, values and taboos.
B.Sc. Agric. Ext.: Agricultural Extension
(Practical)

Max. Marks: 50
Practical: 40
Int. Assess.: 10
Periods per week (Practical): 3

Preparation and use of Audio—Visual Aids. To develop and evaluate extension programme, Acquiring skill in the preparation & use of various audio visual aids and equipments. Use of selected teaching methods—individuals, Group and Mass contact in field situation.

Visit to Agricultural extension and rural development agencies to study their organisational set up and programmes.
B.Sc Agric. Stats: Agricultural Statistics

Time: 3 Hours

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.
6. Scientific Calculator shall be allowed.

Theory

Sampling and Sample Designs: Sample v/s census, Theoretical basis of sampling, Methods of sampling: Simple random sampling (with and without replacement), stratified random sampling, systematic sampling, multistage sampling, cluster sampling, quota sampling. Planning and execution of surveys, sampling and non-sampling errors.

Analysis of time series data, estimation of linear trend, periodic and random variations, fitting of exponential curve \( Y = ab^x \).

Index numbers, Laspeyre's Paasche's and Fisher formula, requirement of an ideal index and its uses.

Statistical Inference: Procedure of testing hypothesis, Type I and Type II errors, two tailed and one tailed test of hypothesis, Sampling distribution and standard error. Tests of significance for single mean and difference of means in large and small samples.

Principle of Experimental Design: Uniformity trials- size and shape of plot, role of Randomisation, local control and replication.

Layout and analysis of completely randomised design, Randomised block design, Latin square design including one missing value.

Suggested Readings:
1. Experiment on simple random sampling with and without replacement.
2. Experiment of stratified random sampling.
3. Experiment on ratio method of sampling.
4. Fitting of linear trend to time-series data.
5. Fitting of exponential trend to time-series data.
6. Calculation of index numbers.
7. Test of significance for single mean in small and large samples.
8. Test of significance for difference of means in small and large samples.
9. Analysis of variance one way and two way.
10. Analysis of completely randomised design.
11. Analysis of randomized block design.
12. Analysis of Latin square design.
13. Analysis of RBD with one missing value.
14. Analysis of LSD with one missing value.
B.Sc. Agric. Oleri.: Olericulture, Floriculture & Land Scaping

Time 3 Hours

Max. Marks: 100
Theory: 80
Int. Assess. : 20

Periods per week (Theory): 4

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight and simple.
3. Not more than one question should be based on one topic.
4. The question paper should be cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory
Olericulture: Scope and importance of vegetable growing in Punjab and role in human diet. Climate and soil factors effecting the growth of vegetable seeds; vegetable forcing; Kitchen gardening methods, Callender of operations, programme for the continuous supply of vegetable throughout the year. Problems of commercial vegetable growing in Punjab, Cultivation practices for important winter and summer vegetables crops of Punjab.

Floriculture: Importance and scope of floriculture in Punjab; seed production and multiplication of ornamental plants; general cultivation of important winter, summer, and rainy seasons annuals Bulbous plants viz Canna, Amarylis, Dahlia, Gladiolus Gerbera Crysanthemum, their culture, procurement and storage of bulbs. Cultivation of important ornamental trees, shrubs, hedges and climbers. Cultivation of succulent plants as Bryophllem, Sanseveria, Euphorbia and cacti. Cultivation of Roses, Cultivation of indoor plants.

Land Scaping: Principles and concept of Landscape gardening. Famous gardens of India and their special features of layout. Preparation of landscape plans for schools; Colleges, Public places, Highways and Domesticated places and study of Plants used, terrace gardening, Establishment and maintenance of lawns.

Suggested Readings:
1. Vegetable Growing in India – DVS Chauhan
2. Introductory Ornamental Horticulture – JS Arora
5. Vegetable Gardening – WCS Cooper
7. Commercial Floriculture – S Prasad and U Kumar
1. Propagation of ornamental plants through seeds cuttage, layerage and graftage.
2. Identification of the plant materials given in the syllabus.
3. Preparation of layout plans and landscaping of park, bungalows and school premises etc.
4. Practice in preparation of different types of flower beds, making the maintenance of lawns.
5. Planting, training and trimming of shrubs, hedges and climbers.
6. Identification of different kinds and varieties of vegetables given in the syllabus.
7. Practices in vegetable growing, laying out a kitchen garden and growing vegetables in window boxes and pots.

**Additions in Practical-**
1. Sowing and transplanting of vegetable crops
2. Vegetable nursery production and vegetable forcing techniques.
4. Diseases and Disorders of vegetable crops.
Agron Elective–I

B.Sc Agric.: Seed Production Technology

Time: 3 Hours

Max. Marks: 100
Theory: 80
Int. Assess.: 20
Periods per week (Th): 04

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

Seed and its characteristics, Agronomic practices for raising quality seed of cereals, pulses, oil seeds, tuber, sugar and fodder crops and production of hybrid maize seed in multiplication of breeder's seed.

Physiology of seed development, dormancy, viability, maturity, germination and seedling vigor.
Environmental factors affecting seed quality. Seed certification- Standards and inspection. Seed processing – Cleaning, treatment, packing, storage and marketing. Seed industry and seed act.


Suggested Readings:

2. Seed Technology- Rattan Lal Aggarwal.
B.Sc Agric.: Agronomy Elective- I

(Practical)

Time: 3 Hours

Max. Marks: 50
Practical: 40
Int. Assess.: 10

Periods per week (Pract): 06

Seeds identification, seed analysis for purity and germination. Breaking of dormancy, tests for viability. Sowing and maintenance of seed production field of important crops. Visits to commercial seed production fields, seed processing plants and seed sale agencies. Planning for establishment of seed production farms.

Identification of terrestrial and aquatic weeds and their seeds. Weed survey.
B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

Agron Elective–II

B.Sc Agric.: Ecology and Crop Physiology

Time: 3 Hours

Max. Marks: 100
Theory: 80
Int. Assess.: 20

Periods per week (Th): 04

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Suggested Readings:


B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

B.Sc Agric. Elective-III (Agron)

Crop Production under Special Situations: Soil Fertility and Fertilizers Use

Time: 3 Hours                          Max. Marks: 100
Theory: 80                               Theory: 80
Int. Assess.: 20                           Int. Assess.: 20
Periods per week (Th): 04                 Periods per week (Th): 04

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory
Dry Farming: extent, and problems. Distribution of low rainfall areas. Effect of moisture stress on physiological processes. Plant water relationships, special characteristics of plants, seed treatments, water conservation characteristics, fertilizer management, mixed cropping, crop and variety selection, crop sequences, use of mulches and chemicals to save water and crop diversification in dry farming. Contingency crop planning for aberrant weather conditions. Problematic soils, crop management problems of water logged, saline, alkali soils; agronomic practices with special reference to crop rotations, planting techniques, irrigation management, weed control and fertilizer use in problematic soils.


Raising fodders- Role of fodder crops and pastures in farm economy, raising of different fodders, fodder quality, fodder preservation and factors affecting quality of preserved fodder, silage and hay making.

Suggested Readings:
Soil Elective–I

B.Sc Agric.

Systematic Study of Soils in Relation to Geology, Genesis, Classification, Hydrology & Erosion

Time: 3 Hours                                    Max. Marks: 100

Theory:  80                                      Int. Assess:  20

Periods per week (Th): 04

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Suggested Readings:

B.Sc Agric.         Soil Elective- I
               (Practical)

Time: 3 Hours

Max. Marks: 50
Practical: 40
Int. Assess.: 10
Periods per week (Pract.): 06


B.Sc Agric.          Elective- II (Soil)

Fundamentals of Soil Chemistry, Fertility, Biology and Biochemistry including Water and Fertilizer Testing

Time: 3 Hours                         Max. Marks: 100
Theory: 80                           Int. Asst.: 20
Periods per week (Th): 04

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Suggested Readings:
B.Sc Agric. Soil Elective- II
(Practical)

Time: 3 Hours

Max. Marks: 50
Practical: 40
Int. Assess.: 10
Periods per week (Pract): 06

B.Sc. Agric.          Elective-III (Soil)
General Physical Chemistry

Time: 3 Hours

Max. Marks: 100
Theory: 80
Int. Assess.: 20
Periods per week (Th.): 4

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight and simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory
B.Sc. Agric.     Elective-I (Horticulture)
Fundamentals of Fruit Production

Time: 3 Hours                                    Max. Marks: 100
Theory: 80                                      Int. Assess.: 20
Periods per week (Th.): 4

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight and simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Pollen viability and germination; stigma receptivity and pollination studies in fruits.

Suggested Readings:
1. Basic Horticulture – Jatinder Singh
2. Fruit Growing – Dr. JS Bal
5. Fundamentals of Fruit Production – VR Gardener, FC Bradford and HD Hooker
6. Fruit Physiology and Production – Amar Singh
8. The Pruning of Fruit Trees and Vines – JC Bakshi, DK Uppal and HN Khajuria
B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

B.Sc. Agric.  Elective-II (Horticulture)

Systematic Pomology, Propagation and Nursery Management

Time: 3 Hours                      Max. Marks: 100
Theory: 80
Int. Assess.: 20
Periods per week (Th.): 4

Note: Examiner should set at least 3 or 4 questions from Part A and five questions from Part B. Students will have to attempt 2 questions from Part A and 3 from Part B.

Theory

PART-A

SYSTEMATIC POMOLOGY
Description and classification of fruits of order Rosales, Rhamnales, Sapindales, Myrtales, Geraniales, Palmales with special reference to fruits grown under Punjab conditions.

PART – B

PLANT PROPAGATION AND NURSERY MANAGEMENT

Introduction
Media, its propagation structures, mist propagation.
Aporrhesis, its types and significance in fruit crops.
Seed dormancy, its types, regulation of germination, environmental and dormancy factors affecting seed germination, preconditioning of seeds to stimulate germination.
Importance of asexual propagation, clone, genetic variation in asexually propagated plants.

Cutting: Anatomical development of roots and shoots, Physiological, basis of root initiation effect of leaves and buds, polarity, factors affecting regeneration. Type of cuttings, treatment of cutting and techniques of propagation by cuttings.

Layering: Factors affecting layering procedure, characteristics and uses of layering.

Graftage: Techniques types of Budding and Grafting, terminology classification of grafting according to placement, Herbaceous, Nurse root and Nurse seed grafting. Top Working, Double working, micro budding, crown grafting.
Reasons for grafting and budding, formation of graft union, healing process in budding, Factors influencing the healing of graft union, graft hybrids, polarity, limits of grafting, selection storage of bud wood scion.
Graft incompatibility, Stionic influences.
Propagation by specialized stems and Roots with special reference to fruit corps.
Aseptic Methods of micro-propagation, General techniques for preparing cultures for micro propagation procedures for cultivating various tissues and organs.
Propagation Methods and Root stocks for important fruit crops Apple; Citrus, mango, Pear, Peach, Plum, Guava etc.
Physiological basis of dwarfing.

Suggested Readings:
2. Plant Propagation – RR Sharma
3. Vegetative Propagation of Plants – KK Nanda and VK Kochhar
5. Plant Taxonomy – OP Sharma
6. Modern Systematic Pomology – QB Zielinski
7. Practical Manuals of Various Universities on Systematic Pomology
Identification and description of important fruit species and identification of nucellar seedlings in citrus.

Fruit types, their description, edible portions and time of ripening.

Pollen viability and germination, stigma receptivity and pollination studies in fruits. Extraction, drying and storage of seeds and testing seed viability.

Stratification and other seed treatments. Preparation of seed beds, seed sowing, practices in plant propagation techniques like cutting, layering, budding and grafting methods. Application of growth regulators in propagation methods.

Packing-transplanting, and after care of nursery plants and other nursery managements, Insect, pests, disease and weed control in nurseries and orchards.

Preparation of wound infectant solutions like grafting wax, bourdaux, paste, paint and white wash mixtures.

Visits to various fruit research stations and nurseries.

Pollen viability and germination; stigma receptivity and pollination studies in fruits.
B.Sc. Agric.  Elective III (Horticulture)

Fruit Growing

Time: 3 Hours

Max. Marks: 100
Theory: 80
Int. Assess.: 20

Periods per week (Th.): 4

Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight and simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

Fruit Growing:-
A. Importance, scope and development of Horticulture in India with special reference to Punjab. Challenges to be faced by the fruit Industry.
B. Detailed studies of following fruit crops regarding their importance, origin, distribution, cultivation and progress of work in India with special reference to Punjab.

2. Temperate Fruits: Pear, Peach, Plum and Almond, apple, cherry, olive, persimmon.
   Cultivation of Tea and Rubber

Suggested Readings:
1. Fruit Growing – Dr.JS Bal
2. Package of Practices for Fruit Crops – PAU Ludhiana
4. Temperate Fruits – TK Bose (ed.)
5. Fruits Tropical and Sub-Tropical Vol.-1 – TK Bose (ed.)
7. Tropical Horticulture Vol-1 – TK Bose (ed.)
B.Sc. AGRICULTURE (HONS.) PART – IV (ANNUAL SYSTEM)

B.Sc Agric. Elective- I (Ag. Econ.)

Economic Problems of Indian Agriculture & Rural Sociology

Time: 3 Hours                                    Max. Marks: 100

Theory: 80                                    Int. Assess: 20

Periods per week (Th): 04

Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory

1) Importance of Agriculture in Indian Economy, comparison with other countries.
2) Trends in Agricultural Production and productivity. Deceleration of Agricultural growth rates in India, causes and effective measures to check it.
3) Land reforms: Objectives, abolition of intermediaries, Tenancy Reforms, Ceilings on Agricultural holdings, Consolidation, Cooperative farming, Evaluation, Recent land legislation and Enforcement.
4) Rural Indebtness: Causes, Effects, Government measures to control it. Recommendations of Dr. Radha Krshnan's and RBI's report on Rural Indebtness.
6) Agricultural Labour in India: Problems and remedies.

Suggested Readings:-

4. Agricultural Problems of India -Bansil, P.C.
Assign a visit to a village to team of five students to obtain.

1. a) Distribution of cultivated land to various size groups of farm.
   b) Degree of change of ownership and tenancy.
   c) Cropping pattern and Agricultural inputs.

2) Study of the family budget of two farmers. Tabulation of information to show the major items of expenses, food and clothing habits, housing and other facilities. Preparation of 100 word report.

3) Preparation of questionnaires and schedule for an economic survey.
Instructions for the paper setters:

1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory
What is co-operation, principles of cooperation. Co-operation in the National planning. Organisation, financial structure and general working of following co-operative societies.

1. Primary Agricultural Credit Societies.
2. Multi- Purpose Societies.
3. Large size primary credit societies.
4. Labour co-operative society.
5. Agricultural Service Co-operative society.

Success, failure of Co-operative sector in India. Role of Co-operatives under emerging economic policy.

Co-operative farming, meaning, objectives, types, merits and demerits.
Study of Co-operative movement in Canada, Germany, Japan and England.
Agricultural Marketing: Definition, importance, types and defects. Methods of study, functional, institutional and commodity approach.

Marketing functions and services: Assembling, Processing, Distribution, Packing, Standardization, Grading and Transportation.

Role of State Marketing Board, Public – Private partnership in Marketing, Contractual farming, Entry of Corporates in Agricultural Marketing.

Suggested Readings:-

3. Indian Foodgrain Marketing -Moore, J.R, Johl S.S, Khusro A.M.
6. Agriculture Co-operation in India- C.B. Memoria.
B.Sc Agric. Ag. Econ. Elective- II
(Practical)

Time: 3 Hours

Max. Marks: 50
Practical: 40
Int. Assess.: 10
Periods per week (Pract): 06

1. Visit to wholesale and retail shops (Mandis) to study Marketing methods and practices with respect to major Agricultural commodities, preparation of a report.

2. Visit to market committee to know the facilities provided to the farmer, various market charges paid by farmers and buyers.

3. Visit to Co-operative societies to get first hand knowledge of their methods of working, preparation of a report.
B.Sc Agric. Elective-III (Ag. Econ.)

Micro & Macro Economics

Time: 3 Hours

Max. Marks: 100
Theory: 80
Int. Assess: 20
Periods per week (Th): 04

Instructions for the paper setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of questions should be straight & simple.
3. Not more than one question should be based on one topic.
4. The question paper should cover the whole syllabus and questions should be evenly distributed.
5. At least eight questions should be set, out of which the candidates should be required to attempt any five.

Theory


Macro Economics


Suggested Readings:

1. Macro Economic Theory by M.C.Vaish.