

## TYBA Annexure-II

Structure/ Pattern of Syllabus must be as follows:

- 1) Title of the Course: **Soil Conservation & Water Management (Vocational)**
- 2) Introduction: **Pattern- Annual**
- 3) Eligibility: **Should have offered Soil Conservation & Water Management (Vocational) at S.Y.B.A. & passed as per University rules**
- 4) Examination
  - A) Pattern of examination
    - i) **80-20 University annual examination of 80 marks & Internal assessment of 20 marks. Details as per syllabus**
    - ii) **Pattern of the question paper- As per specimen given**
  - B) Standard of Passing : **As per University norms**
  - C) ATKT Rules : **As per University norms**
  - D) Award of Class : **As per University norms**
  - E) External Students : **Not allowed**
  - F) Setting of Question paper/ Pattern of Question paper: **As per University norms**
  - G) Verification of Revaluation: **As per University norms**
- 5) Structure of the Course :
  - i) **Optional**
  - ii) **Medium of instruction : English**
- 6) Equivalence subject/ papers & Transitory Provision: **Soil Conservation & Water Management (Vocational)**
- 7) University terms : **As per University norms**
- 8) Subject wise Detail Syllabus : **Attached**
- 9) Recommended books : **Mentioned in the syllabus**

## **Paper V Soil Conservation & Water Management (Vocational)**

### **Soil Conservation III**

#### **Chapter I Soil Conservation Survey:**

- i) Soil survey-Soil variability, destination of soil survey, importance fundamental and applied ..... (2)
- ii) Types of soil survey, soil mapping unit & soil survey interpretation, soil survey report. (3)

#### **Chapter II Waste Land Management :**

- i) Definition of wasteland, causes of wasteland, need for wasteland management (1)
- ii) Methods of wasteland management - Establishment of vegetation, selection of plant species, use of fertilizers, improvement of vegetative composition orangepasture. (2)

#### **Chapter III Land Use Capability Classification :**

- Definition of Land capability classification, land use land capability classification & their use. (2)

#### **Chapter IV Causes & Improvement Of Degraded Soil :**

- i) Release of salts from rocks & minerals, composition of rain water, river water, canal or reservoir water and sea water. (2)
- ii) Properties of different salts - Chlorides, carbonates, sulphates, bicarbonates & nitrates of calcium, magnesium, sodium & potassium. (1)
- iii) Role of soil slope, minerals, quality of irrigation water, climate and vegetation cover on salinity & alkalinity of soil. (2)
- iv) Reclamation of saline & sodic soils. (1)

#### **Chapter V Soil Loss Measurement :**

- i) Soil losses due to erosion & extent of erosion - water and wind erosion. (1)
- ii) Estimation of soil losses - universal soil loss equation, causes of soil loss-soil erodability, rain fall erosivity, estimation of soil losses by wind erosion. (2)

#### **Chapter VI Development Of Cropping For Soil & Water Conservation :-**

- Strip cropping, mix cropping, crop rotation & cover crops. (2)

#### **Chapter VII Watershed Management :** (08)

- i) Definition of watershed, morphological characteristics of watershed, classification of watershed, sequence of events in planning, planning & designing of structure & other activities, execution of activities, evaluation of work.

- ii) Concept of watershed management - Principle of watershed management, objectives, steps, basic information & development of components - components of watershed management
- iii) Soil water conservation - measures of soil conservation
- iv) Water harvesting-rain water harvesting
- v) Crop management - cropping pattern
- vi) Alternate land use - Agro forestry & types of agro forestry

**References :**

- 1) Soil survey manual - All India soil & land use survey organization.  
IARI New Delhi - 110 012.
- 2) Soil taxonomy, basic system of soil classification for making & interpreting soil survey. Agriculture Handbook No. 36, Nbs & Lup Publication New Delhi.
- 3) Soil & water conservation engineering by Schwab, Fravert Edminster & Barnes  
John Wiley and Sons Publication.
- 4) Soil conservation in India I.C.A.R. New Delhi, Ramarao, M.S.V. - 1962.
- 5) Manual of soil & water conservation practices by Gurmel singh, C.  
Venkatraman, G.Sastry-1990. Oxford & J.B.H. Publication, New Delhi.

**TYBA - Soil Conservation - Practicals :**

- 1) Study of soil survey equipments.
- 2) Preparation of soil survey report
- 3) Determination of runoff from the watershed.
- 4) Estimation of water erosion losses.
- 5) Estimation of wind erosion losses.
- 6) Design and layout of contour bunding / graded bunding.
- 7) Study in situ moisture conservation techniques - Ridges & furrows / broad bed. furrow / dead furrow / tide ridges / scooping / compartmental bunding.
- 8) Analysis of saturation extract of saline & sodic soils.
- 9) Determination of Gypsum requirement for acidic soils.
- 10) Visit to watershed project.

## **Water Management - III**

- Chapter I** National & Global water budget, major irrigation project and extent of area. Crops in India & different states. (2)
- Chapter II** Role of physical properties in water management - Bulk density, Hydraulic conductivity, Infield ratio, Soil water movement, Soil water potential, Moisture constant, Field capacity, Permanent wilting point, Soil moisture measurement methods. (4)
- Chapter III** Soil water plant relationship - evaporation, transpiration & evapotranspiration, consumptive use measurement methods, water uptake & transpiration by plants. (2)
- Chapter IV** Scheduling of irrigation water, different approaches of scheduling of irrigation water. (2)
- Chapter V** Water requirement, crop water requirement, irrigation requirement, Gross & net irrigation requirement, factors affecting water requirement. (2)
- Chapter VI** Irrigation water use efficiency - Definition, Types of irrigation water use efficiency, Conveyance efficiency, Conveyance application, storage, distribution, crop water use efficiency, field water use efficiency, project efficiency. (4)
- Chapter VII** Quality of water for irrigation - Criteria for assessment of water quality, standards & consideration in the assessment of suitability of irrigation water. Relation between water quality & soil properties - salinity, sodium hazards, boron & fluoride hazards. (5)
- Chapter VIII** Fertilization - Concept & importance, advances and limitations, Criteria for fertilization, Fertilization methods. (2)
- Chapter IX** Water management for problem soils-Definition, suitable irrigation methods. (1)
- Chapter X** Watershed management - Concept, identification & classification, water harvesting & recycling runoff collection, selection of pond site, design of pond, embankment ponds, drainage of excessive water, excavated ponds, watershed planning & management. (6)

### **References :-**

- 1) Irrigation - Theory & Practices Vikas Publishing House, New Delhi - 801. Michael A.M.
- 2) Water Shed Management By Dhruvanarayan.

### **T.Y.B.A. - Water Management - III - Practicals:**

1. Measurement of soil-moisture by Tensiometer / Gypsum block / Neutron probe.
- 2) Measurement of soil - moisture by pressure plate apparatus / Time Domain Reflectometer (Microwave method).
- 3) Measurement of crop water requirement by Pan evaporation method.
- 4) Measurement of evapo transpiration by Lysimeter.
- 5) Estimation of Reference Crop - evapo transpiration by modified Panman method.
- 6) Estimation of net irrigation requirement & gross irrigation requirement.
- 7) Estimation of irrigation efficiencies.
- 8) Determination crop water requirement in drip irrigation / spinkler irrigation.
- 9) Determination of electrical conductivity (EC) & PH of irrigation water.
- 10) Determination of total soluble salts (like Ca, Mg, Na, K) from irrigation water.
- 11) Determination of HCO<sub>3</sub>, CO<sub>3</sub>, Cl & SO<sub>4</sub> from irrigation water.
- 12) Determination of boron from irrigation water.

## Paper VI Entrepreneurship development and Project Report

### Entrepreneurship development

Unit I	5
<ul style="list-style-type: none"><li>• Meaning and Concept of Entrepreneurship Development</li><li>• Factors affecting the growth of Entrepreneurship</li><li>• Benefits of Being an Entrepreneur</li><li>• Qualities of an Entrepreneur</li><li>• SWOT Analyses</li><li>• Functions of an Entrepreneur</li></ul>	
Unit II	4 +2 Practical
<ul style="list-style-type: none"><li>• Promotional steps for starting a Small Scale Industry</li><li>• Meaning, definition and types of SSI</li><li>• Role of the Government in promoting SSI</li><li>• Sources of Information: <b>Practical</b></li><li>• District Industry Centre, MIDC, MS SSI Development Corporation, National Institute of E and Small Business Development (IESBUD), National E Development Board (NEDB), E D Institute of India (EDII), State Industrial Development Bank (SIDBI), MSEB, office of the Charity Commissioner</li></ul>	
Unit III	4
<ul style="list-style-type: none"><li>• Service Industries: meaning, definition and scope,</li><li>• process of registration: small scale and service industries</li><li>• Similarities and difference between small scale and service industries</li></ul>	
Unit IV	15
Techno Economic Feasibility Assessment	
<ul style="list-style-type: none"><li>• Primary Project Report</li><li>• Detailed Project Report</li><li>• Techno Economic Feasibility Report</li></ul>	
Unit V	3
<ul style="list-style-type: none"><li>• Personnel Management</li><li>• Meaning and Definition</li><li>• Recruitment and Selection</li><li>• Training</li></ul>	
Unit V I	7
<ul style="list-style-type: none"><li>• Legal Aspects</li><li>• Basic Knowledge of Income tax, sales tax, , VAT</li><li>• Factory Act and Payment of wages Act, shop act</li></ul>	

Motivational Stories of Two Successful Entrepreneurs: Practical: Field work as well as reading biographies/ autobiographies.

### Practical

Sr No	Title of the Practical	Objective	Mode
1	1Experiences of Entrepreneur	Identification of Entrepreneurial Qualities	Interview
2	2Pitfalls of Entrepreneurship	Problems faced by an Entrepreneur	Interview
3	Preparation of a project report	Understanding Techno Economic Feasibility Assessment	Project work
4	Modern Management Techniques	TechniqueTo study/survey the development of an Industry	Visit

### Key Competency Modules

- Managing Professional Challenges
- General and professional Ethics

### Evaluation Pattern

**Internal Assessment: 20 Marks**

**Annual Examination: 80 Marks**

**Internal Assessment (Term Work) 60 marks converted to 20 Marks**

**University Theory Paper: 40 Marks**

**University Practical Exam of Project: 40 marks**