

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)****Subject with Code: PASS (20AG0701)****Course & Branch: B.Tech-AGE****Year & Sem: II-B.Tech & I-Sem****Regulation: R20****UNIT –I**

**Introduction and scope of agronomy. Classification of crops. Effect of different weather parameters on crop growth and development. Principles of tillage, tith and its characteristics. Crop seasons. Methods, time and depth of sowing of major field crops. Methods and time of application of manures and fertilizers.**

**Organic Farming- Sustainable Agriculture**

<b>1</b>	a	Explain the effect of Edaphic Factors on Crop Growth and Development.	[L2][CO1]	<b>[8M]</b>
	b	Distinguish between Manures and Fertilizers	[L2][CO1]	<b>[4M]</b>
<b>2</b>	a	Explain the Advantages and Disadvantages of Organic Farming.	[L2][CO1]	<b>[6M]</b>
	b	Classify the crops based on Ontogeny and Seasons.	[L3][CO1]	<b>[6M]</b>
<b>3</b>	a	Explain in detail the different types of sowing methods.	[L2][CO1]	<b>[8M]</b>
	b	What is Tith and its characteristics.	[L1][CO1]	<b>[4M]</b>
<b>4</b>	a	Compare Sustainable Agriculture and Modern Agriculture	[L4][CO1]	<b>[6M]</b>
	b	Define Agriculture, Agronomy and Tillage.	[L1][CO1]	<b>[6M]</b>
<b>5</b>	a	Explain in detail the Off-Season Tillage.	[L5][CO1]	<b>[8M]</b>
	b	What is Depth of Sowing and Time of Sowing.	[L1][CO1]	<b>[4M]</b>
<b>6</b>	a	Discuss the effect of Climatic Factors on Crop Growth and Development	[L6][CO1]	<b>[8M]</b>
	b	What is scope of Agronomy?	[L1][CO1]	<b>[4M]</b>
<b>7</b>	a	Show the flow chart of development of Agriculture.	[L1][CO1]	<b>[4M]</b>
	b	Explain the Fertilizer Soil Application Methods.	[L3][CO1]	<b>[8M]</b>
<b>8</b>	a	What are the disadvantages of High External Input Agriculture	[L1][CO1]	<b>[7M]</b>
	b	Factors influencing Fertilizer application methods	[L2][CO1]	<b>[5M]</b>
<b>9</b>	a	List out the Problems in Modern Agriculture.	[L1][CO1]	<b>[4M]</b>
	b	Ideological difference between Organic Agriculture and Conventional (Chemical) Agriculture	[L3][CO1]	<b>[8M]</b>
<b>10</b>	a	Operational structure of National Programme for Organic Production (NPOP)	[L3][CO1]	<b>[4M]</b>
	b	List out and explain the Principles of Organic Farming in detail.	[L1][CO1]	<b>[8M]</b>

## UNIT-II

**Soil water plant relationship, crop coefficients, water requirement of crops and critical stages for irrigation. Weeds and their control. Crop rotation, Cropping system. Relay cropping and Mixed Cropping.**

1	a	Solve the Problem: Maize is planted on 1 <sup>st</sup> June and harvested on 31 <sup>st</sup> September. The seedling, Vegetative, reproductive and maturity stages are 20, 35, 39 and 28 days respectively. The ET <sub>0</sub> for the corresponding stages are: 8.9, 9.4, 8.8 and 7.6 mm/day. Wind speed is light to moderate and minimum RH is low. Calculate ET <sub>m</sub> or ET (crop).	[L3][CO2]	[8M]																												
		<table border="1"> <thead> <tr> <th rowspan="2">Crop</th> <th colspan="4">Crop Development Stage</th> </tr> <tr> <th>Seedling</th> <th>Vegetative</th> <th>Reproductive</th> <th>Maturity</th> </tr> </thead> <tbody> <tr> <td>Rice</td> <td>1.1-1.2</td> <td>1.1-1.4</td> <td>1.1-1.3</td> <td>0.9-1.0</td> </tr> <tr> <td>Wheat</td> <td>0.3-0.4</td> <td>0.7-0.8</td> <td>1.0-1.2</td> <td>0.6-0.8</td> </tr> <tr> <td>Maize</td> <td>0.3-0.5</td> <td>0.7-0.8</td> <td>1.0-1.2</td> <td>0.8-0.9</td> </tr> <tr> <td>Sorghum</td> <td>0.3-0.4</td> <td>0.7-0.8</td> <td>1.0-1.1</td> <td>0.7-0.8</td> </tr> </tbody> </table> <p>*Lower values are for high humidity and low wind velocity.</p>	Crop	Crop Development Stage				Seedling	Vegetative	Reproductive	Maturity	Rice	1.1-1.2	1.1-1.4	1.1-1.3	0.9-1.0	Wheat	0.3-0.4	0.7-0.8	1.0-1.2	0.6-0.8	Maize	0.3-0.5	0.7-0.8	1.0-1.2	0.8-0.9	Sorghum	0.3-0.4	0.7-0.8	1.0-1.1	0.7-0.8	
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	b	Define Evaporation and Transpiration?	[L1][CO2]	[4M]																												
2	a	Define Gravitational Water, Capillary Water and Hygroscopic water.	[L1][CO2]	[6M]																												
	b	Draw a flow chart depicting different steps in water movement in the soil-plant-atmosphere system..	[L4][CO2]	[6M]																												
3	a	Name the critical stages of Irrigation for different crops in tabular form	[L1][CO2]	[8M]																												
	b	Define Intercropping and mention its objectives	[L2][CO2]	[4M]																												
4	a	Define Parallel cropping and Companion cropping? What are the advantages and disadvantages of Intercropping.	[L1][CO2]	[6M]																												
	b	Define Crop Rotation and its Characteristics.	[L1][CO2]	[6M]																												
5	a	Explain measurement of Soil moisture Direct Method by Alcohol Burning Method and Oven Drying Method with its merits and demerits.?	[L2][CO2]	[8M]																												
	b	Difference between Cropping pattern and Cropping system.	[L4][CO2]	[4M]																												
6	a	Explain the weed control by Mechanical Method	[L2][CO2]	[8M]																												
	b	Define Polyculture and Relay Cropping with examples.	[L1][CO2]	[4M]																												
7	a	Define the water requirement of crops and list out the factors that influence on Evapotranspiration.	[L1][CO2]	[4M]																												
	b	State and explain any eight Agronomic (cultural) weed management practices.	[L3][CO2]	[8M]																												
8	a	Explain briefly about the key elements in Weed Management.	[L2][CO2]	[7M]																												
	b	Discuss Multi-tier Cropping System with examples and neat labelled diagram	[L4][CO2]	[5M]																												
9	a	Define Mixed Cropping and what are the Steps involved in Estimation of Evapotranspiration	[L1][CO2]	[4M]																												
	b	Explain Crop Coefficient in detail along with the graph.	[L2][CO2]	[8M]																												
10	a	Explain the weed control by Biological method and Chemical Method.	[L2][CO2]	[8M]																												
	b	What are the types of Intercropping?	[L1][CO2]	[4M]																												

## UNIT-III

**Nature and Origin of Soil, Soil Forming Rocks and Minerals, their Classification and composition, soil forming processes, classification of soils- soil taxonomy orders, important soil physical properties, and their importance, soil particle distribution**

1	a	Categorize the soil structure and describe them with suitable diagrams.	[L3][CO3]	[8M]
	b	Show the tabular form of textural Class names developed by U.S.Department of Agriculture	[L1][CO3]	[4M]
2	a	List out the limitations in Genetic System of Soil Classification.	[L2][CO3]	[6M]
	b	Characteristics of Soil Separates (Sand, Silt and Clay)	[L4][CO3]	[6M]
3	a	Describe the factors of Soil Formation.	[L2][CO3]	[8M]
	b	Define Particle density and Bulk density and write down their C.G.S and F.P.S system units?	[L1][CO3]	[4M]
4	a	Differentiate between Surface Soil and Sub Soil	[L4][CO3]	[6M]
	b	Write a short notes on Mica, Quartz and Clay Minerals.	[L1][CO3]	[6M]
5	a	Enlist and describe the factors effecting Soil Structure.	[L5][CO3]	[8M]
	b	A metal cylinder pushed into a loam soil is removed from the field and the soil it contains is dried in an oven. The measured data are given below: Cylinder height: 6.0 cm Inside diameter of the cylinder: 5.4 cm Oven dried soil weight: 87.6g Calculate the bulk density of the soil	[L3][CO3]	[4M]
6	a	Define Soil and Illustrate the soil profile with proper diagrammatic representation.	[L2][CO3]	[8M]
	b	Write a short notes on Metamorphic rocks with proper examples.	[L1][CO3]	[4M]
7	a	Mention and explain the Factors affecting the Bulk Density.	[L1][CO3]	[4M]
	b	Enlist the Weathering Process? Describe Physical and biological weathering processes	[L3][CO3]	[8M]
8	a	Explain the chemical weathering process of Rocks and Minerals.	[L1][CO3]	[7M]
	b	A soil core was taken for the determination of bulk density. The measurements were: Cylinder volume: 84.6.c.c Dry soil weight: 97.8 gm Particle density: 2.65 gm/cc. Calculate the percentage pore space of the soil.	[L4][CO3]	[5M]
9	a	How the Soil structure shows influence on soil physical properties.	[L1][CO3]	[4M]
	b	Explain the Early System and recent system of soil classification.	[L4][CO3]	[8M]
10	a	Discuss the Factors affecting Weathering of Minerals with suitable examples and diagrams.	[L2][CO3]	[8M]
	b	Mention and explain the Factors affecting the porosity of soil.	[L1][CO3]	[4M]

## UNIT-IV

**Soil inorganic colloids-their composition, properties and origin of charge, ion exchange in soil and nutrient availability, soil organic matter-its composition and decomposition , effect on soil fertility, soil reaction-acidic, saline and sodic soils**

1	a	Define Soil Colloids and explain its eight properties.	[L3][CO4]	[8M]
	b	Define Amorphous Clays and CEC	[L1][CO4]	[4M]
2	a	Explain in detail the problems of salt affected soils.	[L2][CO4]	[6M]
	b	What are the sources of soluble salts and explain them.	[L4][CO4]	[6M]
3	a	Explain the factors affecting Decomposition.	[L2][CO4]	[8M]
	b	Enlist and describe the Factors affecting Anion Exchange	[L1][CO4]	[4M]
4	a	Justify why Gypsum is not considered as a Liming material and explain the types of Slags.	[L5][CO4]	[6M]
	b	Define Laterisation and Podzolisation with explain with their respective conditions.	[L1][CO4]	[6M]
5	a	Explain the Role of Organic Matter in Soil Fertility.	[L2][CO4]	[8M]
	b	What are the factors affecting Ion Exchange.	[L1][CO4]	[4M]
6	a	Descibe Carbon:Nitrogen Ratio in detail.	[L2][CO4]	[8M]
	b	Explain types of Soil Colloids.	[L1][CO4]	[4M]
7	a	Define Electrical Conductivity, SAR, Soil Texture and Osmotic Pressure with expressions wherever applicable.	[L1][CO4]	[4M]
	b	Define Soil Acidity and describe its sources in brief.	[L3][CO4]	[8M]
8	a	Explain Reclamation of salt affected soils with suitable chemical reactions.	[L2][CO4]	[7M]
	b	Define Liming Factor and mention the criteria to maintain the Lime Balance Sheet	[L4][CO4]	[5M]
9	a	Assume an irrigation water has a conductivity of $1.08 \text{ dSm}^{-1}$ . The field crop planted has a 50 percent yield reduction at soil saturation extract conductivity of $7 \text{ dSm}^{-1}$ (drainage water). Calculate the additional amount of water required to apply if the water needed to wet the profile is 6.35 cm (2.5 inches).	[L3][CO4]	[4M]
	b	Discuss the Factors affecting $\text{K}^+$ and $\text{NH}_4^+$ fixation in soils.	[L4][CO4]	[8M]
10	a	Describe the problems of Soil Acidity.	[L2][CO4]	[8M]
	b	Define Soil Organic Matter and explain Carbon sequestration in Soils.	[L1][CO4]	[4M]

## UNIT-V

**Quality of irrigation water, essential plant nutrients-their functions and deficiency symptoms in plants, important inorganic fertilizers and their reactions in soils. Use of saline and sodic water for crop production, Gypsum requirement for reclamation of sodic soils and neutralizing, RSC, Liquid fertilizers and their solubility and compatibility.**

1	a	Mention the functions and deficiency symptoms of Potassium and Phosphorous.	[L3][CO5]	[8M]
	b	Explain Criteria of Essentiality.	[L2][CO5]	[4M]
2	a	List down the functions of Zinc, Boron and Molybdenum micro nutrients.	[L2][CO5]	[6M]
	b	Distinguish between Inorganic fertilizers and Organic Manures	[L4][CO5]	[6M]
3	a	Describe the three general Reclamation Methods of Saline and Sodic Soils.	[L2][CO5]	[8M]
	b	List down the Boron and Copper deficiency symptoms.	[L1][CO5]	[4M]
4	a	List down the Criteria for Evaluation of Irrigation Water and explain any six of them.	[L1][CO5]	[6M]
	b	Define the Following: i) Complete fertilizer ii) Optimum dose iii) Manure iv) Placement of Fertilizers v) Fertilizer vi) Threshold Dose	[L1][CO5]	[6M]
5	a	Mention the conditions for management and use of poor quality water.	[L2][CO5]	[4M]
	b	Explain Potassic fertilizers in detail.	[L3][CO5]	[8M]
6	a	Explain in detail Gypsum requirement for the reclamation of sodic soils.	[L2][CO5]	[8M]
	b	Define the following Method of Fertilizer Application i) Top Dressing ii) Broadcasting iii) Foliar application iv) Soil Application and v) Fertigation	[L1][CO5]	[4M]
7	a	List out and explain the common problems faced from using the poor quality water.	[L1][CO5]	[4M]
	b	Enlist the Toxicity symptoms of Nitrogen, Phosphorous, Iron, Manganese and Boron.	[L2][CO5]	[8M]
8	a	Identify the deficiency symptoms of nutrients based on i) Region of Occurrence ii) Presence or absence of dead spots iii) Chlorosis of entire leaf or intervienal chlorosis	[L4][CO5]	[6M]
	b	List down the Fertilizers containing Phosphorous and explain few of them.	[L4][CO5]	[6M]
9	a	Describe the Problems of Saline Soils	[L1][CO5]	[4M]
	b	Explain the factors affecting suitability of waters for irrigation.	[L2][CO5]	[8M]
10	a	Classify the irrigation water based on Total salt content and Boron content in a tabular form.	[L4][CO5]	[8M]
	b	Write a short notes on formation of Saline soils.	[L2][CO5]	[4M]