

Serial No.

1110

AGRICULTURE : PAPER-I

Full Marks-100

Time-2 Hours

PART-I

(Descriptive-80 marks)

A. Agronomy

(Answer any Four questions)

1. Describe in detail the 'Package of Practices' of Wetland Paddy cultivation. 20
2. State the principles of Organic Farming and describe the current status of Organic Farming *vis-a-vis* Food Security. 20
3. What do you understand by 'Green Revolution' and describe its impact on the Agriculture scenario in the country. 20
4. Describe the economic importance, soil and climate requirements, varieties and cultural practices of the Maize crop. 20
5. Describe the advantages and disadvantages of Rain-fed Agriculture versus Irrigated Agriculture? 20
6. Describe in brief the 'Rice-based cropping system' and the 'Seed treatment of Paddy'. 10+10

OR

Horticulture

0111

(Answer any Four questions)

1. What are the major Spice crops of Meghalaya and describe the 'Package of Practices' of one of them. 20
2. What are the different techniques of Plant propagation of fruit trees and describe in detail on one of them. 20
3. What are the basic principles in Vegetable production and describe in detail the 'Package of Practices' of anyone of the major Vegetable crops cultivated in Meghalaya. 20
4. Describe in detail the impact of 'Protected Cultivation' and 'High Tech Horticulture' in the State of Meghalaya. 20
5. Describe in detail the Post-harvest techniques of anyone of the major Vegetable crops cultivated in Meghalaya and discuss the constraints you observed in this aspect. 20
6. Describe in brief the Principles of Landscaping and commercial Floriculture. 10+10

- a) increases
- b) decreases
- c) vanishes
- d) grows proportionally with seed

8. During seed germination, the seed coat ruptures due to

- a) Differentiation of cotyledons
- b) Massive glycolysis in endosperm and cotyledons
- c) Sudden increase in cell division
- d) Massive inhibitions of water

9. Highest auxin concentration occurs

- a) in growing tips
- b) in leaves
- c) at base of plant organs
- d) in xylem and phloem

10. In the soil, the water that is available for root absorption is

- a) Gravitational water
- b) Capillary water
- c) Hygroscopic water
- d) Combined water

Serial No **2172**

AGRICULTURE : PAPER-II

Full Marks-100

Time-2 Hours

PART-I

(Descriptive-80 marks)

A. Plant Breeding & Genetics

(Answer any Four questions)

1. a) What is Inbreeding ? Summarize the effects of Inbreeding . 2+8
- b) What is Hybridization ? What are the aims and objectives of Hybridization ? 2+8
2. a) Distinguish between Back cross and Test cross. 10
- b) Distinguish between Pedigree method and Bulk method of breeding. 10
3. a) Define Isolation distance and discuss its significance in seed production with reference to the mode of pollination of crops. Give suitable examples. 12+4
- b) What is Seed dormancy ? 4
4. Discuss the importance of Seed certification and briefly describe the Certification process. Enumerate briefly the role of Public sector in Seed production. 14+6
5. Define mutations. Do these occur in nature ? How are they important in creating variability ? What is the role of macro mutations in Crop improvement ? 2+4+7+7

6. Differentiate between Breeder's seed and Nucleus seed. Describe the specific method adopted for maintenance of purity of seed. Name the different methods of breeding self pollinated crops. 6+10+4

OR

Soil Science & Agricultural Chemistry
(Answer any Four questions)

1. a) Define manures and name the different types of manures used for agricultural purpose. 4+6
- b) Briefly describe each of the different types of manures. 10
2. a) What is a Soil Health Card and name the twelve parameters covered in Soil Health Card. 10
- b) What are the aims, objectives and benefits of Soil Health Card scheme? 10
3. a) How do Calcium, Aluminium and Iron result in low phosphorus use efficiency? 10
- b) Describe Phosphorus fixation in relation to Soil pH. 10
4. Explain the sixteen Essential elements required for growth of plants. Classify them based on the amount of nutrient required and their mobility in plants. 6+14
5. Explain the need of Integrated Nutrient Management in present day agriculture. Write critical notes on Bio-fertilizers. 14+6
6. Differentiate between Soil fertility and soil productivity. Classify fertilizers. Briefly explain each one of them with examples. 8+3+9

PART-II
(Objective-20 marks)

B. Agricultural Microbiology

Choose the correct answer :

10x2

1. Which of the following is N_2 fixing bacterium living in association with Sugarcane ?

- a) Acetobacter b) Azotobacter
c) Frankia d) Azospirillum

2. Among the following which is considered as the best indicator of Water pollution ?

- a) Bacillus b) Clostridium
c) E. Coli d) Paramecium

3. Rhizobium has symbiotic association with what of these ?

- a) Legumes b) Non-legume crops
c) Sugarcane d) Paddy

4. Azolla is widely used as nitrogen in which of these fields ?

- a) Paddy fields b) Corn fields
c) Wheat fields d) All of these

5. Neomycin is produced by what of these ?

- a) *S. noursei* b) *S. fradiae*
c) *S. erythraeus* d) *S. venezuelae*

6. Lysozyme treated cells of Gram negative bacteria are called

- a) Protoplast b) Sphaeroplast
c) Cytoplasm d) Mesosomes

7. The endomycorrhizal association is present in how many percentage of plant families ?

- a) 10%
- b) 40%
- c) 85%
- d) Less than 5%

8. Microbes that solubilise fixed Soil phosphorus are called what ?

- a) Phosphorus fixers
- b) Phosphorus solubilisers
- c) Phosphorus Solubilising Microorganism or PSM
- d) None of the above

9. What is the name of the bacteria producing endospore ?

- a) Bacillus
- b) Agrobacterium
- c) E. Coli
- d) Xanthomonas

10. Which of the following is a correct association ?

- a) Polysome : group of golgi complex
- b) Ribosome : electron transport chain
- c) Lysosome : digestive enzyme for intercellular use
- d) Mitochondria : transport materials from the nucleus to the cytoplasm

Serial No.

3079

AGRICULTURE : PAPER-III

Full Marks-100

Time-2 Hours

PART-I

(Descriptive-80 marks)

A. Agricultural Entomology

(Answer any Four questions)

1. What is Integrated Pest Management ? Describe its aims, advantages and disadvantages . 5+15
2. Describe the description, damage and control measures of the following insect pests : a) Gundhi bug in Rice b) Citrus leaf miner 10+10
3. Define 'Economic Threshold' for an insect pest and discuss its relevance in pest management. 20
4. Why is it important to identify the pests and its nature of damages before implementing management practices in crops ? Give suitable reasons and support your answer with suitable examples. 16+4
5. Describe the major insect pests of Cauliflower and their management. What is 'Bordeux mixture' ? 15+5
6. Describe in brief some of the important methods of control of insect pests. What are the basic precautions to be taken while handling and using insecticides ? 12+8

OR

0508

Plant Pathology
(Answer any Four questions)

1. What is Disease occurrence and Epidemic ? Describe the different components of 'Integrated disease Management.' 6+14
2. Define fungus and how does fungi reproduced ? Name four diseases caused by fungi. 16+4
3. Describe the symptoms, damages and the management of the following crop diseases : a) Blast in Rice b) Bacterial wilt in tomato 10+10
4. **Briefly distinguish between :** 5+5+5+5
 - a) Rusts and smuts b) Mildew and White blisters
 - c) Canker and Dieback d) Blight and Damping off
5. What is a Systemic fungicide and how are they introduced ? Mention the ideal characteristics of a systemic fungicide. 6+14
6. Describe the major diseases of Tomato with their causal organisms, symptoms, damages and their management. 20

PART-II
(Objective-20 marks)

B. Agricultural Meteorology

Indicate whether the following statements are either 'True' or 'False':

8 x 2.5

- a) Low temperature is good for increasing rice yield.
- b) Indeterminate (or day neutral) plants are much affected by light duration for blooming.
- c) Cloudy weather is always helpful in increasing the incidence of pests and diseases.
- d) Light affects the plants in four ways namely intensity, quality, duration and direction.
- e) When the atmosphere contains maximum possible of water vapours it is said to be unsaturated at a particular temperature.
- f) Micro-climate is measured by an instrument called 'Assmans physiometer'.
- g) Nitrogen content of the atmosphere surrounding the earth is 70 percent.
- h) Air temperature is recorded from thermometers placed in the Stevenson's screen at two metre above the ground level.

Serial No **4154**

AGRICULTURE : PAPER-IV

Full Marks-100

Time-2 Hours

PART-I

(Descriptive-80 marks)

A. Agricultural Extension

(Answer any Four questions)

1. a) What do you understand by Leadership and Leaders in Agricultural Extension scenario ? 10

b) What are the pros and cons of utilizing the services of rural local leaders in Agricultural Extension ? 10

2. Describe in detail the different components of Extension Teaching methods. 20

3. Describe in detail the functions of the "Farmers' Training Centres" and the mandate, four fold tasks and specific activities of the "Krishi Vigyan Kendras". 5+15

4. What do you understand by the term "Rural Sociology" in Agricultural Extension ? Explain the interrelationship between Rural Sociology and Agricultural Extension in the context of the State of Meghalaya. 6+14

5. What are social Organizations ? Describe in detail the role Social Organizations play in furthering the effectiveness of Agricultural Extension delivery in the State. 5+15

6. Describe in brief the importance and problems of Rural Development in Meghalaya. 20

OR

Agricultural Economics
(Answer any Four questions)

1. Define Agricultural Economics and describe in detail its concepts. 20
2. What is Farm inventory method ? Describe in detail the method of Farm Planning and Farm Budgeting. 5+15
3. What do you understand by Contract Farming ? Enunciate the advantages and disadvantages of Contract Farming in the context of the State of Meghalaya. 6+14
4. Describe the role of Agro-based industries in increasing the income and revenue of the farmers of the State. 20
5. What is Crop Insurance ? List out and describe the Crop Insurance programmes / Schemes prevailing in Meghalaya. 5+15
6. Describe in brief : a) Inflation b) Agricultural Business 10+10

PART-II
(Objective-20 marks)

B. Plant Biotechnology

Choose the correct answer :

10x2

1. The Father of "Tissue culture" is
 - a) Laibach
 - b) Haberlandt
 - c) Bonner
 - d) Gautheret

2. A dividing and undifferentiated mass of cells is called
 - a) Callus
 - b) Embryo
 - c) Explant
 - d) Zygote

3. Advancement in genetic engineering has been possible due to the discovery of
 - a) Oncogenes
 - b) Transposons
 - c) Restriction endonuclease
 - d) Exonucleases

4. DNA fingerprinting was discovered by
 - a) James Watson
 - b) Frederick Fanger
 - c) Alec Jeffreys
 - d) Hargobind Khorana

5. DNA is found in
 - a) Chromosomes
 - b) Plastids
 - c) Mitochondria
 - d) All of these

6. Genetic Engineering is
 - a) Plastic surgery
 - b) Study of extranuclear genes
 - c) Addition or removal of genes
 - d) All of these

7. The first genetically modified fruit authorized for marketing is

- a) Mango
- c) Papaya

- b) Banana
- d) Strawberry

8. The first transgenic crop was

- a) Pea
- c) Strawberry

- b) Tobacco
- d) Cotton

9. The term 'gene' was coined by

- a) Mc Clintock
- c) Johanssen

- b) Morgan
- d) De Duve

10. Geographical Indication is a

- a) Private right & Community right
- b) Community right & Intellectual Property right
- c) Intellectual Property right & Private right
- d) All of the above
