

M.Sc. BOTANY
Third Semester
PLANT PATHOLOGY & MICROBIOLOGY
(MSB - 11)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

Answer any *five* of the following questions:

- a) Write the basic tools and techniques of disease resistant plant development through genetic engineering. (10)
- b) Discuss how abiotic factors influence on the pathogenicity of a disease. What do you mean by inoculum potential of a disease? What is the first-line of defense systems of a plant against pathogens? (5+2+3=10)
- c) Define disease triangle. Establish a relationship between disease cycle and disease triangle of a disease. Justify how this relation may help in better management of a disease. (2+4+4=10)
- d) Write the name and systematic position of the pathogen of blast disease of rice. Write the symptoms, disease cycle and control measures of the disease with suitable diagrammatic representations. (2+8=10)
- e) Write on different techniques of pure culture isolation and preservation for longer periods. What are the chances of contamination during isolation of pure cultures? (4+3+3=10)
- f) Describe the biochemical defence system of plants against plant diseases. (10)

g) Write illustrative notes on: (any *two*) (2×5=10)

- i) Principles of food spoilage and preservation
- ii) Industrial production of citric acid
- iii) Beneficial roles of mycorrhiza in agriculture

h) Differentiate between: (any *five*) (2×5=10)

- i) Bacteriocin vs. Bacteriostatic agents
- ii) Pasteurization vs. Tyndallization
- iii) Industrial fermentation vs. Physiological fermentation
- iv) ISR (Induced Sequence Resistance) vs. SAR (Systemic Acquired Resistance)
- v) Microbial taxonomy vs. Higher plant and animal taxonomy
- vi) Differential media vs. Selective media

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Duration: 20 minutes

Marks – 20

(PART A- Objective Type)

I. Fill up the blanks with appropriate words:

1×20=20

- i)is used as cryoprotectant in microbial culture preservation below freezing point.
- ii) Media used for culturing of virus should not be heat sterilized because virus can be cultured only in
- iii) A pathogenic fungus that kills the host and survives on the dying and dead cells is called
- iv) 'Khaira' disease of rice is due to deficiency.
- v) Symptoms of withering and drooping of a plant starting from some leaves to growing tip occurs suddenly or gradually is called.....
- vi) The period of time between penetration of a pathogen to the host and the first appearance of symptoms on the plant is called
- vii) Hollow and black heart of potato is caused due to lack of
- viii) Fungi that are found in root zone but not inside the root tissues are called.....
- ix) In nitrogen fixing microorganisms, the two component metallo-proteins found in nitrogenase enzyme are and
- x) Characteristic symptom of a disease with a white to gray surface coating of mycelia which can be rubbed off is generally called
- xi) Citrus Canker disease is caused by
- xii) Agar agar is used as agent in culture media.

- xiii) The purpose of streaking in streak plate method is to get.....
- xiv) The best technique to study the diversity of unculturable microbes is.....
- xv) Carl Woese's three domain system of classification was based on
- xvi) Presence of in cell wall makes Oomycetes different from other groups of fungi.
- xvii) In prokaryotic cells, electron transport chain is found in
- xviii) Periplasmic space is found in
- xix) The conversion of Nitrogen gas tois called nitrogen fixation.
- xx) Taxonomically AM fungi come under the class *Zygomycetes* in family
