

2021

MICROBIOLOGY — HONOURS

Paper : DSE-A-3

(Plant Pathology)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer **Question No. 1** and **any three** from the rest.

1. Answer **any ten** of the following questions: 2×10
- (a) What is ergotism?
 - (b) Write the contribution of P.M.A. Millardet in the field of plant pathology.
 - (c) What is hypoplasia? Give example.
 - (d) Give two examples of abiotic agents that cause plant diseases.
 - (e) Which pathogens do not satisfy Koch's postulates and why?
 - (f) Differentiate between biotrophs and necrotrophs.
 - (g) Why the pathogen of Black stem Rust of wheat is called macro-cyclic and heteroecious?
 - (h) Name two quinone compounds which are commercially used as fungicides.
 - (i) What is disease triangle?
 - (j) Write two differences between Rice Tungro Bacilliform Virus (RTBV) and Rice Tungro Spherical Virus (RTSV).
 - (k) Discuss the role of cell wall flavonoids in resisting plant pathogens.
 - (l) Mention one biological control method of Crown gall disease.
 - (m) Which specialized perennating structures are formed by fungal pathogens?
 - (n) Define the terms (i) monogenic resistance and (ii) vertical resistance.
 - (o) Write two symptoms of Coconut Cadang Cadang disease.
2. (a) What do you mean by polycyclic disease cycle? With proper diagram explain it and how it is related to epidemiology? 2+3+1
- (b) What is necrosis? Discuss any two types of necrotic symptoms with the help of suitable illustrations. 1+2
- (c) What is propagule? 1

Please Turn Over

3. (a) Which virus causes Papaya ring spot disease? How this pathogen is transmitted? 1+1
(b) How does nematodes perennate? 2
(c) Discuss in brief the different modes of penetration by fungi in plants. 4
(d) What is meant by fungistasis? 2
4. (a) Name two diseases with their causal agents in which photosynthetic area is usually very much reduced. 2
(b) Why the juice obtained from severely red rot infected sugarcane does not set well on boiling? 2
(c) 'Target board effect' is caused in which disease? Name the causal agent and diagrammatically represent the disease cycle. 3
(d) Mention roles of two bacterial phytotoxins as pathogenicity factors. 2
(e) What is the difference between alternate host and collateral host of a rust pathogen? 1
5. (a) Comment on the symptoms, predisposing factors and disease management of the following diseases: 4+3
(i) White rust of Crucifers.
(ii) Bacterial cankers of Citrus.
(b) State how gibberellins help in overcoming the effects of plant pathogens. 2
(c) What is 'honey dew' stage? 1
6. Write short notes on **any four** of the following: 2½×4
(a) Plant Quarantine Act
(b) Phytoalexins in plants
(c) Disease pyramid
(d) Pathotoxins and Vivotoxins
(e) Bacterial soft rot
(f) Plantibodies
7. (a) Comment on the general mode of action of Phytoalexins. 3
(b) How can bacterial soft rot be developed on vegetables? 3
(c) Describe the important stages of virus-vector interaction in plant disease incidence. 3
(d) Give one example of a disease where transport through phloem is affected. 1
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