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Your Roll No.

B.Sc. (Hons.) / III

A

MICROBIOLOGY – Paper XIII

(Plant Pathology)

(Admissions of 2004 and onwards)

Time : 3 Hours

Maximum Marks : 60

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Attempt Five questions in all.

Q. No. 1 is compulsory.

All questions carry equal marks.

1. (a) Mention the causative agents of the following diseases :
 - (i) Take all disease of wheat
 - (ii) Rice tungro
 - (iii) Corn stunt
 - (iv) Root rot of pines
 - (v) Flax rust
 - (vi) Panama disease of banana

(1×6=6)

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(b) Briefly write about the contributions of any **three** of the following scientists :-

(i) J.E. Van der Plank

(ii) H.H. Flor

(iii) A. Millardet

(iv) K.C. Mehta (2×3=6)

2. (a) Discuss the etiology, epidemiology and control of the apple scab or black stem rust of wheat. (6)

(b) What is a disease progress curve? Explain it with the help of a suitable diagram and comment on its significance. (2)

(c) Give an example of each of the following :

(i) HV toxin

(ii) R gene

(iii) Systemic fungicide

(iv) Autoecious rust (1×4=4)

3. (a) Differentiate between the following pairs : (any five)

(i) Biotrophs and necrotrophs

(ii) Bacterial soft rots and blights

(iii) Soil invaders and soil inhabitants

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(iv) Protectant and eradican chemical

(v) Primary and secondary inoculum

(vi) Macrocytic and microcytic rust

(2×5=10)

(b) How does a disease qualify to be effectively forecast ? (2)

4. (a) What do you understand by a disease pyramid ? What is its significance in plant disease epidemiology ? (4)

(b) Write the etiologic agent and disease control measures for the following plant diseases :

(i) Papaya ringspot

(ii) Tobacco mosaic

(iii) Late blight of potato (2×3=6)

(c) Name any two diseases for which quarantine regulation exist in India. (2)

5. (a) Describe the role of cellulases or pectinases in disease development. (3)

(b) Discuss the role of genetic engineering in developing disease resistance by using pathogen derived genes. (3)

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- (c) List the symptoms, causative agent and control of potato spindle tuber disease. (3)
- (d) Define the following terms giving suitable examples :
- (i) Polyetic pathogens
 - (ii) Cross protection (1½×2=3)
6. (a) Write short notes on the following : (any three)
- (i) HR
 - (ii) Host specific toxins
 - (iii) Crown galls
 - (iv) SAR (3×3=9)
- (b) Discuss the effect of pathogens on host plant respiration in compatible plant – pathogen interactions. (3)