

2018

BOTANY – HONOURS

Paper : CC-1

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.

1. Answer the following questions : 2×5
- (a) What is flagellar basal body?
 - (b) Name one freshwater and one unicellular red algae.
 - (c) What is red snow phenomenon?
 - (d) What is induction? Name one inducing agent.
 - (e) Differentiate viriod and virion.
2. (a) Describe the process of auxospore formation in pinnate diatoms with suitable illustrations. 5
- Or,*
- Write a brief note on ultrastructure of algal plastids and their variation. 5
- (b) Comment on the multiplication of TMV with diagrams. 5
- Or,*
- Discuss with the help of suitable diagrams, the process of endospore development in bacteria. 5
3. Give an outline of Algal classification as proposed by Lee (2008) up to phylum. What are the criteria of Fritsch's classification? 8+2
- Or,*
- Describe the ultrastructure of a cyanobacterial cell with suitable diagrams. Write a brief note on Evolutionary significance of *Prochloron*. 8+2
4. With suitable illustrations describe the structure of bacterial peptidoglycan. State at least four important characteristics of spirochaetes. 6+4
- Or,*
- Discuss about the modes of viral transmission. Enumerate the ultrastructure of bacterial flagella. What is F plasmid? 4+4+2

Please Turn Over

5. (a) Compare the characteristic features of xanthophyta with chlorophyta. What is the other name of class xanthophyceae?
- (b) Cyanobacteria occur in most extreme environments on earth. — Explain the statement. (5+1)+4

Or,

What is genetic recombination? Comment on bacterial recombination with reference to transduction.

2+8

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Paper : CC-2

Full Marks : 50

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1. Answer **any five** of the following : 2×5
- (a) What are PR-proteins?
 - (b) What is 'damping off' in Stem Rot of Jute?
 - (c) What is Hartig net?
 - (d) Distinguish between pandemic and epidemic diseases with examples.
 - (e) Name the different spore forms found in *Puccinia graminis tritici* and the respective host plants in which they are produced.
 - (f) Distinguish between crozier formation and clamp connection.
 - (g) Define systemic acquired resistance in plants.
 - (h) Distinguish between pathogenicity and pathogenesis.
2. Answer **any two** of the following :
- (a) What are the steps of parasexual cycle? How is it different from sexual cycle? 3+2
 - (b) What are foliose lichen? Mention the components of lichen thallus and give their ecological importance. 1+4
 - (c) Give a brief account of the post-penetration development in host by plant pathogens. 5
3. Answer **any three** of the following :
- (a) (i) What do you mean by anamorphic fungi? What type of spores do they produce?
 - (ii) Why is Oomycota considered as unique from other groups of fungi?
 - (iii) How does mycorrhiza help in forestry? (1+2)+3+4
 - (b) (i) Differentiate among sign, symptom and syndrome.
 - (ii) How do pathotoxins contribute in causing plant disease?
 - (iii) What do you mean by systemic fungicides? Give two examples. 3+4+(1+2)

Please Turn Over

- (c) Give a brief illustrated account of the life cycle of *Synchytrium endobioticum*. Justify that it is an endobiotic holocarpic fungus. 8+2
- (d) (i) Discuss the role of phytoalexins in plant defence mechanism.
(ii) Briefly discuss the techniques followed in biological control of plant diseases. 5+5
- (e) (i) Name the causal organism for the disease Late Blight of Potato.
(ii) How the disease cycle operates for Late Blight of Potato?
(iii) What are the different predisposition factors for causing the disease and mention the control measures adopted for this pathogen? 1+3+(2+4)
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2019

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1. Answer the following questions : 2×5
- (a) What are benthic algae? Cite one example.
 - (b) ✓ What are viroids? Give one example.
 - (c) ✓ Differentiate between archaea and eubacteria.
 - (d) What is Rhizoplast?
 - (e) What is SDV?
2. ✓ (a) Write a brief note on the life cycle pattern encountered in Algae with suitable example. 5
- Or,*
- Make comments on the contributions of Professor T.V. Desikachary and H. D. Kumar. 5
- ✓ (b) Draw and describe the different stages of bacterial growth curve in Batch culture. 5
- Or,*
- Classify plant viruses based on the type of nucleic acid with suitable examples. 5
3. Give an outline of the ultrastructure of algal flagella with suitable illustration and comment on its importance in algal phylogeny. In which eukaryotic algal group flagella is lacking? 6+3+1
- Or,*
- ✓ Draw and describe the structure of cyanobacterial heterocyst. Add a note on its formation and biological functions. 4+6
4. Compare lytic and lysogenic cycle. What is the significance of lysogeny? What are Pili? What are its functions? 6+2+1+1
- Or,*
- ✓ How cell wall of Gram-positive bacteria differ from that of Gram-negative bacteria? Enumerate the major categories of plasmid found in bacterial cell. 6+4
5. What is the basis of Lee's Classification? State basic characters of Heterokontophyta. Comment on the thallus organisation of members of this group. 3+3+4
- Or,*
- ✓ (a) Compare the characteristics of actinobacteria and enterobacteria.
- ✓ (b) Explain the role of Hfr in genetic recombination. 5+5

2019

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Full Marks : 50

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1. Answer **any five** of the following : 2×5
- (a) What is VAM?
 - (b) Who has discovered Parasexuality and in which organism?
 - (c) What is plasmodium?
 - (d) What is dolipore septum?
 - (e) Distinguish between hypertrophy and hyperplasia.
 - (f) What is Integrated Disease Management?
 - (g) Differentiate Necrotroph from Biotroph.
 - (h) Define polycyclic disease with example.
2. Answer **any two** of the following :
- (a) Describe briefly different hyphal forms in fungi. 5
 - (b) What is Etiology? Mention the different steps followed in Koch's Postulates. 1+4
 - (c) What is fruticose lichen? Discuss the economic importance of lichen. 1+4
3. Answer **any three** of the following :
- (a) (i) What is heterothallism? How does it differ from homothallism?
(ii) Discuss, in brief, different types of heterothallism found in the members of fungi. (1+2)+7
 - (b) (i) Distinguish between SAR and ISR.
(ii) What are the components of a disease triangle? Mention their role in development of disease.
(iii) What is sporadic disease? 5+(1+3)+1
 - (c) (i) Give a brief account on plant quarantine.
(ii) Name a biocontrol agent.
(iii) State the symptoms of brown spot of rice. Mention its causal organism. 5+1+(3+1)

Please Turn Over

- (d) (i) Describe the sexual reproduction of *Rhizopus* with suitable sketches.
- (ii) Give a brief note on fruit body of *Ascobolus*. 6+4
- (e) (i) What is meant by heteroecious rust?
- ✓(ii) Discuss, in brief, the disease cycle of Black Stem rust of wheat mentioning the name of the pathogen.
- ✓(iii) State the measures to be adopted to control the disease. 2+(4+1)+3
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2020

BOTANY — HONOURS

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Full Marks : 50

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1. Answer the following questions : 2×5
- (a) Why members of archaebacteria are termed 'extremophiles'?
 - (b) Why prions are important?
 - (c) What is F-factor? How does it differ from F-prime?
 - (d) What is phytoplankton? Cite one example.
 - (e) Name an alga with chlorophyll d.
2. (a) State the salient features of xanthophyta with examples. 5
- Or,**
- Comment on the criteria and basis of Fritsch's classification. 5
- (b) Illustrate the process of natural transformation in bacteria. 5
- Or,**
- Mention the physicochemical structure of TMV with labelled sketches. 5
3. Describe the ultrastructure of algal plastids with labelled sketches. What is CER? Mention its significance. 6+2+2
- Or,**
- Describe Auxospore formation in Pennales. Write a note on ecology of Cyanobacteria and its importance. 6+4
4. (a) Explain the formation and structure of bacterial endospore.
- (b) Write a note on one-step growth curve of virus. 4+3+3
- Or,**
- (a) Compare firmicutes and mollicutes with suitable examples.
- (b) Briefly explain the different modes of transmission of plant virus. 5+5

Please Turn Over

5. Write a note on origin and evolution of sex in algae. Enumerate the post fertilization changes in *Polysiphonia*. 5+5

Or,

- (a) Compare and contrast the characters of Archaeobacteria and Eubacteria.
(b) Enumerate the ultrastructure of a bacterial flagellum with labelled sketches. 5+5
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2020

BOTANY — HONOURS

Paper : CC-2

Full Marks : 50

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1. Answer **any five** questions from the following : 2×5
- (a) What is eucarpic fungus?
 - (b) What is plectenchyma?
 - (c) What is 'Hartig Net'?
 - (d) Define Foliose Lichen.
 - (e) Define endemic disease with example.
 - (f) Distinguish between Pathogenecity and Pathogenesis.
 - (g) What is Pathotoxin?
 - (h) What is causal complex?
2. Answer **any two** of the following :
- (a) Discuss the role of mycorrhiza in agriculture. 5
 - (b) State the role of phytoalexin in plant defence. 5
 - (c) What is parasexuality? Name the discoverer of parasexual cycle. Mention the sequence of events of parasexual cycle. 1+1+3
3. Answer **any three** of the following :
- (a) (i) Name the different types of sexual spores found in fungi.
 - (ii) Discuss the different types of sexual reproduction observed in fungi with suitable examples. 2+8
 - (b) (i) Discuss the mode of asexual reproduction of *Synchytrium* with diagram.
 - (ii) Give the internal structure of fruit body of *Agaricus*. 6+4
 - (c) (i) Give a brief account of Integrated Disease Management.
 - (ii) State the symptoms of stem rot of jute. Mention its casual organism. 6+(3+1)

Please Turn Over

- (d) (i) Mention the general characteristics of Myxomycota and Ascomycota.
(ii) State the ecological significance of lichen. (2½+2½)+5
- (e) (i) Name the causal agent of late blight of potato.
(ii) Write down the symptoms of the disease.
(iii) Describe its disease cycle and control measures. 1+2+(4+3)
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