DEPARTMENT OF BOTANY

NAMBOL L. SANOI COLLEGE, NAMBOL

QUESTION BANK

5TH Semester B0T: SE H--505 (HONOURS)

PREVIOUS 5 YEARS (2016-2020)

PAPER-V / BOT: SE H-505: MICROBIAL DIVERSITY, MICROBES AND HUMAN WELFARE, PLANT PATHOLOGY, PLANT DISEASES MANAGEMENT, BRYOLOGY AND PTERIDOLOGY

UNIT-1: MICROBIAL DIVERSITY

VERY SHORT ANSWER TYPE

(1 MARK QUESTIONS)

(a) Of which vitamin are yeast cells the best source? (2016)

(b) Name a fungal genus, some species of which produce an important antibiotic and some other species are used in chees making. (2016)

(c) What is peplomer? (2017)

(d) Why is virus not included in three domain system of classification? (2017)

(e) What is a facultative anaerobe? (2018)

(f) Define chemoheterotroph. (2018)

(g) Give one point of difference between fungi and protozoa. (2019)

(h) Who discovered prion? Name a disease caused by prion on human. (2019)

(i) Mention the main structural component of bacterial cell wall. (2020)

(j) What are viriods? (2020)

SHORT ANSWER TYPE

(3 MARKS QUESTIONS)

(a) Differentiate between cyanobacteria and other photosynthetic bacteria with three points. (2016)

(b) Write the distinguishing features of mycoplasma. (2016)

(c) How does a prion cause and spread diseases? (2017)

(d) *Halobacterium sp*. Grows in the dead sea where most organisms cannot grow but it cannot grow in loktak lake where most aquatic organisms will flourish. Why? (2017)

(e) Survival period of microorganisms in the air depends on many factors. Explain. (2018)

(f) If a freshwater lake is supplied with nitrogen and phosphorus from industrial and domestic waste, what will be the consequences? (2018)

(g) Give any three characteristics of virus as given by Lwoff and tournier (1966). (2019)

(h) What types of microbes found in air are relevant to public health? Comment on this. (2019)

(i) Write three important contribution of Lious Pasteur in microbiology. (2020)

(j) Draw the phylogenetic tree showing three Domains-Archaea, Bacteria and Eukarya. (2020)

ESSAY TYPE (12 MARKS QUESTIONS)

1. Why are endospores very resistant to harsh condition? Describe endospore formation with diagrams.3+6+3=12 (2016)

2. Describe the five kingdom classification mentioning characteristics of each kingdom. On what three criteria did whittaker classify organism into five kingdoms? Why do many biologists not accept his five kingdom classification ?3+6+3=12 (2017)

3.Describe characteristic features of Archaea with reference to habitat, cell wall and plasma Membrane.4+4+4=12 (2018)

4. a) Describe three domains of living organisms with regards to nuclear organisation, cell wall composition, organelles, membrane lipids and metabolism. (2019)

Or

b) Discuss microbiology of water in special reference to the agents that make it unfit for consumption. 5 (2019)

4. a) What are the criteria on which R.H.Whittaker classified living organisms into five

kingdoms? Discuss the draw-backs of five-Kingdom classification.3+3=6 (2020)

or

b) Explain with diagrams the process of endospore formation in bacteria. 6 (2020)

5. a) In what ways are actinomycetes different from fungi? Mention the economic importance of actinomycetes.4+2=6 (2020)

or

b) Discuss the role of microorganism in nitrogen cycle. Draw a nitrogen cycle.3+3=6 (2020)

UNIT II: MICROBES AND HUMAN WELFARE

VERY SHORT ANSWER TYPE

(1 MARK QUESTIONS)

(a) What is the difference between constitutive antibiotics and wound antibiotics? (2016)

(b) What is Cobb scale? (2016)

(c) What property of *Bacillus thuringiensis* makes it a good biopesticide? (2017)

(d) What is phytoremediation? (2017)

(e) Name two bacteria, which are used useful in vinegar industry. (2018)

(f) Why is biological control often preferable to the use of chemical pesticides. (2018)

(g) Name a bacterium used for the production of vitamin B12. (2019)

(h) What is biofuel? (2019)

(i) Who discovered penicillin? (2020)

(j) Name the area (Zone) around the soil where microbial growth and activity are maximum. (2020)

SHORT ANSWER TYPE

(3 MARKS QUESTIONS)

(a) Why are Mn^{2+} and Fe^{3+} used in low concentration in the microbial production of citric acid? (2016)

(b) Write a short note on the microbial production of enzymes. (2016)

(c)How does 'nisin'a bacteriocin check food spoilage? (2017)

(d)State three factors that determine the outcome of most host-parasites relationship. (2017)

(e) If an orange is kept for too long, it smell foul, looks rotten. What is the process that causes this phenomenon? Mention both abiotic and biotic factors contributing to this process. (2018)

(f) Microbes play an important role in agriculture in many ways. Comment. (2018)

(g) How are natural antibiotics produced in pharmaceutical industry? (2019)

(h) Mention a disease each caused by virus, bacteria and fungi on human and give scientific name of the pathogen. (2019)

(i) Why are microbes regarded as an ideal organism in industry? (2020)

(j) Discuss the role of mycorrhizal fungi in enriching soil fertility. (2020)

ESSAY TYPE (12 MARKS QUESTIONS)

1. Discuss the qualities essential in a good antibiotic. Give names of four therapeutically important antibiotics and their applications. 8+4=12 (2016)

2. Why is it preferred producing microbial enzymes to extracting from plant and animal cells? Describe both the semisolid media culture and submerged culture methods of the production of microbial enzymes through fermentation.4+8=12 (2017)

3. Describe the physical methods of food preservation. Highlight the advantages and disadvantages of food preservation.8+4=12 (2018)

4. a) Describe the roles of microbes in enriching soil fertility and crop productivity. 6 (2019)

b) Explain various causes of food spoilage by giving more emphasis to microbes. 6 (2019)

5. a) What is food spoilage? Write the process of any two traditional methods of food preservation. 2+4=6 (2020)

Or

b) Write the long form of SARS-CoV-2. Will the SARS-CoV-2 pandemic increase the importance of environmental sustainability with special reference to human health and disease? Discuss.1+5=6 (2020)

6. a) Name the different classes of biopesticides.Discuss the advantages and disadvantages of using biopesticides. 2+4=6 (2020)

or

b) What are antibiotics? Name four antibiotics and the corresponding organism from which they are extracted. 2+4=6 (2020)

UNIT III: PLANT PATHOLOGY

VERY SHORT ANSWER TYPE

(1 MARK QUESTIONS)

(a) What is Cobb scale? (2016)

(b) Why are vegetative propagules considered to have higher potentiality for spreading plant diseases as compared to true seeds? (2016)

(c) What is the casual organism of 'damping off 'of seedlings? (2017)

(d) What is necrosis? (2017)

(e) Give the composition of' Bordeaux mixture'. (2018)

(f) What is the casual organism of citrus canker? (2018)

(g) What role does a collateral host play in the disease cycle of a pathogen? (2019)

(h) Distinguish between penetration and infection. (2019)

(i) Differentiate between Symptom and syndrome giving one point. (2020)

(j) Define virulence. (2020)

SHORT ANSWER TYPE

(3 MARKS QUESTIONS)

(a) Distinguish between Pathogen Dominant diseases (PDD) and Host Dominant diaeases (HDD). (2016)

(b) How will you identify pea plants infected with powdery mildew? Why is late planting not suggested for peas which are susceptible to powdery mildew? (2016)

(c) What is the most common disease found in the paddy filed of Manipur? What are the symptoms and control measures of the disease? (2017)

(d) Write three differences between uredospore and teleutospore of *puccinia graminis*. (2017)

(e) Give reasons why yields of wheat plants having black stem rust disease are reduced. (2018)

(f) Draw the disease cycle of 'white rust of crucifers.' (2018)

(g) Distinguish between late and early blight of potato on the basis of pathogen and symptoms.

(2019)

(h) Write a note on Robert Koch's contribution of host-pathogen relationship. (2019)

(i) Define necrotic, atrophic and hypertrophic symptoms of diseased plant. (2020)

(j) Classification of plant disease on the basis of causal organism is the most useful criteria. Justify. (2020)

ESSAY TYPE (12 MARKS QUESTIONS)

1. a) Define pathogenesis. What are the attributes of a successful pathogen? Differentiate between mesobiotic and biotic pathogens by giving examples.2+3+3=8 (2016)

   b) Draw and label the disease cycle of white rust of crucifers. 4 (2016)

2. a) What is the casual organism of late blight of potato? How will you diagnose it? Suggest four methods of control for the disease. 2+3+3=8 (2017)

   b) Describe the mechanism of pathogen dispersal of tobacco mosaic virus. 4 (2017)

3. Classify plant diseases on the basis of symptoms with a brief description of the types of diseases. What purposes are served by classifying plant diseases? 8+4=12 (2018)

4. Describe the disease cycle of stem rust disease of wheat with appropriate word diagram. Explain how the disease recurs annually in the northern plains of india.8+4=12 (2019)

5. a) Define pathogenesis. What are the attributes of a successful pathogen?2+4=6 (2020)

or

   b) List the symptoms and causal organism of late blight of potato.Write three control measures.3+3=6 (2020)

7. What are Koch's postulates? Koch's postulate is not applicable to organism like virus and protozoa. Give reasons. 4+2=6 (2020)

Or

   b) What is the casual organism of white rust of crucifers? List the symptoms and draw the disease cycle.1+5=6 (2020)

UNIT IV: PLANT DISEASE MANAGEMENT

VERY SHORT ANSWER TYPE

(1 MARK QUESTIONS)

(a) What are foundation seeds? (2016)

(b) What are the botanical insecticides? (2017)

(c) Planting of leguminous plants increases soil fertility. Give reasons. (2017)

(d) Give one point of difference between contact and system fungicides. (2018)

(e) Write one pre-quarantine requirement in India. (2018)

(f) How is seed certification helpful in controlling plant diseases? (2019)

(g) What is the concept of Integrated Pest Management (IPM)? (2019)

(h) Give one point of difference between Protectant fungicides and Eradicant fungicides. (2020)

(i) Define plant quarantine. (2020)

SHORT ANSWER TYPE

(3 MARKS QUESTIONS)

(a) Despite huge advantages of biological control of diseases, there is still an important role for fungicides in plant disease management. Explain. (2016)

(b) Why is knowledge of disease cycle necessary for developing effective disease management strategies? (2016)

(c) All plant diseases result from a three-way interaction between three components. Illustrate. (2017)

(d) There are certain eligibility criteria for seed certificate. State them. (2017)

(e) Write the principle of 'silver bullet 'approach of biocontrol of plant diseases. (2018)

(f) What are the disadvantages /demerits of genetically modified crops? (2018)

(g) Prophylaxis is better than therapeutic cure in controlling plant diseases. Justify the statement. (2019)

(h) What is plant quarantine? Where is its national headquarter located and where is in Manipur, Plant quarantine station (PQS) located? (2019)

(i) Illustrate the interaction of the three components leading to disease development in plants. (2020)

j) What are the eligibility requirements of seed certificate? (2020)

ESSAY TYPE (12 MARKS QUESTIONS)

1. a) Differentiate between vertical resistance and horizontal resistance of plants to diseases.3 (2016)

b) State the problems encountered in breeding for disease resistance.6

c) Discuss the probable causes of 'yield penalty' due to disease resistance.3

2. a) How are genetically modified plants helpful in producing disease-resistant plant? 3

b) What is IPM? How is it to be implemented? Give reasons for not using chemical insecticides, pesticides and fungicides in IPM programme. 2+4+3=9 (2017)

2. a) Describe cultural method of plant disease control. 6 (2018)

b) There are many breeding practices for developing disease resistance crop. Which one is considered the most effective by you? Explain. 6

3. Give an account of fungicide classification on the basis of their chemical nature with examples.12 (2019)

4. a) How are genetically modified plants beneficial in preventing plant disease? Mention the disadvantage of GMP.4+2=6 (2020)

Or

b)" Mixed cropping reduces the spread of disease. "Justify the statement. 6

6. a) State the problems encountered in breeding for disease resistance. What are vertical and horizontal resistances of plants to disease?4+2=6 (2020)

or

b) Discuss the biological management of plant disease. 6

UNIT V: BRYOLOGY AND PTERIDOLOGY

VERY SHORT ANSWER TYPE

(1 MARK QUESTIONS)

(a) Name the bryophyte which is used in the manufacture of surgical pads. (2016)

(b) Distinguish between haplostele and actinostele with one point. (2016)

(c) Name a bryophyte whose archesporium is endothecial in origin. (2017)

(d) Give one reason why pteridophytes fail to establish as successful land plants. (2017)

(e) What significant role do the bryophytes play in plant succession? (2018)

(f) Name the type of stele in pteridophytes, where vascular cylinder is medullated. (2018)

(g) Give one example each of a leptosporangiate and eusporangiate fern. (2019)

(h) Difference between perichaetium and perigynium. (2019)

(i) Name the bryophyte that adapted to complete its life cycle under water. (2020)

(j) Who proposed Telome theory? (2020)

SHORT ANSWER TYPE

(3 MARKS QUESTIONS)

(a) How will you differentiate a solenostele from that of a dictyostele? (2016)

(b) Write a short note on fossil bryophytes giving at least three examples. (2016)

(c) Give three evidences to show that bryophytes are amphibians of plant kingdom. (2017)

(d) Briefly describe the 'Lycopsid line of evolution' as suggested by *zimmermann.* (2017)

(e) Bryophytes are more evolved than algae. Explain. (2018)

(f) Write a short note on 'Telome theory'. (2018)

(g) Distinguish between protostele and siphonostele with labelled diagrams. (2019)

(h) Name one fern each of the following uses: (2019)

(i) Socio-religious ceremony

(ii) Biofertilizer

(iii) Edible

(i) State three evidence showing amphibious nature of bryophytes. (2020)

(j) Give the xerophytic characters of *Equisetum.* (2020)

ESSAY TYPE (12 MARKS QUESTIONS)

1.Describe the evolutionary trends of sporophytes in bryophytes giving suitable examples and labelled diagrams.9+3=12 (2016)

Or

What is heterospory? Illustrate your answer with reference to *selaginella* with appropriate diagrams. Discuss the significance of heterospory.1+5+3+3=12 (2017)

2.Taking *Selaginella* as an example, elucidiate the prerequisite conditions of seed habit. Draw a

graphic representation of its life cycle. 8+4=12 (2018)

Or

Enumerate the evolutionary tendencies exhibited by gametophyte and sporophyte of *Anthoceros*. Draw a neat labelled diagram of the sporogonium of *Anthoceros.* 8+4=12

3. Give an account of the economic importance of bryophytes. 6 (2019)

4. Enumerate the affinities and differences of pteridophytes with and from gymnosperm. 6

5. Discuss the theory of progressive sterilization in explaining evolution of sporophytes among bryophytes with suitable labelled diagrams.12

6. a) Enumerate the affinities and differences between bryophytes and Pteridophytes.6 (2020)

Or

b) Explain the two theories regarding the origin of siphonostele from prostele. Draw and label an ectophloic siphonostele. 4+2=6

7. a) What is heterospory? Discuss the significance of heterospory in evolution of seed habit. 2+4=6 (2020)

b) Describe in brief the two theories regarding the evolution of gametophytes in bryophytes. 6