


Name:			
Enrolment No:			
<p align="center"><b>UPES</b></p> <p align="center"><b>End Semester Examination, May 2025</b></p> <p> <b>Course: Agricultural Microbiology and Plant Pathology</b>      <b>Semester: IV</b>  <b>Program: B.Sc. Microbiology</b>      <b>Time: 03 hrs.</b>  <b>Course Code: HSMB2033</b>      <b>Max. Marks: 100</b> </p>			
<b>Instructions:</b>			
<p align="center"><b>SECTION A</b> <b>(5Qx4M=20Marks)</b></p>			
S. No.		<b>Marks</b>	<b>CO</b>
	Statement of question		
Q 1	<b>Fill in the blanks</b>  A. _____ is a soilborne fungus that causes vascular wilts in many crops. B. The _____ is the part of the plant where root knot nematodes form galls. C. _____ is a term for the death of tissue in a localized area on leaves or fruits. D. _____ are chemical substances used to control fungal pathogens.	<b>4</b>	<b>CO4</b>
Q2	Match Column A with Column B <div style="display: flex; justify-content: space-between;"> <div> <b>Column A</b>  i. Puccinia graminis  ii. Tobacco Mosaic Virus  iii. Citrus canker  iv. Fusarium wilt </div> <div> <b>Column B</b>  A). Soilborne fungal disease  B). Rust of wheat  C). Viral disease  D). Bacterial disease </div> </div>	<b>4</b>	<b>CO3</b>
Q3	<b>Write True/False for the below statements</b>  A. PGPR must always live inside plant cells to promote plant growth. B. PGPR have no role in protecting plants against diseases. C. Some PGPR can help plants tolerate abiotic stresses like drought and salinity. D. PGPR can induce systemic resistance in plants, helping them defend against pathogens.	<b>4</b>	<b>CO2</b>
Q4	Fill in the blank  A. _____ is a genetically modified crop that contains Vitamin A precursors.  B. _____ is a second-generation biofuel made from non-food biomass.	<b>4</b>	<b>CO5</b>

	C. _____ is the technique used to culture genes in a bacterial vector for GMO development.		
	D. The introduction of Bt gene in plants provides resistance against----- -----		
Q5	Write at least two examples of feedstocks used to prepare following types of biofuel.  A. 1 <sup>st</sup> generation biofuel  B. 2 <sup>nd</sup> generation biofuel	4	CO5
<b>SECTION B</b> <b>(4Qx10M= 40 Marks)</b>			
	Statement of question: <b>answer any four</b>		
Q6	a. Define epiphytotic and sporadic plant diseases. b. Describe the phases of plant infection. c. What types of structural defense mechanisms plant use to prevent infection?	2+4+4=10	CO1
Q7	a. Write the name of two bacteria that cause plant diseases. b. How do fungal pathogens transmit? c. How can nematode plant diseases be controlled?	2+3+3=10	CO2
Q8	a. What is disease triangle? b. Write the general principle of plant disease management. c. Describe the symptoms of viral and viroid plant diseases.	2+4+4=10	CO2
Q9	a. What are the significances of using vermicompost? b. Write the physical, chemical and microbiological characteristics of vermicompost.	4+6=10	CO3
Q10	a. Describe the phases of composting. b. Write name of four composting methods.	6+4=10	CO1
<b>SECTION-C</b> <b>(2Qx20M=40 Marks)</b>			
	Statement of question: <b>Answer any two.</b>		
Q11	a. Write your views on the environmental significance of GMO. b. Write a short note on <i>BT</i> cotton. c. Compare bio-controlling agents with chemical agents d. Discuss how biocontrol agents are applied on agricultural fields.	5+5+5+5=20	CO3
Q12	a. What is the full form of PGPR? b. Do you agree that biofertilizers are sustainable and eco-friendly over chemical fertilizers? Explain your answer. c. Describe the mechanisms of biofertilizers for plant growth promotion. d. What should be the ideal properties for a carrier materials of a biofertilizer? e. Write a short note on VAM.	2+5+6+4+3=20	CO2
Q13	a. Define “Agrofuel”.	2+5+5+5+3=20	CO3

	<ul style="list-style-type: none"> <li>b. Do all renewable energies are “green”? explain your answer with example.</li> <li>c. Among 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> generation biofuels, which one is more sustainable and why?</li> <li>d. What is the prospect of biofuel in future?</li> <li>e. What are the advantages of biofuel?</li> </ul>		
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