



Braitwate University Royal Ports

BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – M.Sc.(MB)-2023
Course Name – Plant-Microbe Interactions
Course Code - MMBC303
(Semester III)

Full Marks : 60 Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

- Choose the correct alternative from the following :
- (i) Correlate the following statements that best describes a habitat.
 - a) The specific role and position of a species within an ecosystem.
 - c) The interactions between different species within a community.
- b) The physical and biological environment in which a species lives.
- d) The process of change in the composition of a community over time.
- (ii) Select reasons for the microorganisms to form biofilms
 - a) To increase susceptibility to antibiotics
 - c) To enhance resistance to environmental stressors
- b) To inhibit cell-cell communication
- d) To reduce cellular metabolism
- (iii) Select from the following that is a common example of a biofilm-related infection in humans.
 - a) Influenza

b) Common cold

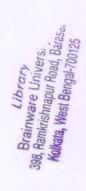
c) Dental plaque

- d) Malaria
- (iv) Select the role played by "pili" in biofilm formation.
 - a) They are involved in quorum sensing.
- b) They allow bacteria to move within the biofilm.
- c) They facilitate initial attachment to surfaces.
- d) They serve as energy sources for biofilmforming bacteria.
- (v) Choose the role that efflux pumps play in biofilm antibiotic resistance.
 - a) They facilitate antibiotic penetration into
 - the biofilm.
 c) They break down antibiotics into harmless
- They pump antibiotics out of the biofilm.
- c) They break down antibiotics into harmless compounds.
 (vi) Predict the main enzyme component of Sanger sequencing.
 - a) Helicase

b) Polymerase

c) Nuclease

d) Gyrase



(vii)	Choose from the followings: Soredia is a type o	f	
	a) Asexual reproduction c) both	b) Sexual reproduction d) none	
(viii)	State the association which involves the exchartwo species	nge of nutrients (metabolite) between	
	a) mutualism	b) syntrophism	
/iv)	c) commensalism Indicate the contribution of microorganisms in	d) antagonism	
(1//)	a) Recycle nutrition stored in organic matters	b) Generate Oxygen in atmosphere	
	to inorganic form c) Allows herbivore animals to get nutrition from poor quality food	d) All of the these	
(x)		icrobial inoculants.	
	a) Staining	b) Catalase test	
	c) PCR	d) Soil pH measurement	
(xi)	Name the system responsible for plant-microb stimuli.	e signaling in response to external	
	a) Photosynthesis	b) Two-component signal transduction	n system
/\	c) Digestive system	d) Circulatory system	
(XII)	Name a non-symbiotic nitrogen fixer.	E ALESSA DELL	
	a) Rhizobium c) Mycorrhiza	b) Azotobacter d) Legume	
(xiii)	Choose the primary succession in microbial co		
	a) The stage where diverse microorganisms establish stable interactions c) The final stable and mature stage of	b) The initial colonization of previousl uninhabited or disturbed habitatsd) The phase characterized by complete	ex
Lein	microbial community development Select the purpose of studying microbial succe	microbial interactions and nutrient	cycling
(XIV)			
	To develop new antibiotics	 b) To understand nutrient cycling and ecosystem dynamics 	
(xv)	c) To improve agricultural practices d) To identify new species of microorganism l) Choose which of the following is an abiotic factor that influences microbial succession?		
	a) Presence of other species	b) pH levels	
	c) Competition among microorganisms	d) Cooperation among microorganism	ns
		up-B	derwind i
	(Short Answer	Type Questions)	3 x 5=15
	alistati ju	Control and and and and and	(2)
3. S	xplain the concept of seed endophytes. Write the ummarize the key characteristics of Type I survive size III.		(3)
4. R	ypically exhibit this pattern? ecall the reasons of biofilm formation and associately a stresses.	ciation of increased resistance to	(3)
5. D	escribe the positive and negative influence of p	hyllosphere on plant.	(3)
6. A	nalyze the process of prevention of early blight	of tomato by talc-based formulation. OR	(3)
E	xplain Systemic Acquired Resistance(SAR) in pla	nt defense mechanism.	(3)
	Gro	oup-C	
		Type Questions)	5 x 6=30

7. Write the role of mycorrhizal fungi in enhancing plant growth. How do mycorrhizae form	(5)
Mycorrhizal fungi form symbiotic relationships with plant roots.	
8. Explain MAMPs and PAMPs, and how do they contribute to plant immunity?	(5)
9. Explain the significance of signaling pathways in plant defense against pathogens. Explain the ethylene signaling pathway in plant defense.	(5)
10. Explain with diagrams how to perform DNA or RNA sequencing using Next Gen sequencing techniques	(5)
11. Explain the application of biofertilizers in agriculture and forestry. How do beneficial microorganisms enhance soil fertility and plant growth? Provide examples of biofertilizers and their specific functions.	(5)
12. Summarize the mechanism through which PGPR can promote plant growth directly. OR	(5)
Justify the advantages and limitations of Sanger sequencing.	(5)
***************************************	Versity Baras

Brainware University 125 Brainware University 100 25 398 Rainware Nest Rengal 700 25