

--	--	--	--	--	--	--	--	--	--



# MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

## III SEMESTER B.TECH. (BIOTECHNOLOGY)

### END SEMESTER EXAMINATIONS, NOV/DEC 2017

SUBJECT: INDUSTRIAL MICROBIOLOGY [BIO 2103]

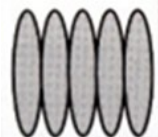
REVISED CREDIT SYSTEM  
(23/11/2017)

Time: 3 Hours

MAX. MARKS: 50

#### Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

1A.	Which kingdom fits both the following descriptions: (a) The members derive nutrition through either photosynthetic mode or absorptive mode. (b) The members can reproduce either asexually or sexually. Also, name the method of classification which uses these parameters as the basis.	2
1B.	The presence of algae in water bodies is highly problematic under certain conditions, but, turns favourable under a different set of conditions. Enlist four such conditions for the first case and two such instances for the second case.	3
1C.	How does <i>Bacillus popilliae</i> ensure its destructive action against <i>Popillia japonica</i> ? State a couple of advantages and disadvantages, both, in the administration of <i>B. popilliae</i> .	5
2A.	How would this bacterial arrangement be known as? Cite an example. 	2
2B.	Is it ever possible that two evolutionally-unrelated organisms may have similar values of G + C mol%? Why or why not?	3
2C.	Platinum could be used in a technique to characterize and enhance the details of bacterial cell structure in a certain form of microscopy. How can this be achieved? Support your answer with a schematic diagram.	5

<b>3A.</b>	Having learnt the different types of gametogenesis of fungal spores and various types of sexually-formed fungal spores, correlate the different spores with the type of gametogenesis.	<b>3</b>
<b>3B.</b>	The nucleus and the cytoplasm in which it is embedded is unique in a way in protozoans. Can you reason out how?	<b>3</b>
<b>3C.</b>	A person who reported chronic cough was diagnosed with a helminthic infection of the lungs. What is he suffering from? Outline the pathogenesis of the infection, the person is afflicted with.	<b>4</b>
<b>4A.</b>	There is a certain method by which spherical oogonia and elongate antheridia join to form a diploid zygote. What is the name of the resulting spores? Elucidate the method of their formation.	<b>4</b>
<b>4B.</b>	In the batch growth studies of bacteria, how many transitional periods do you observe and why do they occur? Is it feasible to make all the bacterial cells in a given batch to grow in tandem with each other, in all the phases? If so, devise a method to achieve the same.	<b>6</b>
<b>5A.</b>	What is the common application of <i>Mycorrhizae</i> , <i>Azospirillum</i> , <i>Azotobacter</i> , <i>Rhizobium</i> , <i>Sesbania</i> and <i>Azolla</i> ? How does it prove beneficial relative to synthetic formulations for the same application?	<b>4</b>
<b>5B.</b>	Present a diagram showing the construction of a raceway pond for SCP production. How are enzymes made use of in the detergent industry?	<b>6</b>