



B.A. / B.Sc. Part - I  
Supplementary Examination - 2017

Subject: Microbiology-I  
PAPER: A (Fundamentals of Microbiology)

TIME ALLOWED: 45 min.  
MAX. MARKS: 28

Instructions: Part I is Objective and should be on a separate sheet with space for Roll No. and Name. Q # 1 and Q # 2 in part I are compulsory and Time for Part I is 45 minutes. Cutting, overwriting and use of ink remover is not allowed.

Sr. No.	PART I	Marks
	<b>Q1 and Q2 are Compulsory</b>	
Q1 a).	State whether the statement is True or False.	7
	i). Louis Pasteur discovered the process of microbial fermentation. ii). Edward Jenner first time isolated the causal agent of tuberculosis. iii). Fluorescent microscopy is used to study microbes in living state. iv). Thermophiles would be expected to grow at high temperature range. v). Resolving power of a light microscope is the function of the wavelength of light used and numerical aperture of the lens system. vi). Microbial control methods that kill endospores can be used for sterilization. vii). The most common pathway of glucose catabolism is Entner-Doudoroff pathway.	
b).	Fill in the blanks by using suitable words.	7
	i). In 1880 _____ isolated the causal agent of chicken cholera and grew it in pure culture. ii). The basic limitation of the bright-field microscope is one not of magnification but of _____. iii). The field of soil microbiology was opened in the late 1880s by _____. iv). Bacteria that are surrounded with lateral flagella are called _____. v). The coloration of bacteria by applying a single solution of stain to a fixed smear is termed _____. vi). _____ is an example of prothecate bacteria. vii). The typical end products of complete aerobic cell respiration are carbon dioxide, water and _____.	

i). Which of the following stains is used frequently to identify *Mycobacterium* and other bacteria whose cell walls contain high amounts of lipids?

- (a). Gram stain (b). Schaeffer-Fulton stain  
(c). Acid-fast stain (d). Spore stain

ii). What is the name for the field of study established by Semmelweis and Snow in the mid 1800s?

- (a). Immunology (b). Bacteriology  
(c). Virology (d). Epidemiology

iii). Which scientist first disproved spontaneous generation by showing that maggots only appear on decaying meat that has been exposed to flies?

- (a). Lister (b). Redi  
(c). Pasteur (d). Koch

iv). The addition of which of the following would change a chemically defined medium into a complex medium?

- (a). Biotin (b).  $K_2HPO_4$   
(c). Maltose (d). Yeast extract

v). Resolving power is the ability of a microscope to:

- (a). Estimate cell size (b). Magnify an image  
(c). See two close objects as separate (d). Keep objects in focus

vi). Capsules are similar to pili because both:

- (a). Contain DNA (b). Are made of protein  
(c). Contain dextran fibers (d). Permit attachment to surfaces

vii). A bacterial species generation time would be determined during the \_\_\_\_\_ phase:

- (a). Decline (b). Lag  
(c). Log (d). Stationary

**viii). During aerobic cell respiration most of the energy is produced during:**

- (a). Krebs cycle
- (b). Glycolysis
- (c). Fermentation
- (d). Electron transport chain

**ix). Which one of the following is not produced during glycolysis?**

- (a). ATP
- (b). NADH
- (c). Pyruvate
- (d). Glucose

**x). The first vaccine for human use produced using recombinant DNA technology was the:**

- (a). Hepatitis A vaccine
- (b). Hepatitis B vaccine
- (c). MMR vaccine
- (d). AIDS vaccine

**xi). Microorganisms that use organic compounds as energy and carbon sources are:**

- (a). Chemoheterotrophs
- (b). Chemoautotrophs
- (c). Photoautotrophs
- (d). Photoheterophors

**xii). Which of the following is best to sterilize heat labile solutions?**

- (a). Dry heat
- (b). Autoclave
- (c). Membrane filter
- (d). Pasteurization

**xiii). Biological treatment of sewage by microorganisms would most likely occur at which stage of wastewater treatment?**

- (a). Advanced
- (b). Tertiary
- (c). Secondary
- (d). Primary

**xiv). Gastric ulcer disease is caused by:**

- (a). *Helicobacter pylori*
- (b). *Yersinia enterocolitica*
- (c). *Escherichia coli*
- (d). *Salmonella typhi*



# UNIVERSITY OF THE PUNJAB

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**Supplementary Examination - 2017**

Roll No. ....

**Subject: Microbiology-I**  
**PAPER: A (Fundamentals of Microbiology)**

**TIME ALLOWED: 2 hrs. & 15 min.**  
**MAX. MARKS: 42**

**USE SEPARATE ANSWER SHEET PROVIDED**

**INSTRUCTIONS: Part II is Subjective. Attempt three questions from Part II. All questions carry equal marks. Maximum time for Part II is 2 hours and 15 minutes.**

Sr. No.	PART II Attempt any Three Questions	Marks
Q3 a).	What are the applications of Dark Field and Phase Contrast microscopy?	6
b).	Describe the contribution of Leeuwenhoek and Edward Jenner to the field of Microbiology.	4
c).	Give a brief account of Shape and Arrangement of bacterial cells.	4
Q4 a).	Write a note on Food Spoilage.	4
b).	Define Endospores. What functions are associated with Endospores?	6
c).	Differentiate between Complex and Minimal media.	4
Q5 a).	Define Pure Culture. What are the different strategies to preserve pure bacterial cultures?	5
b).	Why is <i>Escherichia coli</i> considered an indicator of pollution?	4
c).	Give an outline of differences between Prokaryotes and Eukaryotes.	5
Q6 a).	What is Nitrogen cycle? Discuss the role played by microorganisms in Nitrogen Fixation.	5
b).	Describe how the physical composition of soil influences the magnitude and diversity of the microbial flora.	4
c).	Give a brief account of Glycolysis.	5
Q7 a).	Describe some toxic derivatives of Oxygen and explain how bacteria protect themselves from their toxic effects.	5
b).	What are the different applications of Genetic Engineering?	5
c).	What are major methods of Food Preservation?	4