



UNIVERSITY OF THE PUNJAB

B.A. / B.Sc. Part – I Annual Exam – 2019

Roll No.

Subject: Microbiology-I

Paper: A (Fundamentals of Microbiology)

Time: 2 Hrs. 15 Min Marks: 42

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Note: Attempt any THREE questions. All questions carry equal marks.

Q3	a).	Describe the contributions of Leeuwenhoek and Edward Jenner to the field of Microbiology.	6
	b).	What are the applications of Dark Field and Phase Contrast microscopy?	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 Capsule. What functions are associated with bacterial capsule?	6
	c).	Differentiate between Enriched and Minimal media.	4
Q5	a).	Describe structure and chemical composition of bacterial Cell Wall and its relevance to Gram staining.	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



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Subject: Microbiology-I Paper: A (Fundamentals of Microbiology) Time: 45 Min. Marks: 28

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt

Attempt this Paper on this Question Sheet only.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q1 a).	State whether the statement is True or False. i). Life on earth would be much better if all microbes were eradicated. ii). Robert Koch discovered the process of fermentation. iii). Agar is a polysaccharide that is used to solidify microbiological media. iv). Psychrophiles 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). A bacterial medium that contains 3 g of beef extract and 5 g of sodium chloride dissolved in 1L of water is a defined medium.	7
b).	Fill in the blanks by using suitable words. i). _____ is the ability of microscopic system to distinguish two objects as separate and distinct. ii). The use of antiseptics in surgical practices was introduced by _____ iii). The field of soil microbiology was opened in the late 1880s by _____ iv). Bacteria with two or more flagella at one or both ends are called _____ v). _____ is the transformation of ammonia nitrogen to nitrates. vi). Secondary metabolites of microbes are formed during the _____ phase of growth. vii). The typical end products of complete aerobic cell respiration are carbon dioxide, water and _____	7
Q2	Encircle the most appropriate answer. i). Spherical bacterial cells in chains would be referred to as _____ arrangement. (a). Tetrad (b). Streptococcus (c). Staphylococcus (d). Vibrio 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	14

P.T.O.

iii). In bright field microscopy, 60X objective and 10X ocular produce a total magnification of:

- (a). 50 (b). 400
(c). 90 (d). 600

iv). The enzyme catalase is important to the survival of many bacteria and serves the important function of:

- (a). Breaking down of hydrogen (b). Breaking down hydrogen peroxide
(c). Catalyzing salt breakdown (d). Catalyzing respiratory reactions

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 dextrin 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). Photoheterotrophs

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*