Microbiology

TALHA JAVED

Medical Lab Technology

Objectives

- To understand the Meaning of the subject Title
- To familiarise the content of the subject
- To know what we will learn in this subject

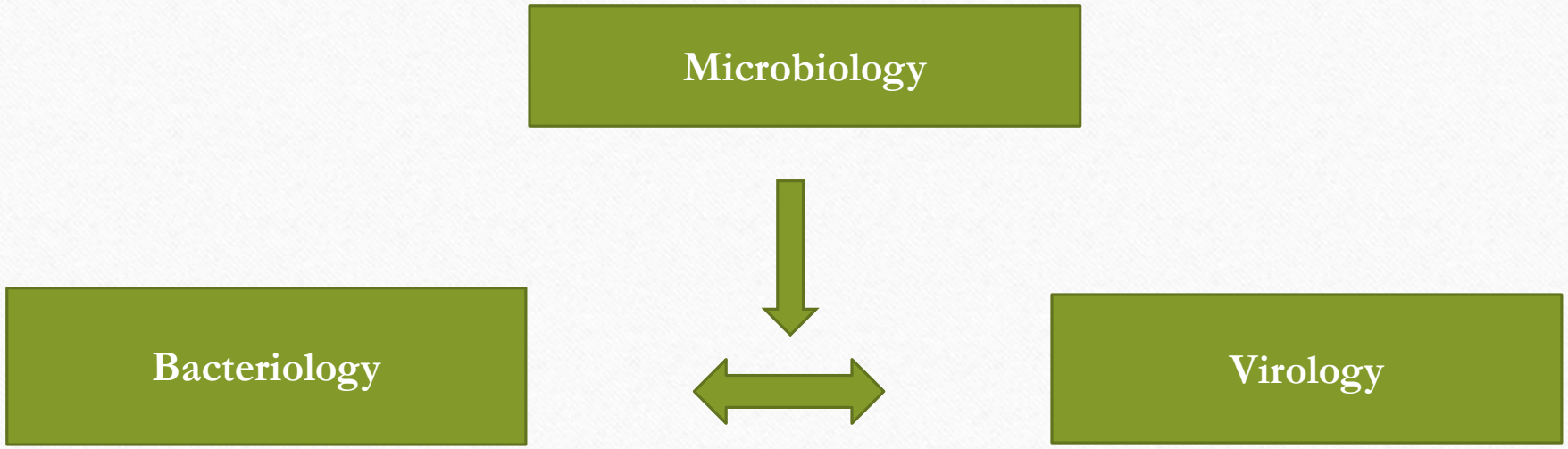
Introduction To Subject

- **Microbiology**

- **Microbiology** is the scientific study of microorganisms, also known as microbes, which are tiny life forms (like bacteria, viruses, fungi, protozoa, and archaea) that are too small to be seen with the naked eye.

Introduction To Subject

- .



1. Bacteriology

- **Bacteriology** is the branch and specialty of biology that studies the morphology, ecology, genetics and biochemistry of bacteria as well as many other aspects related to them.

Bacteriology

- Introduction to Microbiology
- Classification of Microorganisms
- Microscope
- Bacterial Cell Structure
- Bacterial Classification
- The Growth Cycle
- Culture Media

Conti..

- Study of Common Pathogens
- Stains
- Biochemical Tests
- Sterilization
- Antimicrobial Resistance

Virology

- Introduction To Virology
- Classification of Viruses
- Transmission and Entry
- Lab Diagnosis Of Viral Infection
- Collection of Virological Samples
- Study of Common Viruses

Paper Pattern

Roll No. ☐☐☐☐☐☐ Answer Sheet No._____87

Sig. of Candidate._____ Sig. of Invigilator._____

MICROBIOLOGY HSSC–I

SECTION – A (Marks 10)

Time allowed: 10 Minutes

NOTE: Section–A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 10 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

(i) Which of the following bacteria is catalase positive and oxidase negative?
A. Staphylococcus B. Streptococcus
C. Neisseria D. Pseudomonas

(ii) The term microbiology, as the study of living organism was used by:
A. Antony van leeuwenhock B. Robert Koch
C. Louis Pasteur D. Edward Jenner

(iii) Incineration is an efficient method for:
A. Destroying contaminated materials B. Sterilizing points of forceps
C. Sterilizing scalpel blades and needles D. Sterilizing all glass syringes

(iv) Phenol is bactericidal at a concentration of:
A. 0.1 % B. 0.25 %
C. 0.5 % D. 1.0 %

(v) The period between inoculation of bacteria in a culture medium and begining of multiplication is known as:
A. Lag phase B. Log phase
C. Stationary phase D. Decline phase

(vi) Peptone water and nutrient broth are:
A. Basal media B. Enriched media
C. Selective media D. Enrichment media

(vii) Crystal violet iodine complex is retained in G positive cells by:
A. Thick peptidoglycan layer B. Techoic acid
C. Lipid contents D. Lipopolysaccharides

(viii) As a result of post infection which bacteria causes rheumatic fever?
A. Pneumococci B. β haemolytic streptococci
C. Meningococci D. Staphylococci

(ix) What is the recommended temperature for sterilization of an object in autoclave?
A. 100°C for 30 minutes B. 110°C for 25 minutes
C. 121°C for 20 minutes D. 131°C for 15 minutes

(x) Which of the following organisms can be detected by CAMP test?
A. S. aureus B. Streptococcus pneumoniae
C. Streptococcus agalactae D. Streptococcus pyogenes

For Examiner's use only:

Total Marks: 10

Marks Obtained: ☐

Paper Pattern

88

MICROBIOLOGY HSSC–I

Time allowed: 2:20 Hours **Total Marks Sections B and C: 40**

NOTE: **Answer any thirteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet–B if required. Write your answers neatly and legibly.**

SECTION – B (Marks 26)

Q. 2 **Answer any THIRTEEN parts. The answer to each part should not exceed 2 to 4 lines.** **(13 x 2 = 26)**

(i) How will you calculate the magnification of compound microscope?
(ii) What do you mean by sterilization of an object in terms of Microbiology?
(iii) Which precautions should be taken while using an autoclave?
(iv) Which factors influence the action of chemical germicides?
(v) Define enriched media.
(vi) What are the methods used for the sterilization of culture media?
(vii) Define antigenic structure of pneumococci.
(viii) Name the toxins and enzymes produced by N. gonorrhoeae.
(ix) Write down Nagler's Reaction.
(x) Write down the morphology and staining behaviour of C.diphtheriae.
(xi) Define minimum bactericidal concentration.
(xii) Define facultative anaerobe.
(xiii) Define interferon.
(xiv) Enumerate the routes of transmission of human viruses.
(xv) Write down the methods of classification of bacteria.
(xvi) Write down habitat, morphology and staining behaviour of N. meningitidis.
(xvii) Write down Mantoux Reaction.

SECTION – C (Marks 14)

Note: **Attempt any TWO questions. All questions carry equal marks.** **(2 x 7 = 14)**

Q. 3 Write down in detail the methods for moist heat sterilization.

Q. 4 Describe antimicrobial resistance.

Q. 5 Describe the ways of transmission, pathogenicity and laboratory diagnosis of M. tuberculosis.

Thanks For Your Patience

Good Luck