



**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS  
2016/2017 ACADEMIC YEAR**

**FIRST YEAR SECOND TRIMESTER EXAMINATIONS**

**FOR THE DEGREE  
OF  
BACHELOR OF SCIENCE IN PHYSIOTHERAPY/ HEALTH  
PROFESSIONS EDUCATION**

**COURSE CODE: HPE 200**

**COURSE TITLE: MEDICAL MICROBIOLOGY**

**DATE: -----**

**TIME: -----**

**INSTRUCTIONS TO CANDIDATES**

This paper consists of three sections:

- i. Section A – Multiple Choice Questions
- ii. Section B – Short Answer Question
- iii. Section C – Long Answer Question.

Answer all questions

TIME: 3 Hours

*Correct in MCP  
Jh  
6/8/2017*

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over. ►

**Section A: MCQ (20 Marks)**

*Choose the most appropriate choice, only one choice is correct*

1. What is a virion?
  - a. Inactivated virus
  - b. Infective virus
  - c. viral capsid
  - d. Defective virus
2. Viruses are known to infect
  - a. plants
  - b. bacteria
  - c. fungi
  - d. all organisms
3. Which of the following scientist tried to disprove Spontaneous generation theory by passing air through cotton into flasks containing heated broth?
  - a. Franz Schulze
  - b. H. Schroder and T. Von Dusch
  - c. Lazaro Spallanzani
  - d. Theodor Schwann
4. Which of the following pioneers of Microbiology is credited with the discovery of microorganisms using high quality magnifying lenses (early microscopes)?
  - a. Anton Van Leeuwenhoek
  - b. Louis Pasteur
  - c. Robert Hooke
  - d. Robert Koch
5. The Alpha helical structure of DNA was discovered by:
  - a. Edward Tatum
  - b. Eile Metchnikoff
  - c. James Watson and Francis Crick
  - d. Oswald Avery, Maclyn McCarty, and Colin McLeod
6. Each of the following statements concerning Mycobacterium tuberculosis is correct EXCEPT:
  - a. After being stained with carbol-fuchsin, M. tuberculosis resists decolorization with acid alcohol.
  - b. M. tuberculosis has a large amount of mycolic acid in its cell wall.
  - c. M. tuberculosis appears as a red rod in Gram-stained specimens.
  - d. M. tuberculosis appears as a red rod in acid-fast stained specimens.
7. The presence of a capsule around bacterial cells usually indicates their increased disease-causing potential and resistance to disinfection. Capsules are generally viewed by:
  - a. Scanning electron microscopy
  - b. Gram staining
  - c. Ziehl-Neelsen staining
  - d. Negative staining
8. Which of the following stains is used to classify microorganisms based on their cell wall content?
  - a. Methylene blue
  - b. Gram stain

- c. Spore stain
  - d. Capsular stain
- b. The envelope of an animal virus is derived from the \_\_\_\_\_ of its host cell.
- a. cell wall
  - b. cell membrane
  - c. glycocalyx
  - d. receptors
9. A prophage is an early stage in the development of a/an
- a. bacterial virus
  - b. poxvirus
  - c. lytic virus
  - d. enveloped virus
10. Enveloped viruses carry surface receptors called
- a. buds
  - b. spikes
  - c. fibers
  - d. sheaths
11. Infections from fungi occur mostly due to EXCEPT:
- a. disruption of natural barriers
  - b. immunosuppression
  - c. occupational contact
  - d. Water contamination
12. Which of the following shows up as typical "ringworm" lesions
- a. tinea corporis
  - b. tinea capitis
  - c. tinea cruris
  - d. tinea unguium
  - e. Epidermophyton sp
13. Which of the following is the largest intestinal protozoan parasite in human
- a. *Balantidium coli*
  - b. *Entamoeba histolytica*
  - c. *Entamoeba coli*
  - d. *Giardia lamblia*
14. Protozoa belong to Kingdom:
- a. Monera
  - b. Protista
  - c. Plantae
  - d. Animalia
15. Mature cyst of *Entamoeba histolytica* is:
- a. Uninucleate
  - b. Binucleate
  - c. Quadrinucleate
  - d. Octanucleate
16. Cyst of *Entamoeba histolytica* are form in:
- a. Lumen of the intestine
  - b. Tissue
  - c. Soil

Correct the stem to indicate one issue the student is to respond to.

- d. Vegetation
17. *Giardia lamblia* resides in:
- a. Duodenum and upper part of jejunum
  - b. Caecum
  - c. Colon
  - d. Rectum
18. Rectal prolapsed is seen in infection with
- a. *Ascaris lumbricoides*
  - b. *Enterobius vermicularis*
  - c. *Ancylostoma duodenale*
  - d. *Trichuris trichuria*
19. In which of the following cestodes man can act as intermediate host
- a. *Diphyllobothrium latum*
  - b. *Taenia saginata*
  - c. *Taenia solium*
  - d. *Hymenolepis nana*

#### SECTION B (SAQ) (40marks)

1. Describe the function of the following in bacteria (3marks each).
  - a. Polyamines
  - b. Paratenic host
  - c. Caspid
  - d. Mycelium
2. Using a well labeled diagram describe the anatomical structure of bacteria (8mks).
3. Describe the characteristics of virus (6mks)
4. Explain taxonomical groupings of parasites (8mks)
5. Describe the topographical classification of Fungi (6mks)

#### SECTION C (LAQ) (40marks)

1. Describe the lifecycle of Reverse Transcriptase RNA virus (20 marks).
2. Describe the economic role fungi (20 marks).



**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF PUBLIC HEALTH BIOMEDICAL SCIENCES & TECHNOLOGY**

**Course Outline**

**Programme: Bachelor of Science in Health Profession Education/ Physiotherapy**

**Course Code: HPE 200**

**Course Title: Medical Microbiology**

**Year of Study: Year I**

**Academic Year: 2016/2017      Trimester: III**

**Date: 2017**

**2. Course Purpose**

The course is designed for the student to gain knowledge and skills on Microbiological methods, bacterial, morphology, genetics, viruses, fungi, and parasites for treatment and disease control.

**3. Learning Objectives/Outcomes:**

By the end of this course the student should be able to:

- Classify micro-organisms and describe the methods used to identify them.
- Describe characteristics of each micro-organism and explain how each causes disease in humans.
- Carry out and interpret staining procedures for identification of micro-organisms
- Carry out and interpret other procedures for identification of microorganisms.
- Apply principles and concepts of microbiology in the control of infections.

**4. Learning/Teaching Strategy**

Lectures, demonstrations, laboratory practical, group discussions.

**5. Topic Outline**

**Introduction to microbiology**

- Definition of terminologies used in medical microbiology
- Major classes of pathogenic bacteria

**Classification And Identification Of Micro-Organisms**

- General classification of micro-organisms Classification, Nomenclature and identification of microorganisms
- Classification of bacteria (Gram positive and gram Negative) and bacterial cell structure Gram staining technique

**Microbial Growth And Development**

- Reproduction in microorganism
- Nutritional growth requirement and Phases of bacterial growth Factors affecting physiology of microorganism

**Virology introduction General introduction and concepts of virology**

- Viral structure and lifecycle Classification of Viruses

**Laboratory methods in Virology**

- Specimen collection, transport and culture
- Direct detection, serologic assay and viral isolation
- Cytopathic effect on Cell culture

**Fungi Characteristics of fungi-structure and forms Classification**

## General introduction to Parasitology

- Terminologies
- Introduction to protozoa
- Introduction to Helminthology
- Cestodes
- Nematods
- Trematodes

### 6. Course Requirements

#### A) Attendance

Attendance for lectures, and other scheduled classes/practical/laboratory sessions is mandatory for all students. Any absence will prohibit the student from taking CA and examination.

#### B) Methods of Assessment

Continuous Assessment Tests (CATs)	20%
Take Away CAT	10%
Examination	70%
Pass Mark	50%

#### D) Course Texts including Further reading/Reference Texts

1. Talaro, K.P. (2008). *Foundations in Microbiology*. 6<sup>th</sup> ed. McGraw-Hill Publishing Company. ISBN 10: 0073305405, ISBN 10: 9780073305400
2. Gladwin, M. (2007). *Clinical Microbiology Made Ridiculously Simple*. 4<sup>th</sup> Ed. Med Master, Inc. ISBN 10: 094078081X, ISBN 13: 978094780811.
3. Arora, B. Arora (2009). *Medical Parasitology* 2<sup>nd</sup> Ed. CBS Publishers & Distributors India

Course Lecturer - Name: Mr. Dinda Victor

Sign-----

Date-----

Departmental Timetabler Name: David Kaniaru

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Date-----

CoD-Name -----

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Date-----