



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF HEALTH SCIENCES

QUALIFICATION: BACHELOR OF ENVIRONMENTAL HEALTH SCIENCES	
QUALIFICATION CODE: 08BOHS	LEVEL: 5
COURSE CODE: MAP512S	COURSE NAME: MICROBIOLOGY AND PARASITOLOGY
SESSION: JANUARY 2020	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SUPPLEMENTARY/ SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
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INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. CALCULATOR

THIS QUESTION PAPER CONSISTS OF 6 PAGES (including this front page)

SECTION A

[45]

QUESTION 1

[10]

Select the correct answer. There is only one correct answer.

- 1.1 The instrument used to sterilize our media: (1)
- A. Incubator
 - B. Autoclave
 - C. Hot air oven
 - D. Heating block
- 1.2 An intestinal parasite causes the most parasitic infections in the world, infecting about 1.2 billion people worldwide: (1)
- A. Hookworm
 - B. Malaria parasite
 - C. *Ascaris lumbricoides*
 - D. Chlamydia parasite
- 1.3 In severe infections, typical rice water stools are passed continuously. What is the causative organism? (1)
- A. *Salmonella enterica*
 - B. *Escherichia coli*
 - C. *Vibrio cholerae*
 - D. *Shigella flexneri*
- 1.4 The first person that described microorganisms, by demonstrating the fruiting structures of moulds: (1)
- A. Francesco Redi
 - B. Robert Hooke
 - C. Zacharias Janssen
 - D. Anton Von Leeuwenhoek
- 1.5 Most eukaryotic cells reproduce by: (1)
- A. Budding
 - B. Sporulation
 - C. Binary fusion
 - D. None of the above

- 1.6 Bilhazia is caused by species of: (1)
A. *Amoeba spp.*
B. *Taenia spp.*
C. *Schistosoma spp.*
D. *Plasmodium spp.*
- 1.7 The domains in which thermophiles exist are: (1)
A. Eubacteria
B. Eukarya
C. Archaea
D. Protista
- 1.8 The symbiotic relationship most observed in protists, for example, the species *Trypanosoma* protozoa that can cause sleeping sickness: (1)
A. Predation
B. Commensalism
C. Mutualism
D. Parasitism
- 1.9 The genus of organisms that can cause infection leading to respiratory paralysis and ultimately death: (1)
A. *Campylobacter*
B. *Aspergillus*
C. *Clostridium*
D. *Staphylococcus*
- 1.10 The process of sterilising milk using heat process is called? (1)
A. Heating
B. Radappertization
C. Tyndallisation
D. Pasteurization

QUESTION 2

[15]

Answer the following short questions.

- 2.1 Which Gram-bacteria are more sensitive to Penicillin? (1)
- 2.2 Vessels for industrial fermentation are called bioreactors. Which factors are they designed to closely monitor? (3)
- 2.3 What are the functions of the cell membrane? (3)

- 2.4 Describe the difference between a bacteriostatic and bactericidal agent? (2)
- 2.5 What is the mechanism of action of lysozyme? (1)
- 2.6 Describe the method in which heat is used to control the growth of microorganisms. (2)
- 2.7 Which active surveillance network is used to rapidly trace the course and cause of infection in days rather than weeks? (1)
- 2.8 Which stain is used as a counterstain in Acid-fast staining? (1)
- 2.9 Botulism is caused by which bacterial genus? (1)

QUESTION 3

[20]

Define the following terms:

- 3.1 Zoonosis (2)
- 3.2 Primary production (2)
- 3.3 Virulence (2)
- 3.4 Obligate parasite (2)
- 3.5 Autotroph (2)
- 3.6 Biofilms (2)
- 3.7 Premunition (2)
- 3.8 Life cycle (2)
- 3.9 Bacteriocins (2)
- 3.10 Bioaugmentation (2)

SECTION B **[30]**

QUESTION 4 **[15]**

- 4.1 Give an account of each of Robert Koch's contribution to the development of microbiology. (5)
- 4.2 Outline Koch's postulates. (4)
- 4.3 Discuss the Germ Theory of Diseases. (4)
- 4.4 Name other scientists whose work disputed the Theory of Spontaneous Generation. (2)

QUESTION 5 **[15]**

- 5.1 Describe the importance of biofilms in human health. (3)
- 5.2 Define the term symbiosis and highlight the different symbiotic relationships that exist. (8)
- 5.3 Give two examples of normal microbiota benefiting a host. (4)

SECTION C **[25]**

QUESTION 6 **[25]**

- 6.1 Enumerate the conditions necessary for successful endemic parasitism. (4)
- 6.2 One of the effects of parasites on hosts are to deprive the host of essential substances. Describe how hookworm goes about this action. (2)
- 6.3 Below is the life cycle of *Toxoplasma* species. Answer the questions below relating to the parasite.

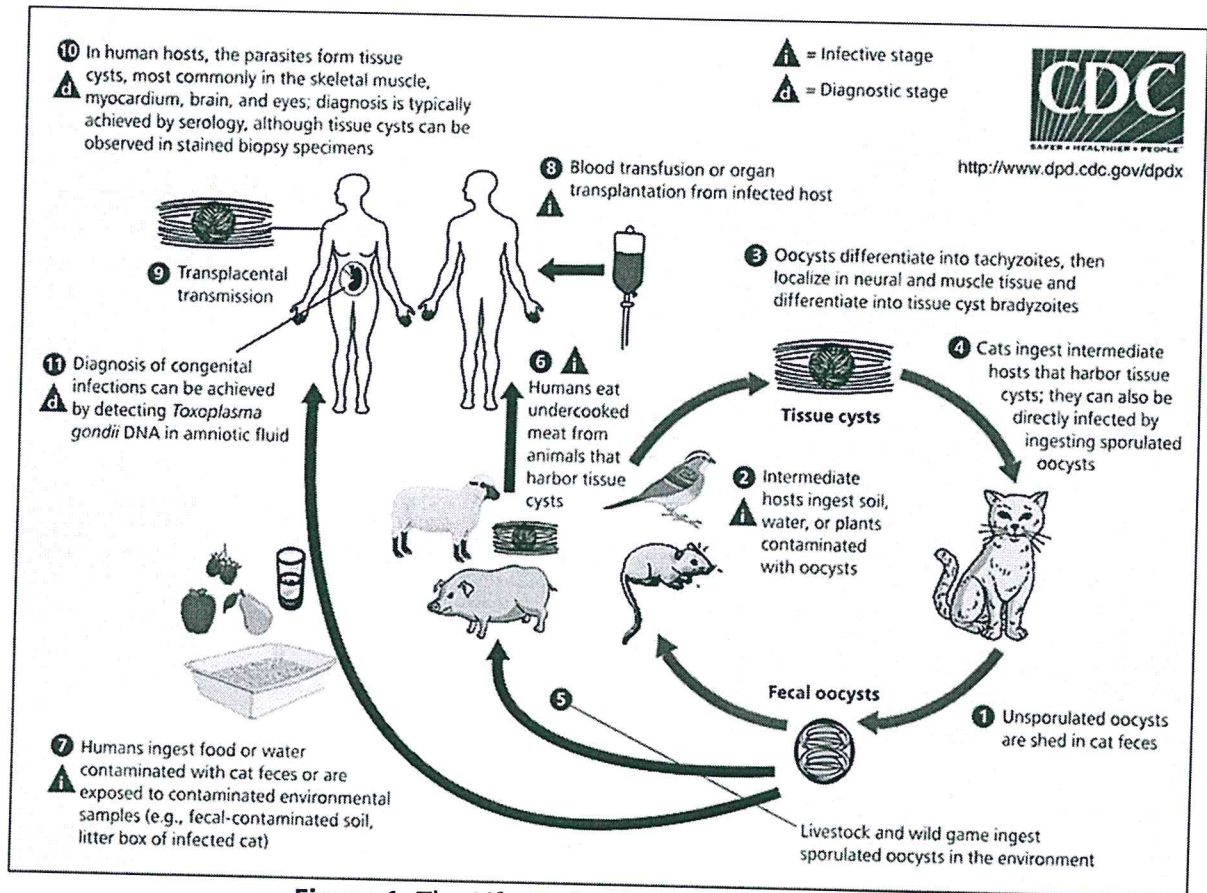


Figure 1. The Life Cycle of *Toxoplasma* species.

- 6.3.1 Describe how man is infected by this parasite. (4)
- 6.3.2 Discuss the infective stage of this parasite to man. (7)
- 6.3.3 In the human host, the parasite forms tissue cysts, most commonly in which organs? (3)
- 6.3.4 Describe how this parasite can be diagnosed. (3)
- 6.3.5 Describe how this parasitic infection can be prevented. (2)

END OF EXAMINATION