

WARNING

This material has been reproduced and communicated to you by or on behalf of *Charles Darwin University* in accordance with section 113P of the *Copyright Act 1968 (Act)*.

The material in this communication may be subject to copyright under the Act.
Any further reproduction or communication of this material by you may be the subject of copyright protection under the Act.

Do not remove this notice



Family Name	
Given Names	
Student Number	
Teaching Period	Semester 1, 2017

FINAL EXAMINATION	DURATION				
SBI282 – Clinical Microbiology 1	<table border="1"> <tr> <td>Reading Time:</td> <td>10 minutes</td> </tr> <tr> <td>Writing Time:</td> <td>180 minutes</td> </tr> </table>	Reading Time:	10 minutes	Writing Time:	180 minutes
Reading Time:	10 minutes				
Writing Time:	180 minutes				

INSTRUCTIONS TO CANDIDATES

This examination has **THREE** sections.

Section A Multiple Choice Questions

Answer all 30 questions on the Multiple Choice Answer Sheet provided.
1 mark per question, total 30 marks. Suggested time 40 minutes.

Section B Short Answer Questions

Answer all 14 questions in the Answer Booklet provided.
Marks as indicated, total 60 marks. Suggested time 60 minutes.

Section C Short Essay Questions

Answer all 3 questions in the Answer Booklet provided.
10 marks per question, total 30 marks. Suggested time 50 minutes.

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a CLOSED BOOK examination

Any non-programmable calculator is permitted

No handwritten notes are permitted

No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 20 Page Book 2 x Scrap Paper Faculty/School Multiple Choice Answer Sheet

**THIS EXAMINATION IS PRINTED
DOUBLE-SIDED.**

**THIS PAGE HAS BEEN INTENTIONALLY LEFT
BLANK.**

Section B
Short Answer Questions
Total No of Marks for this section: 60

This section should be answered in the Answer Booklet provided.
Answer all 14 questions.

Marks for each question are indicated. Suggested Time allocation for Section B: 60 mins

Question 1

Name three routes by which humans can be infected with *Bacillus anthracis*.

(Marks: 3)

Question 2

McConkey agar is an example of a media which is both selective and differential. Explain the biochemical basis for both the selective and differential nature of the media.

(Marks: 4)

Question 3

Define the terms sterilisation, disinfection, and antisepsis. For each, give an example of a method that can be used.

(Marks: 6)

Question 4

Explain the difference between sheep's blood agar (SBA) and chocolate agar. Give an example of a bacterium which will grow on chocolate agar but not SBA and explain why.

(Marks: 3)

Question 5

How many copies of the target sequence are there after 4 cycles of PCR if there were 5 copies of the sequence initially?

(Marks: 1)

Question 6

Name the biochemical test you would perform to distinguish *Staphylococcus aureus* from other *Staphylococcus* species.

(Marks: 1)

Question 7

Name THREE mechanisms by which genetic transfer can occur between prokaryotic cells. Describe the key features of ONE of these mechanisms.

(Marks: 5)

Question 8

Name FOUR classes of action of antibiotics and give TWO examples of an antibiotic of each class.

(Marks: 8)

Question 9

Match the diseases on the left with their causative organism on the right.

- | | |
|-------------------|----------------------------------|
| A. Lyme Disease | 1. <i>Treponema pallidum</i> |
| B. Whooping cough | 2. <i>Yersinia pestis</i> |
| C. Syphilis | 3. <i>Bordetella pertussis</i> |
| D. Scrub typhus | 4. <i>Borrelia burgdorferi</i> |
| E. Plague | 5. <i>Orientia tsutsugamushi</i> |

(Marks: 5)

Question 10

Name two diseases caused by bacteria of the genus *Mycobacterium* and name the causative species for each disease.

(Marks: 4)

Question 11

Name two diseases caused by bacteria of the genus *Clostridium*. For each disease, name the causative species and the main clinical presentation of the disease.

(Marks: 6)

Question 12

In terms of bacterial growth conditions, define what is meant by the term “microaerophile”. Give one example of a bacterium which is microaerophilic.

(Marks: 3)

Question 13

Describe the appearance of a positive and negative result for an oxidase test, a catalase test, and a coagulase (Staphaurex) test.

(Marks: 6)

Question 14

Name five bacterial species which are capable of causing food poisoning.

(Marks: 5)

Section C
Short Essay Questions
Total Number of Marks for this section: 30

This section should be answered in the Answer Booklet provided.
Answer all three questions.

Marks for each question are indicated. Suggested Time allocation for Section C: 50 mins

Question 1

Name FOUR species of bacteria which are capable of intracellular growth. For any TWO of these bacteria, state whether the species is a facultative intracellular or obligate intracellular bacterium and indicate the key features of the bacteria and the clinical diseases they cause.

(Marks: 10)

Question 2

Define what is meant by the term “exotoxin”. Choose TWO examples of exotoxins, name the bacterium that produces it, and provide details of clinical disease that the toxin can cause.

(Marks: 10)

Question 3

In terms of bacterial interaction with a human host, discuss what is meant by the terms “colonisation”, “opportunistic infection” and “pathogen”. Provide one example of a bacterial species, body site and clinical disease, as appropriate, for each term.

(Marks: 10)

END OF EXAMINATION