SPECIMEN PAPER

The University Of Sheffield.

MBB340

DEPARTMENT OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY **SPECIMEN PAPER 2019-2020**

THE MICROBIOLOGY OF EXTREME ENVIRONMENTS **24 Hours**

This specimen is the same format as the summer exam for MBB340 under COVID-19 lockdown regulations.

Answer **ONE** of the questions.

You will be able to access the question paper at <time and date> from the module Blackboard page. You have **24 hours** from that time to submit your answer, but we would expect you to take no more than 4 hours to prepare your answer.

There is a strict word limit of **1500 words,** not including figure legends.

Your answer should be written in Word or a compatible format and submitted via the module Blackboard page to Turnitin. **PLEASE WRITE YOUR REGISTRATION NUMBER ON YOUR ANSWER, BUT NOT YOUR NAME.** Files should be named using the following format: MBB340-QuestionNumber-RegNumber.

For more information and advice, please refer to handbook page

1. Piezophiles (formerly known as barophiles) are adapted for growth at high atmospheric pressures. Discuss the methods used to isolate piezophiles, describe their habitats and discuss cellular adaptations required for optimal growth at high atmospheric pressure.

2. Discuss the following statement. “Changes in the structure of both lipids and proteins are essential for growth of psychrophiles.” Halopsychrophiles are a group of polyextremophiles, discuss the interaction between the cellular responses to salt stress and cold stress.

3. Haloalkaliphilic microorganisms are found in habitats with high levels of both salinity and alkalinity. Discuss how haloalkaliphilic microorganisms are adapted to grow optimally in the presence of these two environmental stress factors. Explain the significance of Na^+ ions in the bioenergetics of haloalkaliphiles.

END OF QUESTION PAPER