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OFFICE OF THE DEPUTY PRINCIPAL
ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2018 /2019 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER REGULAR EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE IN MICROBIOLOGY

COURSE CODE: MIC 215

COURSE TITLE: MICROBIAL PHYSIOLOGY

DATE: 24TH APRIL, 2019 **TIME: 2.00 PM – 5.00 PM**

INSTRUCTIONS TO CANDIDATES

- SEE INSIDE

THIS PAPER CONSISTS OF 3 PRINTED PAGES PLEASE TURN OVER

MIC 215: MICROBIAL PHYSIOLOGY

STREAM: BSc in Microbiology **DURATION: 3 Hours**

INSTRUCTIONS TO CANDIDATES

i. *Answer **ALL** questions from section A and any **THREE** from section B.*

ii. *Diagrams should be used whenever they serve to illustrate the answer.*

iii. *Do not write on the question paper.*

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SECTION A (24 MARKS)

QUESTION ONE

a) Distinguish between the following terms

i. Fermentation and aerobic respiration (2 Marks)

ii. Microbial growth and optimum temperature (2 Marks)

b). In the following redox pairs, which compound is reduced and which is oxidized? Explain

i). NAD^+ and NADH

ii). $FADH^2$ and FAD (2 Marks)

c). Measuring the number of microbes is either directly or indirectly. Describe any three ways of indirect methods of measurement. (6 Marks)

QUESTION TWO

a). Differentiate between the following terms

i. Catabolism and Anabolism (2 Marks)

ii. Enzyme repression and enzyme induction (2 Marks)

b). Explain four chemical conditions required by bacteria for growth. (4 Marks)

c). How many ATPs are formed from a glucose molecule carried through aerobic respiration, and how many are probably formed? What is the net ATP? Explain. (3 Marks)

d). Define the term holoenzyme (1 Mark)

SECTION B (36 MARKS)

QUESTION THREE

Classify enzymes on the basis of their biochemical action. (12 Marks)

QUESTION FOUR

Using illustrations, discuss the four main phases of bacterial growth curve observed in a batch culture. (12 Marks)

QUESTION FIVE

Discuss using illustrations the process of glycolysis citing enzymes and products involved at various stages (12 Marks)

QUESTION SIX

a) Explain the process of DNA replication (8 Marks)

b) Explain the Lock and Key hypothesis with reference to enzymatic action (4 Marks)

QUESTION SEVEN

Explain using a diagram the composition of a bacterial cell and their functions (12 Marks)

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