

W1-2-60-1-6

**JOMO KENYATTA UNIVERSITY**

**OF**

**AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2020/2021**

**END OF YEAR EXAMINATIONS FOR THE DEGREE OF BACHELOR**

**OF SCIENCE IN MICROBIOLOGY**

**SBT 2384: MICROBIAL NATURAL PRODUCTS**

**DATE: MAY 2021 TIME: 2HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (48 MARKS)**

1. Microbial diversity is a complex. Describe the three-domain system of classifying micro-organisms. (6 marks)
2. Distinguish between primary metabolites and secondary metabolites, giving an example for each. (6 marks)
3. Distinguish between Archaea and bacteria. (6 marks)
4. i)Explain the supreme rule (2 marks)

ii) Describe any FOUR classes of terpenes. (4 marks)

1. Explain any SIX reasons why knowledge of biosynthesis pathways of natural products is important? (6 marks)
2. Describe the isolation and detection of a polyketide. (6 marks)
3. Outline the significance of natural microbial products in food industry. (6 marks)
4. Differentiate the classes of alkaloids (6 marks)

**QUESTION TWO (22 MARKS)**

1. Citing examples, describe any FIVE features of secondary metabolites. (5 marks)
2. Describe the physical and chemical properties of terpenoids. (6 marks)
3. Identify THREE bacterial natural products used as ??????

1. Giving examples, demonstrate the significance of secondary metabolites in human nutrition. (5 marks)

**QUESTION THREE (22 MARKS)**

1. List SIX mycotoxins and outline their significance and their fungi associated with their production. (12 marks)
2. Describe the major biosynthetic pathways of polyketides. (10 marks)

**QUESTION FOUR (22 MARKS)**

1. Explain the use of modern analytical techniques in natural products analysis. (10 marks)
2. Discuss the importance of microbial natural products in agriculture. (12 marks)