MCB 412 2017/2018 EXAM QUESTIONS

1. In an analytical assay of Virginiamycin, the following data were obtained after adjusting for the diameter of growth zone inhibition.

No	I	III	II	IV
Nos of agar plates	High conc. of standard solution (S_H)	Low conc. of standard solution (S_L)	High conc. of sample solution (U_H)	Low conc. of sample solution (U_L)
1	22.5	16.7	23.1	16.9
2	23.1	16.7	22.9	16.8
3	23.2	16.8	23.4	16.8
4	23.3	17.1	23.4	17.0
5	22.9	17.1	23.7	17.3

From these values, calculate the following

a. the sum of the inhibition diameter for each concentration of the standard solution and sample solution

b. calculate the ratio of the concentration of the antibiotic in the sample solution to that in the standard solution

c. calculate the potency estimate of the antibiotic in the sample

d. highlight two activities in ensuring the quality of stock culture of Virginiamycin is controlled in the microbiological assay

e. Define accuracy and precision in analytical microbiology

HINTS: (estimate of sample concentration: 5 g (potency)/kg; $X = 4$)

2. Write briefly on the determinants of the types of microorganism(s) to be used for microbiological assay

3. State the advantages and disadvantages of using the following for analytical assays:

(a) Bacteria (b) Yeasts (c) Fungi (d) Protozoans

4. Suppose you are employed by a pharmaceutical industry where antibiotics, vitamins and amino acids are produced.

a. Design a flowchart showing unit operations in the microbiological diffusion assay of these substances

b. Describe the procedure you will follow in preparation of stock solution from reference standard.

c. State 5 essential requirements for a typical assay of an antibiotic

d. What are the determinants that can potentially influence the outcome of inhibition zone of an assay after incubation?

e. Mention 3 measurable metabolic responses in analytical microbiology

5. a. Differentiate between microbiological standards and specifications

b. In Nigeria, mention 2 regulatory agencies in charge of food quality and their functions

c. State two general methods of microbiological assay.

d. Describe BRIEFLY the principles with which each method mentioned in 'c' above work.

e. State at least two advantages and two disadvantages of each method mentioned in 'c' above.

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1	22.5	16.7	23.1	16.9
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