BOWEN UNIVERSITY, IWO
COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE
MICROBIOLOGY PROGRAMME
2021/2022 FIRST SEMESTER EXAMINATIONS

MCB 305: BACTERIOLOGY

Answer question ONE and any other two **Time: 2 hours 20 minutes**

1. (a) (i) Briefly describe how you obtain bacteria from a well water sample **(10 marks)**

(ii) Mention at least two biochemical characteristics that can be considered in classifying bacteria. **(2 marks)**

(iii) What are the monomers of a bacterial peptidoglycan? **(3 marks)**

(b) The Table below highlights the constituents of **Medium Q** and **Medium Z**, both of which are used to cultivate *Escherichia coli*.

Medium Q		Medium Z	
Component	**Amount**	**Component**	**Amount**
Potassium phosphate dibasic (K_2HPO_4)	1.0g	Peptone	5g
Glucose	5.0g	Beef Extract	3g
Magnesium Sulphate ($MgSO_4.7H_2O$)	0.2g	Pancreatic digest (Casein)	1.5
NaCl	5.0g	NaCl	8g
Ammonium phosphate, monobasic ($NH_4H_2PO_4$)	1.0g	Pancreatic digest (Gelatin)	1.5
Water	1 Litre	Water	1 Litre
Agar	15g	Agar	15g

(i) As a microbiologist, suggest the possible basic media category each of these media could belong to and why? **(3 marks)**

(ii) Briefly explain **selective** and **differential** medium and give one example of each. **(8 marks)**

(iii) If lactose was left out of Eosin Methylene Blue (EMB) agar medium, would lactose-fermenting *Escherichia coli* bacteria grow? Give reason. And if so, what color would their colonies be? **(4 marks)**

2. Write briefly on the following culture methods:

(i) Streak plate (5 marks) (ii) Pour plate (5 marks)
(iii) Spread plate (5 marks) (iv) Liquid culture (5 marks)

3. Describe bacterial endospore in a **named** bacterium. **(20 marks)**

4. On the basis of such parameters as normal habitat, morphology, culture, pathogenicity and antimicrobial sensitivity, write on a **named** bacterium of medical importance belonging to:

(i) Gram negative bacilli (ii) Gram positive cocci **(20 marks)**

5. Write short notes on any **four** of the following terms:

(i) Septicemia (ii) Haemolysis (iii) Pathogenicity

(iv) Diarhoea (v) Polymorphism (vi) Peritrichous flagella

(20 marks)