

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

MCB 405: MICROBIAL GENETICS (THEORY OF PRACTICAL)

Answer ALL questions

Time allowed: 1h

1. If a region of a wild type *Escherichia coli* strain has the following DNA sequence:
5' ATGAAAAGATGTGCATAA 3',
- (a) Determine the sequence of its
(i) Complementary strand (ii) mRNA and (iii) Amino acids (3 marks)
- (b) If the bacterium strain in (1) above is subjected to induced mutations to give the sequences below, describe the type of mutations that must have occurred both at the DNA sequence and the protein coding sequence
- (i) 5' ATGAAAAGGTGTGCATAA 3' (2 marks)
(ii) 5' ATGAAAACGATGTGCATAA 3' (2 marks)
(iii) 5' ATGAAATGATGTGCATAA 5' (2 marks)
(iv) 3' ATGAATAGATGTGCATAA 5' (2 marks)
(v) 3' ATGAAAGATGTGCATAA 5' (2 marks)
2. (a) Using a labelled diagram, describe the process of gene recombination in producing a recombinant bacterial cell (8 marks)
(b) Highlight the function(s) of the tools that are used in gene recombination (4 marks)

(25 marks)