**CHUKA**  **UNIVERSITY**



**UNIVERSITY EXAMINATIONS**

**RESIT/SPECIAL EXAMINATION**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE**

**BIOC 351: BIOCHEMISTRY OF GENE EXPRESSION**

**STREAMS: BSC BIOC** **TIME: 2 HOURS**

**DAY/DATE: MONDAY 28/08/2023** **2.30 P.M – 4.30 P.M.**

**INSTRUCTIONS:**

- *Answer question **ALL** questions.*

**QUESTIONS**

**QUESTION 1 (COMPULSORY)(30 MARKS)**

a) Briefly describe four major modes in which trans- acting proteins contact DNA (4 marks
b) Explain how mutation of proto oncogenes and tumour suppressor genes lead to cancer (5 marks)

c) Using flagella formation as an example, explain how prokaryotes use sigma factors to regulate gene expression. (6 marks)

d) Explain the role of DNA methylation (5 marks)
e) Describe how viral infection can lead to cancer development (5 marks)
f) State the different mechanisms of action of repressors in gene regulation. (5 marks)

**QUESTION 2 (20 MARKS)**

a) Explain the major differences between eukaryotic and prokaryotic gene expression (8 mark)
b) (i) Describe post transcriptional modification (PTM) in eukaryotes (6 marks)
(ii) Explain how the modifications in 2b(i) above influence gene expression. (6 marks)

**QUESTION 3 (20 MARKS)**

a) Explain in details how the Lac operon works and its regulation. (10 marks)

b) Describe chromatin remodelling and its role in regulation of gene expression. (10 marks)

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