CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY.

BIOC 408: MOLECULAR CELL BIOLOGY

STREAMS: BIOC Y4S1 **TIME: 2 HOURS**

DAY/DATE: THURSDAY 7/12/2017 **2.30 P.M - 4.30 P.M.**

INSTRUCTIONS:

- **Answer Question ONE and any other TWO Questions.**
- **Do not write on the Question paper**

QUESTION ONE [30 MARKS]

(a) Using suitable diagrams differentiate between plant and animal cells. [5 Marks]

(b) Briefly explain the cellular theories that gave rise to modern cell biology. [3 Marks]

(c) Describe the basic parts of cells which are universal for all types of cells. [4 Marks]

(d) Briefly outline the fluid Mosaic Model of Cell Membranes. [5 Marks]

(e) Differentiate between the following:
(i) Nucleus and nucleous [2 Marks]
(ii) Rough and smooth endoplasmic reticulum. [2 Marks]
(iii)Chromoplast and amyeloplasts [2 Marks]

(f) Describe the activities occurring at the leading and lagging strand in DNA replication. [5 Marks]

(g) Briefly describe the term 'embryonic cell differentiation'. [2 Marks]

QUESTION TWO [20 MARKS]

(a) Describe the various microscopic techniques applied in molecular biology experiments and research. [10 Marks]

(b) Clearly indicate the processes occurring during mitosis. [10 Marks]

QUESTION THREE

(a) Describe the process of prokaryotic DNA replication. [10 Marks]

(b) Cell division needs to be tightly regulated to minimize accumulation of errors. Describe in details the steps involved in cell cycle regulation. [10 Marks]

QUESTION FOUR [20 MARKS]

(a) Briefly describe the process of DNA translation in cells [8 Marks]

(b) Differentiate the following terms: [4 Marks]
(i) Chromosomes
(ii) Euchromatin
(iii)Karyotype
(iv)Heterochromatin

(c)What is DNA sequencing? Describe the sangers of DNA sequencing methods in molecular Biology. [8 Marks]

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