

BINGHAM UNIVERSITY
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF BIOLOGICAL SCIENCES
FIRST SEMESTER EXAMINATION - JANUARY, 2014

SESSION: 2013/2014

LEVEL: 100

CREDIT UNITS: 2

COURSE: BIO 101: General Biology I

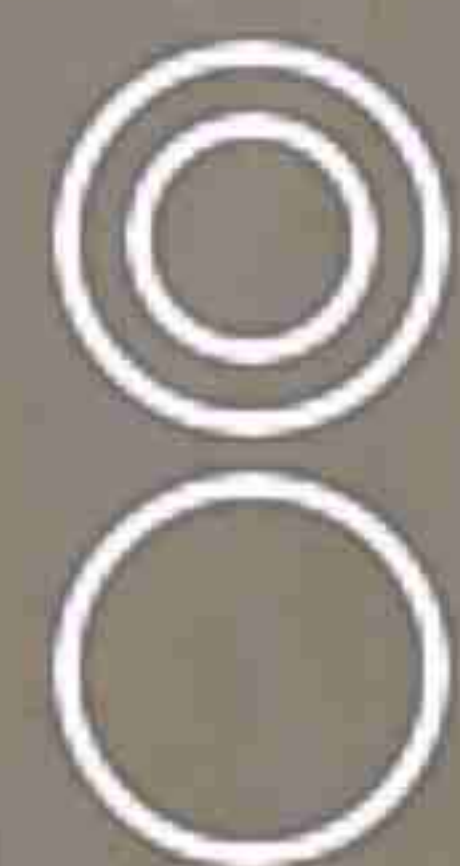
TIME ALLOWED: 2Hrs

Section A

INSTRUCTIONS: Answer **ALL** questions in **SECTION A**, and **ONE** question each from **SECTIONS B, C and D**.

1. Detrital food web begins with.....
2. The process of maintaining a relatively constant internal condition different from the environment is called
3. The two chromatins found within the nucleus of a cell are and
4. Two main branches of ecology areand.....
5. When a species produces gametes identical in structure, it is said to be
6. The simple spherical sacs bounded by a single membrane and which contains digestive enzymes is
7. The natural dwelling place of an organism is called.....
8. The three Domains of living organisms are (i), (ii)and (iii)
9. Two key terms that describe a cell areand
10. The three main types of symbiosis are (a)..... (b)..... (c).....
11. The Kingdom Monera includes unicellular organisms known as
12. One function of mitochondrion is.....
13. The cell wall of Archaeans lacks the structural molecule.....

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SECTION B

In Bingham University, assuming the Gross Primary Productivity (GPP) in 2012 was $20100 \text{ KJm}^{-2}\text{yr}^{-1}$. Energy lost by consumers due to respiration was not constant across the trophic levels. Between level 1 and 2, 2 and 3, 3 and 4, energy lost in percentage were as follows 5%, 18% and 25% respectively.

Calculate the stored energy in form of biomass by:

- (a) The primary consumers
 - (b) The secondary consumers
 - (c) The tertiary consumers
 - (d) Construct a pyramid of energy
2. (i) Discuss emergent properties in biological organization.
(ii) Mention and discuss five approaches used in the study of ecology

SECTION C

1. (a) Archaeans can be referred to as "life extremists," how is this true of the following?
- (i) Methanogens
 - (ii) Halophiles
 - (iii) Thermophiles
- (b) Mention the seven major levels of classification of organisms in the right order?
- (c) Into how many taxa is the Kingdom Protista classified? Give an example in each?
2. (a) Describe what Binomial Nomenclature is.
- (b) State the four divisions of Fungi and give a brief description of each.
- (c) Attempt to structurally classify the Kingdom Plantae.

SECTION D

3. (a) Describe and contrast prokaryotic and eukaryotic cells.
- (b) Define the term organelle
- (c) Differentiate between plant and animal cells
- (d) Describe in detail the structure and function of mitochondria.
4. Compare and contrast prokaryotic and Eukaryotic cells in terms of (i) genetic structure, (ii) intracellular structure, (iii) extracellular structure and (iv) reproductive systems.