

KATHMANDU UNIVERSITY
End Semester Examination [C]
November/December, 2023

07 DEC 2023

Level : B.Sc./B.Tech
Year : I
Time : 2 hrs. 30 mins.

Course : BIOL 103
Semester : I
F. M. : 55

SECTION "B"

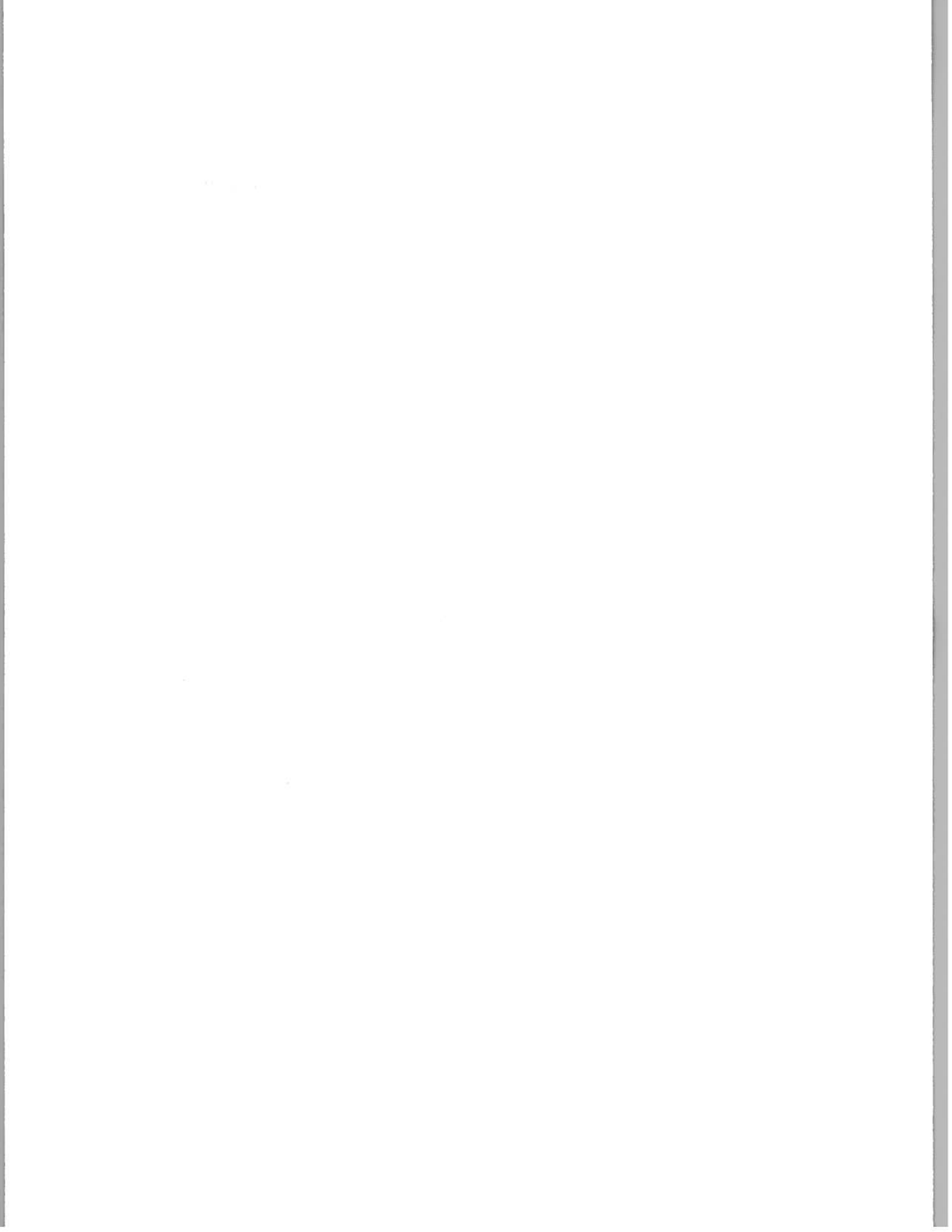
[3Q × 7 = 21 Marks]

Attempt *ANY THREE* questions.

1. Explain the steps of Glycolysis.
2. Describe the processes of the formation of megaspore in an ovule and female gametophytes from the megaspore.
3. Describe how a single character can be influenced by more than one gene. Provide the example of Bateson & Punnett's breeding experiments with Chicken.
4. What causes global climate change? What are the biological effects of climate change?

SECTION "C"

5. Write short notes on. (*ANY FIVE*) [5Q × 4 = 20 Marks]
 - a. Giant Chromosomes
 - b. Internal Structure of monocot stem with a transverse section
 - c. Overview of embryonic development in frogs
 - d. Chromosomal basis of Mendel's principles of independent assortment
 - e. Directional selection changes the average value of a trait
 - f. Algae can be used to manufacture biofuels
6. Give *TWO* major differences between. [2Q × 2 = 4 Marks]
 - a. Mitosis and Meiosis
 - b. Self-pollination and cross pollination
7. Explain why/how for the following. (*ANY FIVE*) [5Q × 2 = 10 Marks]
 - a. Stomata facilitates transpiration.
 - b. Meiosis promotes genetic variation
 - c. Testcross identifies unknown genotype
 - d. Parasites can manipulate their hosts
 - e. Aerobic respiration produces more energy
 - f. DNA comparison groups whales as artiodactyls



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Registration No.:

Date 07 DEC 2023

SECTION "A"

[20 Q. × 1 = 20 marks]

Choose and mark [✓] in the most appropriate answer box.

- Rhodophyceae belongs to which class of algae?
 Green algae Brown algae Red algae Blue green algae
- During Prophase I of meiosis, the physical exchange of DNA i.e., synapsis begins in
 Leptotene Zygotene Pachytene Diplotene
- The central most portion of dicot stem is called as:
 Cortex Endodermis Xylem Pith
- Mendel determined the ratio of white and violet flowers in F₂ generation to be:
 3:1 1:3 1:2:1 1:1
- The three chambered heart of amphibian is composed of
 an atrium and a ventricle two atria and a ventricle
 an atrium and two ventricles two atria and two ventricles
- The type of interaction in which one species benefits but the other species is unaffected is
 Commensalism Competition Consumption Mutualism
- During cleavage of an embryo, the large yolk filled cells are called as:
 megameres micromeres epiblast blastomere
- Which natural selection reduces the variation of a trait in a population?
 directional selection stabilizing selection
 disruptive selection balancing selection
- The enzyme that converts Glucose-6-Phosphate to Fructose-6-Phosphate is
 hexose kinase enolase
 phosphoglucose isomerase phosphoglycerate mutase
- Which enzyme converts Lycopene to β-carotene in Golden Rice?
 Phytoene synthase Carotene desaturase
 β-cyclase Lycopene ligase

Fill in the blanks.

11. Viruses that can attack and infect bacteria are called as _____
12. Sunlight is converted to chemical energy during photosynthesis in _____
13. The tip of the growing region of plants that increases plant height are _____
14. The portion of the fundamental niche that a species actually occupies, given limiting factors such as competition with other species is _____
15. Buccal digestion contain _____ that converts starch into maltose

Describe in ONE sentence.

16. Taxidermy
17. Emboly
18. Test cross
19. Point mutation
20. Immunoassays