KATHMANDU UNIVERSITY
End Semester Examination
March, 2025

Marks Scored:

Level : B.Sc./B.Tech.
Year : I

Course : BIOL 103
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date 21 MAR 2025

SECTION "A"
[10 Q. × 1 = 10 marks]

Choose and encircle the most appropriate answer.

1. The correct way to write the scientific name of tiger is
   a. Panthera tigris b. *panthera tigris* c. Panthera Tigris d. *Panthera tigris*

2. Sister chromatids separate during _____ while homologous chromosomes separate during _____.
   a. Metaphase II, Anaphase II b. Anaphase I, Anaphase II
   c. Anaphase II, Anaphase I d. Meiosis, Mitosis

3. The tracheids and vessels of the heartwood get plugged by the ingrowth of the adjacent parenchyma cells into their cavities through the pits. These ingrowths are called
   a. lenticels b. tyloses c. cork d. bark

4. Which of the following xylem components are usually absent in pteridophytes and most gymnosperms?
   a. Tracheids b. Vessels
   c. Xylem parenchyma d. Xylem fibres

5. How many ATP and NADPH are consumed to produce one glucose in Calvin cycle?
   a. 12, 12 b. 18, 12 c. 12, 18 d. 18, 18

6. Which plant hormone is involved in stomatal closing?
   a. Auxin b. Cytokinin c. Gibberellin d. Abscisic acid

7. In which group of plants does double fertilization occur?
   a. Bryophytes b. Pteridophytes c. Gymnosperms d. Angiosperms

8. If heterozygous tall pea plants (*Pisum sativum*) are crossed with dwarf plants of the same species, the ratio of their progenies will be
   a. All Tall b. 3 Tall: 1 Dwarf c. 1 Tall: 1 Dwarf d. All Dwarf

9. The main cause of ozone layer depletion is
   a. CFCs b. CO c. CO_2 d. CH_4

10. "Species change through time via the inheritance of acquired characters" was proposed by
    a. Plato b. Aristotle c. Lamarck d. Darwin

SECTION "B"

[10 Q. × 1 = 10 marks]

Fill in the blanks.

11. _____ is the art of preparing and preserving the skins of animals and stuffing and mounting them in lifelike form for the purpose of display or study.

12. Any chromosome that is not a sex chromosome is called _____ or somatic chromosome.

13. Blood is classified as _____ tissue.

14. Water potential is measured in units called _____.

15. Radicle is the part of the plant embryo that develops into the _____.

16. _____ is a nutritive tissue in seeds that provides nutrients to the developing embryo in angiosperms.

17. _____ is the interaction of genes, where an allele of one gene hides or masks the effect of another gene.

18. _____ is the use of microbes to clean up contaminated soil and groundwater.

19. Dinosaurs might have disappeared at the end of _____ period.

20. GMO stands for _____.

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SECTION "C"
[3 Q × 7 = 21 marks]

Attempt *ANY THREE* questions.

1. Describe the process of primary and secondary growth in dicots. How does it differ from monocots?

2. Where does the breaking down of carbohydrates, proteins, and fats occur in the digestive tract, and what enzymes are involved in digestion?

3. What are the different types of vegetative reproduction in plants? How does vegetative reproduction differ from sexual reproduction?

4. Discuss major global environmental issues and their impact on ecosystems.

SECTION "D"
[6 Q × 4 = 24 marks]

Attempt *ANY SIX* questions.

5. Describe the Five Kingdom System of Classification proposed by Whittaker.

6. What are the benefits of compartmentalization in a eukaryotic cell? Name three eukaryotic cell structures and write their functions.

7. What are epithelial tissues? Write their functions and types with examples

8. What is photorespiration? What mechanisms have plants evolved to counter the effect of photorespiration?

9. Compare dominance, co- dominance, and incomplete dominance.

10. What is speciation? Describe different types of speciation with suitable examples.

11. What are the applications of biology in health and medicine?

SECTION "E"

12. Write short notes on (***ANY FIVE***). [5 Q × 2 = 10 marks]
    a. Cellular totipotency
    b. Annual ring
    c. Endocrine glands
    d. Linkage
    e. Parthenocarpy
    f. Conservation biology