

KATHMANDU UNIVERSITY  
End Semester Examination  
June/July, 2023

Marks Scored:

Level : B.Sc.

Year : II

Exam Roll No. :

Time: 30 mins.

Course : ENVS 202

Semester : II

F. M. : 20

Registration No.:

Date : 02 JUL 2023

SECTION "A"

Mark [X] to the most appropriate option.

[20Q. × 0.5 = 10 marks]

- TAL and CHAL in Nepal illustrate biodiversity conservation at  
 genetic level     species level     ecosystem level     landscape level
- Padmaja Naidu Himalayan Zoological Park, India practices captive breeding of  
 *Rhinoceros unicornis*                       *Panthera tigris*  
 *Ailurus fulgens*                                 *Elephas maximus*
- Which of the following statement is **CORRECT** about genetic drift?  
 It operates in small populations and increases allelic heterogeneity  
 It operates in small populations and decreases allelic heterogeneity  
 It operates in large populations and increases allelic heterogeneity  
 It operates in large populations and decreases allelic heterogeneity
- Conservation value based on actual use is referred to as  
 bequest value     option value     use value     existence value
- Which of the following is **INCORRECT** about micro-satellites?  
 These are small DNA stretches of 1-4 nucleotide base pairs.  
 These are small proteins of 20 amino acid residue.  
 They form tandem repeats in Eukaryotic genome  
 They are widely used as molecular markers
- Present day cheetah population in South Africa illustrates  
 Founder population                               population bottleneck  
 micro-evolution                                     extinction
- The source of DNA in scat is  
 oral epithelial cells                               rectal epithelial cells  
 hair follicles                                       saliva
- Which of the following is **CORRECT** about aerial survey of animals?  
 Aerial survey is appropriate for megafauna survey in forest areas  
 Aerial survey is appropriate for megafauna in open areas  
 Aerial survey is appropriate for bird survey  
 Aerial survey is appropriate for burrowing animals
- Which of the following is **INCORRECT** about small populations?  
 They are subjected to Allee effect.  
 They are subjected to genetic drift.  
 They are subjected to decreased population adaptive potential.  
 They always remain as metapopulations.

10. Operation Mahahunt was launched by the  
 WWF, Nepal     Nepal Army     DNPWC, Nepal     UNDP
11. Which of the following is used to capture bats?  
 500  $\mu$ m mesh size net                       mist nets  
 pitfall traps     snares
12. Based on IUCN categorization, National Parks fall under category  
 Ia                       Ib                       II                       III
13. Species chosen strategically to raise support for conservation in a specific context are called  
 keystone species                                       flagship species  
 umbrella species                                       indicator species
14. The objectives of the CBD are covered in  
 Article I                       Article II                       Article III                       Article IV
15. Which of the following is correct about protected areas?  
 Large protected areas have large edge effects.  
 Large protected areas have small edge effects.  
 Large protected areas are easier to maintain.  
 Large protected areas always contain charismatic species
16. The entire area where census needs to be conducted is called  
 sample zone     census zone     transects     blocks

Consider the equation:  $\hat{Y} = \bar{y} * N$  and answer the questions from 17 to 20.

17. The equation is used to calculate  
 sample estimate                                       sample mean  
 total number sample units                       total population
18.  $\hat{Y}$  stands for  
 sample estimate                                       sample mean  
 total number sample units                       total population
19.  $\bar{y}$  stands for  
 sample estimate                                       sample mean  
 total number sample units                       total population
20. N stands for  
 sample estimate                                       sample mean  
 total number sample units                       total population

**Fill in the blanks.**

**[10 marks]**

21. The minimum population size with 95% probability of persistence for 100 or 1,000 years is referred to as \_\_\_\_\_.
22. Human mediated movement of living animals from one area, with release in another is called \_\_\_\_\_.

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23. The four 'R's crucial for protected area design are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
24. Preservation of biological materials in extremely low temperature is called \_\_\_\_\_.
25. DD in IUCN category stands for \_\_\_\_\_.
26. Four types of Protected Areas in Nepal are \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
27. Release of individuals into an existing population to increase its size and gene pool illustrate \_\_\_\_\_.
28. \_\_\_\_\_ is a set of sub-populations, occupying distinct habitat patches and connected through the dispersal, migration or human-mediated movement of individuals between patches.
29. Unwanted species caught during commercial fishing are called \_\_\_\_\_.
30. Forested area connecting to a larger area, serving as passageways and as alternative habitat are referred to as \_\_\_\_\_.
31. The full form of IBA is \_\_\_\_\_.
32. Change in allele frequency operating in small populations due to sampling error is called \_\_\_\_\_.
33. The number of species on an island represents a balance between \_\_\_\_\_ and \_\_\_\_\_.

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Year : III ~~II~~  
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Course : ENVS 202  
Semester : II  
F. M. : 55

SECTION "B"

[3Q. × 7 = 21 marks]

Attempt *ANY THREE* questions.

1. List at least five major threats to biodiversity. Give an account of the impacts of any one of these threats on biodiversity with appropriate examples. [1+6]
2. Define direct and indirect animal surveys. Describe the steps involved in capture mark recapture survey method. [2+5]
3. List at least four landscape level conservation approaches undertaken in Nepal. Give an account of TAL with particular focus on megafauna conservation. [2+5]
4. Define ex-situ conservation. Give an account captive breeding programmes with appropriate examples from Nepalese context. [1+6]

SECTION "C"

5. Differentiate between *ANY FOUR*. [4Q × 2 = 8 marks]
  - a. II and III category protected area categories
  - b. Primary and secondary environmental ethics
  - c. Restocking and reintroduction
  - d. Flagship species and umbrella species
  - e. Use value and option value of biodiversity
6. Give an account of : [4Q × 4 = 16 marks]
  - a. Philosophical roots of Conservation Biology
  - b. Applications of conservation genetics
  - c. Wildlife corridors in Nepal
  - d. Drawbacks of IUCN Red List
7. Give reasons for the following statements: [5Q × 2 = 10 marks]
  - a. Citizen science is important in conservation.
  - b. Effective population size is smaller than minimum viable population.
  - c. Conservation Biology is considered as a crisis discipline.
  - d. Thermo-tolerant DNA Polymerase is used in PCR
  - e. Protected areas need to be large.