KATHMANDU UNIVERSITY
End Semester Examination
June/July, 2023

Marks Scored:

Level : B.Sc.
Year : II

Course : ENVS 206
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date 13 JUL 2023

SECTION "A"
[16 Q. × 0.5 = 8 marks]

Mark [**X**] in the most appropriate option.

1. Seed texture in *Pisum sativum* illustrates biodiversity at
[ ] genetic level [ ] species level [ ] ecosystem level [ ] landscape level

2. The total number of protected areas in Nepal is
[ ] 10 [ ] 15 [ ] 20 [ ] 25

3. An area/region with high species richness is called
[ ] biodiversity hotspot [ ] megadiverse country
[ ] centres of origin [ ] centre of diversity

4. Evolution due to failure of gene flow between individuals of a population due to geographical barrier is
[ ] allopatric speciation [ ] sympatric speciation
[ ] parapatric speciation [ ] peripatric speciation

5. The Great American Interchange occurred in
[ ] Madagascar [ ] Neotropics [ ] Mesoamerica [ ] Afrotropics

6. Marsupial adaptive radiation is observed in
[ ] India [ ] Australia [ ] Neotropics [ ] Afrotropics

7. The highest lemur diversity is present in
[ ] the Sundaland [ ] Cape Floristic Province
[ ] the Madagascar [ ] the Phillipines

8. The IUCN headquarter is in
[ ] Switzerland [ ] New York [ ] London [ ] Paris

9. The most severe mass extinction occurred in the
[ ] Permian period [ ] Devonian period
[ ] Silurian period [ ] Ordovician period

10. Which of the following deals with biosafety with regard to living modified organisms?
[ ] Montreal Protocol [ ] Kyoto Protocol
[ ] Cartagena Protocol [ ] Doha Declaration

11. The invasive plant species in Chitwan National Park
[ ] *Lantana camara* [ ] *Eicchornia crassipes*
[ ] *Bidens pilosa* [ ] *Mikania micrantha*

12. Scientific names with identical generic and specific names are called
[ ] tautonyms [ ] basionyms [ ] synonyms [ ] homonyms

13. Which of the following is **FALSE**?
[ ] Biodiversity distribution is punctiform to global.
[ ] Biodiversity distribution is shaped by past geological events.
[ ] Biodiversity distribution shows latitudinal gradient.
[ ] Biodiversity distribution is always characterized by endemicity.

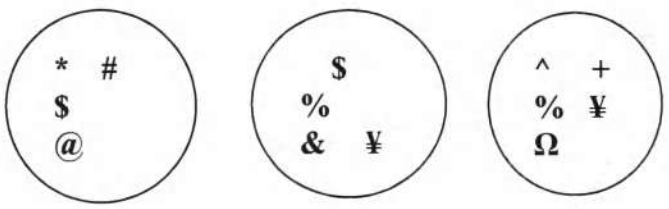
14. Improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity is consistent with Aichi target
[ ] Strategic Goal A [ ] Strategic Goal B
[ ] Strategic Goal C [ ] Strategic Goal D

15. The scientific name *Panthera tigris tigris* illustrates
[ ] sibling species [ ] sub-species [ ] ring species [ ] cryptic species

16. Udvardy's classification of ecosystems has not considered
[ ] forest ecosystems [ ] marine ecosystems
[ ] tundra ecosystem [ ] desert ecosystems

SECTION "B"
(4Q. × 0.5 = 2 marks)

Consider the following systematic position. Diversity figure



A B C

17. Species diversity seen in figures A, B and C depict
[ ] alpha diversity [ ] beta diversity [ ] gamma diversity [ ] delta diversity

18. The difference in species diversity observed between A and B; and A and C is referred to as
[ ] alpha diversity [ ] beta diversity [ ] gamma diversity [ ] delta diversity

19. The overall species diversity observed across A, B and C is referred to as
[ ] alpha diversity [ ] beta diversity [ ] gamma diversity [ ] delta diversity

20. The value of gamma diversity is
[ ] 7 [ ] 5 [ ] 2 [ ] 12

SECTION "C"
[10 marks]

Fill in the blanks.

21. The full form of IPR is _____.

22. The overall species diversity along an ecological gradient is called _____diversity.

23. Warm and humid climatic regimes characteristics of tropical rain forests is referred to as _____climate.

24. A _____diagram represents nutrient storage and flow in ecosystems.

25. Change in allele frequency in the continuum of time and space is called _____.

26. Africa belongs to _____biodiversity realm.

27. The total number of Aichi targets is _____.

28. _____are defined as groups of actually or potentially interbreeding natural populations which are reproductively isolated from other such groups.

29. Identical names assigned to different taxa illustrate _____.

30. Declaration of the World Heritage Sites falls under the jurisdiction of _____.

31. Four types of post-mating isolating mechanisms are _____, _____, _____ and _____.

32. Change in the allele frequency operating in a small population due to sampling error is called_____.

33. Continents with present day rain forests are _____, _____ and _____.

34. Darwin's finches in the Galapagos islands illustrate _____.

35. Red Biotechnology entails _____applications of biotechnology.

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SECTION "D"
[3 Q. × 7 = 21 marks]

Attempt *ANY THREE* questions.

1. List at least five megadiverse countries. Give an account of biodiversity richness of any one megadiverse country you have studied. [1+6]

2. Give an account of different direct use values of biodiversity with appropriate examples.

3. Give an account of unchartered realms of biodiversity explaining their significance.

4. Explain the role of biodiversity as an inspiration of modern day technological innovations and inventions citing appropriate examples.

SECTION "E"
[34 marks]

5. Differentiate between the following [4Q. × 2.5=10 marks]
   a. Biopiracy and bioprospecting
   b. Microevolution and macroevolution
   c. Balance and Imbalance theories of biodiversity
   d. Holotype and Isotype

6. Assign the following species with their most important value in one word. [8Q. × 0.5=4 marks]
   a. *Zea mays*
   b. *Juglans regia*
   c. *Shorea robusta*
   d. *Piper nigrum*
   e. *Azadirachta indica*
   f. *Mangifera indica*
   g. *Cocos nucifera*
   h. *Helianthus annus*

7. Give reasons why (*ANY FOUR*) [4Q. × 2.5=10 marks]
   a. Similar analogues of biota are found in Palearctic and Nearctic realms
   b. A number of biodiversity hotspots are known to harbour plant endemicity at Family levels
   c. Tropics harbour rich diversity
   d. Plants exhibit higher degree of endemism than animals
   e. Scientific names are in Latin

8. Write short notes on (*ANY TWO*) [2Q.× 3=6 marks]
   a. Speciation
   b. Ecological Theory of disturbance
   c. ICZN

9. Name any two plants and animals and add a note on their religious and spiritual significances in Nepalese context. [4]