

KATHMANDU UNIVERSITY
End Semester Examination
July/August, 2024

Marks Scored:

Level : B.Sc.

Year : III

Exam Roll No. :

Time: 30 mins.

Registration No.:

Course : ENV5 302

Semester : II

F. M. : 20

Date 16 AUG 2024

SECTION "A"

[16 Q. × 0.5 = 8 marks]

Choose and Mark [X] in the most appropriate option from each set of choices

1. First book of Limnology was written by
 Hutchinson Forel Birge Naumann
2. A fjord is a
 coral reef feature headwater feature
 coastal feature deep sea feature
3. Which of the following tend to be the deepest?
 glacial lakes tectonic lakes coastal lakes riverine lakes
4. Which of the following statement is wrong about macroinvertebrates?
 These are bottom dwelling invertebrates
 They represent a large taxonomic group
 They form the base of the aquatic food chain
 They are frequently used in bioassessment
5. Which of the following explains the gaseous exchange between the atmosphere and oceans?
 the Lokta Volterra Model the Logistic Growth Model
 the Stagnant Film Model the Exponential Growth Model
6. Siliceous cell wall is characteristic of
 Chlorophyceae Cyanophyceae Bacillariophyceae Rhodophyceae
7. A Secchi disc is used to measure
 water turbidity water salinity
 water conductivity water transparency
8. Presence of abundant red chironomid larvae in water bodies reflect
 high organic load high heavy metal concentrations
 low organic load low heavy metal concentrations
9. Temperature gradient in deep water bodies preventing water mixing is referred to as
 hypolimnion dicothermal layer
 metalimnion thermocline
10. Which of the following is not an indicator of irrigation water quality?
 SAR MAR RSC TSI

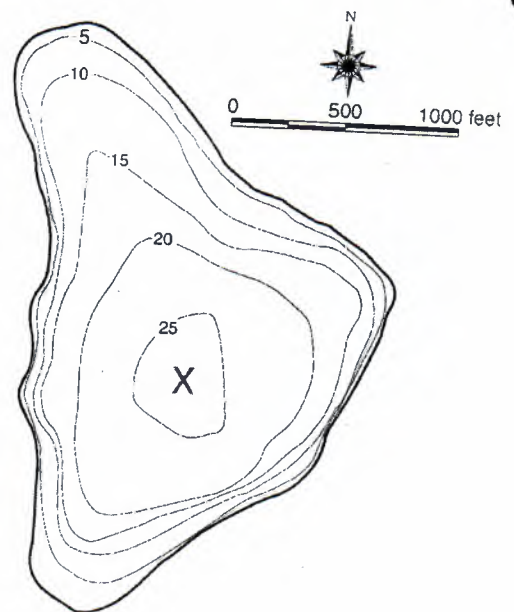
11. Riffles are characterized by
 higher current and higher DO higher current and lower DO
 lower current and higher DO lower current and lower DO
12. A water body receiving agricultural runoff is expected to have
 high O₂ concentration and high conductivity values
 high O₂ concentration and low conductivity values
 low O₂ concentration and low conductivity values
 low O₂ concentration and high conductivity value
13. Which of the following depicts the correct sequence of coral reef formation
 Barrier reef – atoll – fringing reef atoll – barrier reef – fringing reef
 fringing reef – barrier – atoll fringing reef – atoll - barrier
14. The relative concentration of sodium ion remains constant in seas and oceans. Therefore, sodium is a
 strong ion weak ion
 non-conservative ion conservative ion
15. Which of the following shows the correct sequence of increasing WRT?
 air > river > groundwater > lake air > river > lake > groundwater
 river > air > lake > groundwater groundwater > lake > river > air
16. A small increase in P concentration can cause eutrophication of water bodies. Therefore, P is a
 non-conservative ion conservative ion
 growth inhibitor limiting nutrient
17. Most of the lakes are of
 tectonic origin coastal origin glacial origin volcanic origin

SECTION "B"

[3 Q. × 0.5 = 1.5 marks]

Look at the figure and answer the questions.

18. The figure shows a
 hypsographic curve
 bathymetric map
 lake depth profile
 thermocline
19. The Z_{max} value is
 5 m 25m
 50m 75 m
20. The isopleth lines in the figure are drawn at an interval of
 5 m 25m
 50m 75 m



SECTION "C"
[10 marks]

Fill in the blanks:

21. The deepest freshwater lake is _____.
22. Epipsammic algae are found on _____.
23. Water strata preventing water mixing attributed to differential concentrations of chemicals is referred to as _____.
24. Distance below the dam where a particular variable returns to its original state above the impoundment is referred to as _____.
25. The most dominant cation and anion in marine waters are _____ and _____ respectively.
26. EPT stands for _____, _____ and _____.
27. Streams belonging to 1-3 stream orders are referred to as _____.
28. The increase in the concentration of a pollutant/contaminant with increase in trophic levels is called _____.
29. Lakes which undergo mixing throughout a year are called _____.
30. Heterotrophic aquatic swimmers are called _____.
31. Aquatic taxa adapted to water current are called _____.
32. The trophogenic lentic water layer where water mixes thoroughly is called _____.
33. NEPBIOS was developed by _____.
34. The main drivers of altitudinal limits of species distributions are _____ and _____.
35. Cryconite holes are found in _____.
36. Acidic lakes with high concentrations of humic acid are referred to as _____.

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F. M. : 55

SECTION "D"

[3 Q. × 7 = 21 marks]

Answer *ANY THREE* questions.

1. List one each of horizontal, vertical, longitudinal river concept you have studied. Give an account of the drawbacks of the RCC. [1.5+5.5=7]
2. List at least five stressors of the aquatic ecosystems. Give an account of how these stressors have affected the river systems in Nepal. [1+6=7]
3. Give an account of O₂ lake depth profiles of a eutrophic and an oligotrophic lake. [7]
4. Define Ramsar sites. Give an account of the ecology and importance of any Ramsar site from Nepal. [1+3+3=7]

SECTION "E"

[34 marks]

5. Write short notes on [4 Q. × 2=8]
 - a. Lake types based on nutrient concentrations.
 - b. Significance of headwaters
 - c. Cyanophyceae adaptation
 - d. Ecological importance of mangroves
6. Differentiate between (*ANY FOUR*) [4 Q. × 2=8]
 - a. Summer kill and winter kill
 - b. Thermocline and chemocline
 - c. Positive heterograde and negative heterograde lake depth profiles
 - d. Estuaries and deltas
 - e. Lentic systems and lotic systems
7. Give an account of (*ANY THREE*) [3 Q. × 4=12]
 - a. High altitude limnology in Nepalese context
 - b. Ekman transport
 - c. El Nino events and ocean productivity
 - d. Bioindicators
8. Give reasons for the following statements: [4 Q. × 1.5=6]
 - a. Trout fishery is not practiced in Nepalese lowlands.
 - b. Glacial lakes are often characterized by high turbidity.
 - c. Acidification of oceans negatively affects coral reefs.
 - d. Wetlands are considered as the kidneys of the earth.

