Mark Scored:

KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2019

Level : B. Sc.
Year : IV

Course : ENVS 423
Semester: I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date FEB 2 5 2019

SECTION "A"
[20 Q.× 0.5= 10 marks]

Mark "√" in the most appropriate box.

1. Dry snow zone of a glacier will be in the
[ ] lower part [ ] middle part [ ] upper part [ ] upper most part

2. The upper portion of equilibrium line of a glacier is called
[ ] accumulation area [ ] ablation area [ ] sublimation area [ ] percolation area

3. Which oxygen isotope is abundance in nature?
[ ] ^{19}O [ ] ^{17}O [ ] ^{18}O [ ] ^{16}O

4. Ice layers within a snowpack may present at
[ ] wet snow zone [ ] ablation area [ ] inside the glacier [ ] equilibrium line

5. The Last Glacial Maximum (LGM) occurred before
[ ] 200 years [ ] 20 years [ ] 2,000 years [ ] 20,000 years

6. Based on 2010 inventory, the total number of glacial lakes in Nepal is
[ ] 1466 [ ] 2466 [ ] 3808 [ ] 2808

7. Glacier mass balance will be negative in
[ ] ablation area [ ] wet snow zone [ ] dry snow zone [ ] accumulation area

8. Deformation that results from movement within or between individual ice crystals is called
[ ] stress [ ] strain [ ] creep [ ] dislocation

9. Air bubbles found in glacier ice might change to
[ ] clathrate hydrate [ ] oxygen isotope [ ] hydrogen isotope [ ] water vapor

10. An open fissure in the glacier surface is called
[ ] crevasse [ ] moulin [ ] ice cut [ ] ice cave

11. In Greenland Ice sheet, firn becomes ice at a depth of around 66 in
[ ] 10 years [ ] 100 years [ ] 1000 years [ ] 100,000 years

12. Tide water glaciers found near
[ ] sea [ ] mountain [ ] flat land [ ] valley

13. Under the present condition, land ice has δ(per mil) value will be around
[ ] -30 [ ] -40 [ ] -50 [ ] -60

14. Density of depth hoar is
[ ] 100-300 kg m^{-3} [ ] 830-917 kg m^{-3} [ ] 700-800 kg m^{-3} [ ] 50-70 kg m^{-3}

15. Most of the Nepalese glaciers are
[ ] polar type [ ] maritime type [ ] valley type [ ] hanging type

16. An ideal place for ice coring is
[ ] without surface melting [ ] without surface and basal melting
[ ] warm place [ ] cold place

17. A glacier whose mass balance zero for many years is called
[ ] in steady state [ ] advancing state [ ] retreating state [ ] stationary state

18. Interglacial period is a
[ ] warm period [ ] cold period
[ ] mild climate period [ ] very cold period

19. An electronic snow scale gives
[ ] snow depth [ ] snow depth and water equivalent
[ ] water equivalent [ ] snow density

20. Equilibrium line altitude of a glacier will move upward in
[ ] colder climate [ ] warmer climate [ ] polar climate [ ] sub-tropical climate

SECTION "B"

[10 Q. × 1 = 10 marks]

Define following terms in one sentence:

21. Pro-glacial lake:

22. Firn:

23. Ice self:

24. Sub-polar glacier:

25. Crevasse:

26. Rock glacier:

27. Hydrogen isotope:

28. Shear stress:

29. Ice cap:

30. End moraine:

KATHMANDU UNIVERSITY
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Level : B. Sc.
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Time : 2 hrs. 30 mins.

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Semester: I
F. M. : 55

SECTION "C"

(Long answer questions)
[3 Q. × 7 = 21 marks]

Attempt *ANY THREE* questions.

1. What are the causes of earth's glaciation? Explain about major ice ages.

2. Describe a method of measuring mass balance of a glacier in the field.

3. How is snow transformed into ice in dry and wet snow zones of a glacier?

4. Number of glacier and glacial lakes in Nepal has increased recently. Describe the possible causes for it.

SECTION "D"

(Short answer questions)

5. Differentiate between *ANY FOUR* [4 × 4 = 16]
   a) Little Ice Age and Last Glacial Maximum
   b) Supra-glacial and sub-glacial hydraulic systems
   c) Ice sheet and ice cap
   d) Ice dammed and moraine dammed glacial lakes
   e) Firn and ice

6. Write short notes on *ANY THREE* [3 × 4 = 12]
   a) Zones in an accumulation area
   b) Heat budget on a glacier surface
   c) Ice core study
   d) Glacier surge

7. Give reasons why [2 × 3 = 6]
   a) Plateau type glaciers are not common in Nepal.
   b) Glaciers are taken as a good indicator of climate change.