

KATHMANDU UNIVERSITY  
End Semester Examination  
February/March, 2019

Mark Scored:

Level : B. Sc.

Year : IV

Course : ENV5 435

Semester: I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date 11 MAR 2019

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Mark "✓" in the most appropriate.

- It is on the basis of elevation belts and mean annual temperatures that the \_\_\_\_\_ of a watershed is done.  
a. Slope class map  
b. Land use map  
c. Agro climatic zone map  
d. Base map
- Watershed has been defined by \_\_\_\_\_, as an ecosystem in itself, consisting of production, protection, and multipurpose subsystems.  
a. Paembonan (1985)  
b. Hibbert (1967)  
c. Horton (1945)  
d. Lee (1964)
- Lifting of warm air over mountain barriers induced by precipitation is \_\_\_\_\_.  
a. Cyclonic  
b. Frontal  
c. Orographic  
d. Convective
- \_\_\_\_\_ is not a factor affecting storm flow response.  
a. Size and shape  
b. Time  
c. Vegetation type  
d. Infiltration index
- It is improper to use land for cultivation when the slope of land exceeds \_\_\_\_\_ degrees.  
a. 30  
b. 38  
c. 40  
d. 60
- Along the contour lines and across slopes, diversion ditches are constructed for the purpose of \_\_\_\_\_ surface runoff.  
a. intercepts, diverts  
b. culvert, diverts  
c. dams, fume  
d. all
- To slow the flow of water in channels \_\_\_\_\_ are constructed.  
a. dams  
b. drop structures  
c. wood  
d. debris cover
- According to basic strategy of DSCWM, what is area of sub watershed, c?  
a. 30 km<sup>2</sup>  
b. few to 25 km<sup>2</sup>  
c. few to 23 m<sup>2</sup>  
d. 25 km<sup>2</sup>
- Where in Nepal does maximum rainfall of 5010 mm occur?  
a. Panchkhal  
b. Chumle  
c. Lumle  
d. Tulsipur
- In \_\_\_\_\_ zone of Nepal, Sal forest (*Shorea robusta*) are found.  
a. Tropical  
b. Temperate  
c. Sub-tropical  
d. Sub-temperate

11. \_\_\_\_\_ is defined as the mean monthly air temperature being greater than 22 °C.  
 a. Lower sub-tropical monsoon                      b. Upper sub-tropical monsoon  
 c. Warm temperate monsoon                      d. Cool temperate monsoon
12. \_\_\_\_\_ can grow in a minimum temperature of 4 °C?  
 a. Potato                      b. Barley                      c. Oats                      d. Wheat
13. In \_\_\_\_\_ FAO established Land evaluation frame work concept and principles.  
 a. 1976                      b. 1989                      c. 1980                      d. 1992
14. \_\_\_\_\_ km<sup>3</sup> of fresh water is globally withdrawn annually.  
 a. 3900                      b. 3800                      c. 38000                      d. 39000
15. In oligotrophic lakes P-constituents fall under the range of \_\_\_\_\_  
 a. 1-3                      b. 5-15                      c. 1-5                      d. 1-10
16. One of the major cation which commonly occurs in water is \_\_\_\_\_?  
 a. Ca                      b. Al                      c. H                      d. Li
17. \_\_\_\_\_ inversely relates to the solubility of oxygen in water.  
 a. Temperature                      b. Turbidity                      c. dissolved solids                      d. All of the above
18. \_\_\_\_\_ is the Overhead Application of water for irrigation.  
 a. Border strip                      b. Furrow method  
 c. Sprinkler irrigation                      d. Surface drip
19. Less than \_\_\_\_\_ small watershed, structures like weirs and flumes are used for stream flow measurement.  
 a. 800 ha                      b. 1500 ha                      c. 300 ha                      d. 670 ha
20. \_\_\_\_\_ is measured by NTU  
 a. Turbidity                      b. Depth                      c. Velocity                      d. Temperature

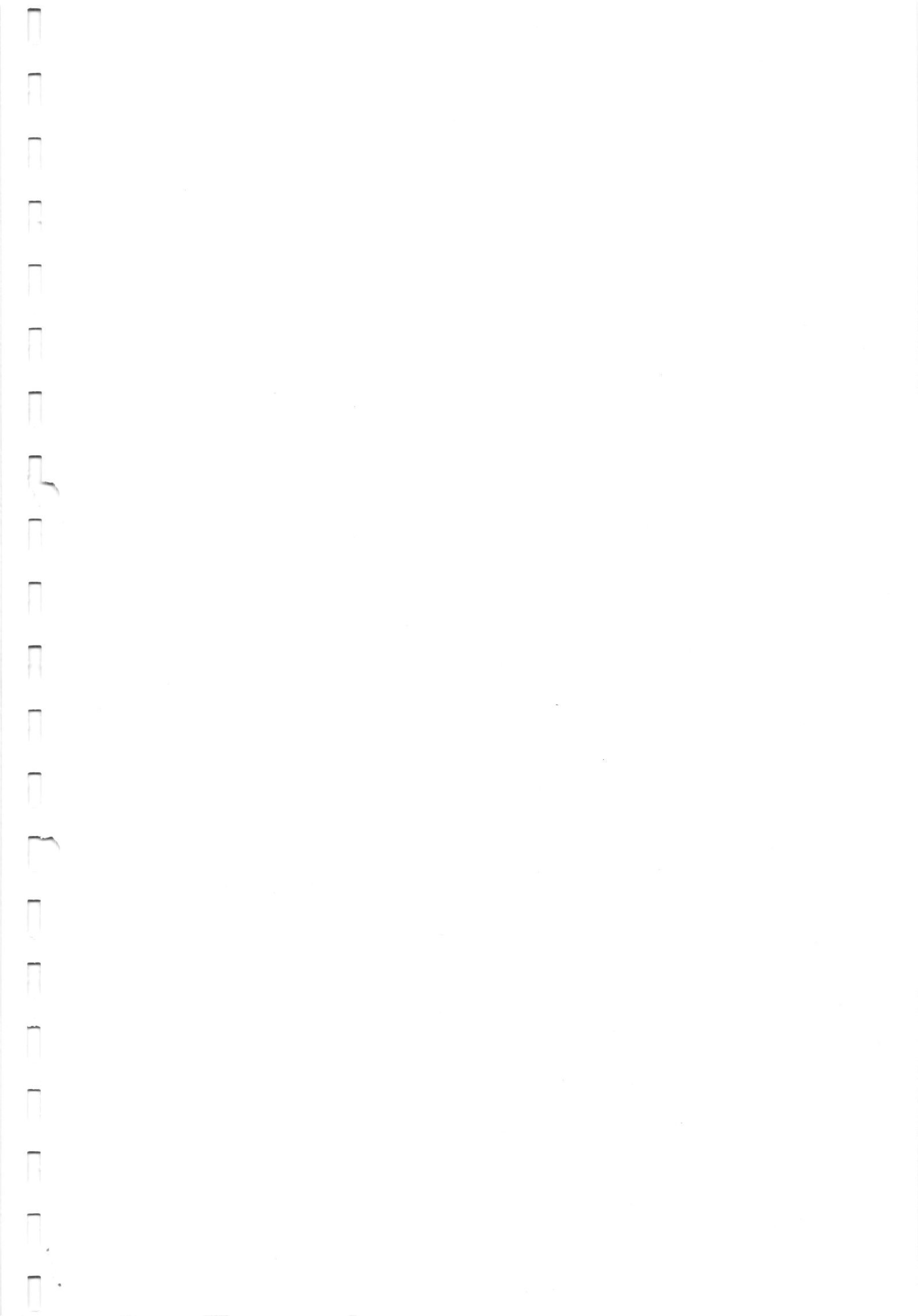
#### SECTION "B"

[20 Q. × 0.5 = 10 marks]

Fill in the blanks.

21. The sub-alpine zones fall in the elevation \_\_\_\_\_, according to the general altitudinal zonation in the Himalayas.
22. It is through the preparation of \_\_\_\_\_ maps that generally a watershed depicted graphically.
23. \_\_\_\_\_ area, watershed, catchments are used for small streams and rivers, while, drainage basin and river basin is used for large river systems with numerous sub-watersheds or sub-catchments.
24. To give overall responsibility to manage and conserve watersheds and their resources to the \_\_\_\_\_ has been the policy of the Nepalese government.

25. The discharge of vapors to the atmosphere via \_\_\_\_\_ is called Transpiration.
26. The basis for developing watershed management practices for minimizing negative impacts on \_\_\_\_\_ water quality is provided VSAC.
27. Relative Leaf Water Content (RLWC) = 
$$\frac{\text{Fresh weight} - \text{Oven dry weight}}{\text{Oven dry weight}}$$
28. Other than merely watering crops, which include drainage, leaching etc., sometimes \_\_\_\_\_ is done for Special Purpose Irrigation.
29. With relatively \_\_\_\_\_ soils, bench terraces are used on sloping land to retain water and control erosion.
30. Over time soil barriers made of wood or rocks may develop into \_\_\_\_\_ of trees and shrubs.
31. Land resource data and its computerization/digitization, have become essential for the manipulation and interpretation of \_\_\_\_\_ using Land Information and Geographical Information Systems (LIS & GIS).
32. The approach to water-resource protection that enables individuals, groups, and institutions with a stake in management outcomes to participate in identifying and addressing \_\_\_\_\_ issues which affect or are affected by watershed functions, is called Community-based watershed management.
33. Developing \_\_\_\_\_ beneficial relationships in development that includes all group in which participation should not be manipulated is called Participatory.
34. A world Bank official (Sandstrom, 1994) noted: "through participation, we lost control of the \_\_\_\_\_, and in doing so, gained ownership and sustainability, precious things in our business".
35. For \_\_\_\_\_ and development within a watershed, PIWM is aimed at farmers' & communities' natural resource mgmt.
36. To help define community's development aspiration and to develop a \_\_\_\_\_ of the state to be achieved (visualizing) the social interactive process of Community envisioning exercise is designed.
37. Participatory Rural Appraisal is a \_\_\_\_\_ of learning – locals and outsiders learn from each other.
38. To seek root causes of \_\_\_\_\_ is the singular goal of APA.
39. Many rural farms and \_\_\_\_\_ activities that impact the watershed and environment involve a greater role of women.
40. That which is of local origin and initiative and not \_\_\_\_\_ brought in from outside is known as Indigenous Knowledge or technology.



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SECTION "C"

[3Q. × 7 = 21 marks]

Answer *ANY THREE* questions.

1. What is DSCWM? Give an account of watershed management policies and principles in Nepal. [1+3+3=7]
2. How have you found your practical field exercise on watershed analysis? Have you found space of RRA, PRA and APA in your practical assignment? Elaborate with examples. [2+5=7]
3. Describe stream order with a diagram. Write an essay on Watershed Horology. [2+5=7]
4. Define the lands. Explain the Management of irrigation water. [2+5=7]

SECTION "D"

[34 marks]

5. Write short notes on: (*ANY THREE*) [3Q. × 3 = 9]
  - a. ITK
  - b. Gender myth
  - c. Zero tillage
  - d. Divide
6. Differentiate clearly of the following: (*ANY THREE*) [3Q. × 3 = 9]
  - a. IWRM and PIWM
  - b. Static versus dynamic models
  - c. Soil barriers and Soil traps
  - d. Soil moisture and ground water
7. Give reasons of the following: [4Q. × 4 = 16]
  - a. Bioengineering is important for roadside hill slop and gully stabilization.
  - b. Human accelerates the rate of watershed degradation.
  - c. Use of stone walls in sloppy land progress to formation of terraces.
  - d. Soil and water has to be conserved ever in a watershed.

