KATHMANDU UNIVERSITY
End Semester Examination
March/April, 2017

Marks Scored:

Level : B. Sc.
Year : IV
Course : ENVS 435
Semester : I
Exam Roll No. :
Time: 30 mins.
F. M. : 20
Registration No.:
Date :

SECTION "A"
[20 Q. × 0.5= 10 marks]

Mark "✓" in the most appropriate.

1. Precipitation induced by lifting of warm air over mountain barriers.
   a. Cyclonic b. Frontal c. Orographic d. Convective

2. Infiltration index is denoted by:
   a. phi-index b. beta-index c. alpha-index d. chi-index

3. The Manning equation is:
   a. $V= (1.49/n)R_n^{2/3} s^{1/2}$ b. Q=VA
   c. $V=c\sqrt{Rn}S$ d. $C=(1.49/n)R_n^{1/6}$

4. In .....method of rainfall estimation , area is delineated between iso-rainfall lines and it is extrapolated using some numerical analysis
   a. simple arithmetic b. thiessen polygon c. isohyetal d. polyhyetal

5. Accuracy of V-notch is:
   a. 0.5-1% b. 1-2% c. 1-4% d. 0.5-3%

6. One small watershed, less than .....in size, structures like weirs and flumes are used for stream flow measurement.
   a. 800 ha b. 1500 ha c. 300 ha d. 670 ha

7. Land degradation, forest degradation and water quality and quantity decline all comes under .....degradation.
   a. watershed b. natural resource c. landscape d. human kind

8. Accelerated soil erosion, slope destabilization are forms of .....degradation.
   a. water b. soil c. forst d. land

9. Compost mounds requires a large quantity of.....material.
   a. mulching b. covering c. composting d. manuring

10. The .....is a good example of contour farming.
    a. bench terrace b. damming c. fumes d. drop structures

11. .....are constructed to slow the flow of water in channels.
    a. dams b. drop structures c. wood d. debris cover

12. Watershed is all the land within the confines of.....
    a. river basin  b. drainage divide  c. basin  d. rivershed

13. What is area of sub watershed, according to basic strategy of DSCWM? (c)
    a. 30 $km^2$  b. few to 23 $m^2$  c. few to 25 $km^2$  d. 25 $km^2$

14. Year of action plan for conservation of biological diversity is .....
    a. 2005-2010  b. 2000-2005  c. 1995-2000  d. 1990-1995

15. Planners of project planning in WSM should consider the interaction and impacts between .....
    a. physical and chemical parameters  b. people and biodiversity
    c. natural resources and biodiversity  d. natural resources and people

16. How many agro-climatic zones are there in Nepal?
    a. 5  b. 6  c. 7  d. 8

17. In which place of Nepal there is maximum rainfall of 5010 mm?
    a. Panchkhal  b. Lumle  c. Humla  d. Tulsipur

18. If the mean monthly air temperature is 16-20 °C then it is called
    a. lower sub-trop. Monsoon  b. upper sub-tropical monsoon
    c. warm temperate monsoon  d. cool temperate monsoon

19. Solubility of oxygen in water is inversely related to
    a. temperature  b. turbidity  c. tds  d. pH

20. NTU stands for what?
    a. Nephelometric Turbidity Units  b. Non Transferrable Units
    c. Nitrogen Transfer Units  d. Nepalese Topographic Units

## SECTION "B"

[20 Q. × 0.5= 10 marks]

Fill in the blanks.

21. Lines joining equal rainfall are known as .....

22. .....is water that flows over the soil surface and occurs from areas that are impervious.

23. The portion of total precipitation that runs off the land surface plus that drains from the soil represents .....

24. .....is the transportation of precipitation down slope as flow through macrospores, rodent tunnels, etc.

25. .....is defined as the storm flow or direct runoff that occurs uniformly over the area and over a given time increment.

26. Stainless steel flumes with integral approach section have been developed to ensure high levels of accuracy and durability with ..... technologies.

27. Planting grasses along the .....creates barriers to minimize soil erosion and runoff.

28. In zero tillage a simple farm implements such as ..... and digging sticks are used to prepare land and food crops.

29. . ..... are constructed to harvest soil eroded from the upper slopes of the catchment.

30. Gibbs defined watershed as "a readily defined, ..... unit established by a relationship between physical and cultural influences".

31. ..... society and rural communities are also integral components of many watersheds.

32. USAD stands for.....

33. Land capability classes are based on soil depth .....and moisture characteristics.

34. Computerization and digitization of land resource data have become essential for the manipulation and interpretation of data using.....and Geographical Information Systems.

35. ..... function of land regulates storage and flow of surface and ground water resources, and influences their quality.

36. For land evaluation framework concepts and principles..... approach is required.

37. Two paddy and one other crops can be grown in the elevation range of .....

38. Rhododendron, Nepali national flower is found in the elevation of .....

39. WUE is defined as the ratio of .....per unit area to transpiration loss from the crop.

40. Damming of river is effective in.....trend of Nepal.

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APR 0 3 2017

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## SECTION "C"

[3Q × 7 = 21 marks]

Answer *ANY THREE* questions.

1. Do you think every watershed is a hydro-geological unit? Elaborate mechanism of VSAC with suitable diagrams. [3+4=7]

2. What do you understand by WOCAT watershed Module? Have you found space of RRA, PRA and APA in your practical assignment? Elaborate with examples. [2+5=7]

3. Draw a general land capability grid and explain capability classes. Discuss criteria for capability classification. [3+2+2=7]

4. Why there is need for soil and water conservation in a watershed? Name the different types of terraces. Explain the process of terrace formation without burying topsoil. [2+2+3=7]

## SECTION "D"

5. Write Short Notes on the following: (*ANY FIVE*) [5Q × 2 = 10]
   a. Effective Rainfall
   b. Topographical Map
   c. Zero tillage
   d. Main legal reference to watershed management.
   e. Canal water cascade
   f. Brush Wattle Construction

6. Differentiate Clearly: (*ANY FOUR*) [4Q × 3 = 12]
   a. IWSM and IWRM
   b. Irrigation and conservation irrigation
   c. Watershed and landscape with a drawing
   d. Grass strips and hedgerows
   e. River discharge and velocity

7. Give Reasons: (*ANY THREE*) [3Q × 4 = 12]
   a. Watershed Management Plan is imperative to start implementation.
   b. Different crops required different range of temperature for the productivity
   c. Active and passive conjugative water use are equally important to practice
   d. Erosion processes are expressed in terms of scale.