

KATHMANDU UNIVERSITY  
End Semester Examination [C]  
June, 2018

Marks Scored:

Level : B. Sc.  
Year : IV

Course : ENVS 435  
Semester: I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date JUN. 19 2018

SECTION "A"

[20Q × 0.5 = 10 marks]

Mark "✓" in the most appropriate answer.

1. Which is NOT a factors affecting storm flow response?  
a. Size and shape      b. Time      c. Vegetation type      d. Infiltration index
2. Precipitation induced by lifting of warm air over mountain barriers.  
a. Cyclonic      b. Frontal      c. Orographic      d. Convective
3. Infiltration index is denoted by  
a. phi-index      b. beta-index      c. alpha-index      d. chi-index
4. The Manning equation is:  
a.  $V = (1.49/n)R_n^{2/3} S^{1/2}$       b.  $Q = VA$   
c.  $V = c\sqrt{RnS}$       d.  $C = (1.49/n)R_n^{1/6}$
5. 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
6. One small watershed, less than \_\_\_\_\_ in size, structures like weirs and flumes are used for stream flow measurement.  
a. 800ha      b. 1500ha      c. 300ha      d. 670ha
7. Compost mounds require a large quantity of \_\_\_\_\_ material.  
a. mulching      b. covering      c. composting      d. manuring
8. The \_\_\_\_\_ is a good example of contour farming.  
a. bench terrace      b. damming      c. fumes      d. drop structures
9. 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
10. For land evaluation framework concept and principles, \_\_\_\_\_ approach is required.  
a. trans-boundary      b. multi-disciplinary  
c. trans-disciplinary      d. sustainability

11. Which crop can grow in minimum temperature up to 4 °C?  
 a. Potato                      b. Oats.                      c. Barley                      d. Wheat
12. Overhead Application Methods is \_\_\_\_\_  
 a. Border strip                      b. Furrow method  
 c. Sprinkler irrigation                      d. Surface drip
13. \_\_\_\_\_ against gravity under pressure from aquifer.  
 a. Gravity flow                      b. Pumping                      c. Artesian wells                      d. Piping
14. TOPMODEL includes two mechanisms to estimate the surface \_\_\_\_\_ production, one is the infiltration excess and another is the saturation excess.  
 a. runoff                      b.rill                      c. flood                      d. moisture
15. \_\_\_\_\_ defines watershed as an ecosystem in itself, consisting of production, protection, and multipurpose subsystems.  
 a. Paembonan (1985)                      b. Hibbert(1967)  
 c. Horton(1945)                      d. Lee(1064)
16. The main \_\_\_\_\_ reference to watershed management is the “*Soil Conservation and Watershed Management act*” of 1982.  
 a. policy                      b. planning                      c. legal                      d. guidelines
17. The development of a watershed management plan needs to integrate.  
 a. biophysical, socio-cultural and politico-economic factors.  
 b. economically feasible, socio-cultural and politico-economic factors  
 c. biophysical, environmentally friendly I and politico-economic factors  
 d. biophysical, socio-cultural and environmentally friendly
18. Run-of-the-river type of hydro-electricity generation is suitable in the \_\_\_\_\_ trend of river of Nepal  
 a. East-South                      b. North-West                      c. East-North                      d. North-South
19. Steps in Participatory Monitoring & Evaluation are NOT the \_\_\_\_\_  
 a. Using own best judgment  
 b. Understand the projects goals and objectives  
 c. Identify the activities to achieve the objectives  
 d. Develop indicators for each activity to be done
20. *Myths* preventing women’s involvement in IWM programmes are  
 a. both men and women are members of watershed communities and active participants in development  
 b. women have been traditionally or overlooked excluded from proper representation in the development and planning/decision- making process  
 c. watershed development/mgmt. programmes have been shown to be less successful when gender relations are not considered  
 d. women are incompetent at certain activities such as public speaking; discussion; meetings, etc.

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SECTION "B"

[20Q × 0.5 = 10 marks]

Fill in the blanks.

21. Standard method of evaporation determination is \_\_\_\_\_
22. Lines joining equal rainfall are known as \_\_\_\_\_
23. \_\_\_\_\_ is the transportation of precipitation down slope as flow through macropores, rodent tunnels, etc.
24. Stainless steel flumes with integral approach section have been developed to ensure high levels of accuracy and durability with \_\_\_\_\_ technologies
25. Planting grasses along the \_\_\_\_\_ creates barriers to minimize soil erosion and runoff.
26. \_\_\_\_\_ are constructed to harvest soil eroded from the upper slopes of the catchment.
27. Gibbs defined watershed as "a readily defined, \_\_\_\_\_ unit established by a relationship between physical and cultural influences".
28. Maps of land holdings types & ownership information is called \_\_\_\_\_
29. A general altitudinal zonation (LRMP, 1986), says Dhulikhel which fall in \_\_\_\_\_ m is warm temperate zone.
30. Indicators of Participatory \_\_\_\_\_ should be SMART: i.e S – specific, M – measurable, A – attainable, R – realistic, T – Time bound.
31. 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".
32. Rhododendron Nepali national flower found above the elevation is about \_\_\_\_\_.
33. WUE is defined as the ratio of \_\_\_\_\_ per unit area to transpiration (T) loss from the crop.
34. Low economic country used \_\_\_\_\_ amount for water for agriculture.
35. Appreciative Planning and Action is \_\_\_\_\_ enough that anyone can do it but profound enough to change people's lives.

36. Water used for irrigation should be free of \_\_\_\_\_ compounds.
37. Minimum tillage is common and effective in controlling soil erosion particularly on highly erodible and \_\_\_\_\_ soils
38. As a development unit, Gibbs defined watershed as "a readily defined, \_\_\_\_\_ unit established by a relationship between physical and \_\_\_\_\_ influences".
39. Computerization and digitization of land resource data have become essential for the manipulation and interpretation of data using \_\_\_\_\_ and \_\_\_\_\_.
40. Bacterial growth proceeds exponentially in the \_\_\_\_\_ and \_\_\_\_\_ decomposition zones.

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SECTION "C"

[3Q × 7 = 21 marks]

Answer *ANY THREE* questions.

1. What is the benefit of community envisioning exercise? Give the dynamics of it. [2+5]
2. How the problem of water can be solved by integrated water resource management and conjugative water use concepts? Explain the Management of irrigation water in farm. [4+3]
3. Give an essay on the hydrology for watershed management. [2+5]
4. Are you equip with any indigenous knowledge from your community, how does it help for your progress? . Introduce at least 5 very important ITK for soil conservation, with appropriate diagram and description. [2+5]

SECTION "D"

5. Write Short Notes [4Q × 2.5 = 10 marks]
  - a. Stream Flow
  - b. Divide
  - c. Land degradation
  - d. Water resources of Nepal
6. Give Reasons [4Q × 3 = 12 marks]
  - a. Pradhan nursery helps for soil conservation.
  - b. Integrated watershed management is an effective tool for eco-friendly development of an area.
  - c. Watersheds are hydro geological units.
  - d. Soil and water has to be conserved ever in a watershed.
7. Differentiate clearly [4Q × 3 = 12 marks]
  - a. Unit hydrograph and elementary hydrograph
  - b. Soil barrier and soil trap.
  - c. Stochastic and Deterministic model.
  - d. Soil moisture and ground water.

