

KATHMANDU UNIVERSITY  
End Semester Examination  
February/March, 2018

Marks Scored:

Level : B. Sc.  
Year : IV

Course : ENV5 435  
Semester: I

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date **MAR 21 2018**

SECTION "A"

[20Q × 0.5 = 10 marks]

Mark "✓" in the most appropriate answer.

1. 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
2. Watersheds are comprised of the various \_\_\_\_\_ in a map.  
a. contour                      b. layers                      c. terraces                      d. drainage
3. Rainfall from \_\_\_\_\_ fall into light category.  
a. less than 2-5 mm/hr                      b. 2.5-7.6 mm/hr  
c. greater than 2-5 mm/hr                      d. greater than 2-8 mm/hr
4. Water budget determination of reservoir evaporation(E) is calculated by: \_\_\_\_\_  
a.  $E=(S_1 - S_2)+I+P-O-Og$                       b.  $E=(S_1 + S_2)+I+P-O-Og$   
c.  $E=(S_1 - S_2)+I-P-O-Og$                       d.  $E=(S_1 - S_2)+I+P-O+Og$
5. Which is not a factors affecting storm flow response?  
a. Size and shape                      b. Time                      c. Vegetation type                      d. Infiltration index
6. Springs are categorized under stream order: \_\_\_\_\_  
a. First                      b. Second                      c. Third                      d. Fourth
7. Accuracy of V-notch is: \_\_\_\_\_  
a. 0.5-1%                      b. 1-2%                      c. 1-4%                      d. None of the above
8. Watershed \_\_\_\_\_ affects how quickly surface and sub-surface flow reaches the outlet of watershed.  
a. Size                      b. Volume                      c. Shape                      d. Area
9. \_\_\_\_\_ is not constant, but is variable during and between storms.  
a. Surface area                      b. Volume                      c. Shape                      d. Source area
10. The graphical relationship of steam flow discharge ( $m^3/sec$ ) plotted against time is.  
a. Unit hydrograph                      b. Stream flow hydrograph  
c. Elemental hydrograph                      d. Flood hydrograph

11. \_\_\_\_\_ separates zone of saturation from zone of aeration.  
 a. Water table      b. Saturation point      c. Tree line      d. Aeration line
12. Improper land use is when the slope of land for cultivation exceeds \_\_\_\_\_ degrees.  
 a. 30      b. 38      c. 40      d. 60
13. \_\_\_\_\_ erosion occurs when runoff water accumulates and rapidly flows in narrow channels during or immediately after heavy rains or melting snow.  
 a. rill      b. sheet      c. gully      d. soil
14. The \_\_\_\_\_ is a good example of contour farming.  
 a. bench terrace      b. damming      c. fumes      d. drop structures
15. \_\_\_\_\_ are constructed to slow the flow of water in channels.  
 a. dams      b. drop structures      c. wood      d. debris cover
16. According to the vegetation altitudinal zonation in the Nepal Himalayas which zones is uniform along Terai / foothills?  
 a. Temperate      b. Sub-tropical      c. alpine      d. tropical
17. For land evaluation framework concept and principles, \_\_\_\_\_ approach is required.  
 a. Trans-boundary      b. Multi-disciplinary      c. trans-disciplinary      d. sustainability
18. Which crop can grow in minimum temperature up to 4 °C?  
 a. Potato      b. Barley      c. Oats      d. Wheat
19. Overhead Application Methods is \_\_\_\_\_  
 a. Border strip      b. Furrow method  
 c. Sprinkler irrigation      d. Surface drip
20. \_\_\_\_\_ against gravity under pressure from aquifer.  
 a. Gravity flow      b. Pumping      c. Artesian wells      d. Piping

SECTION "B"

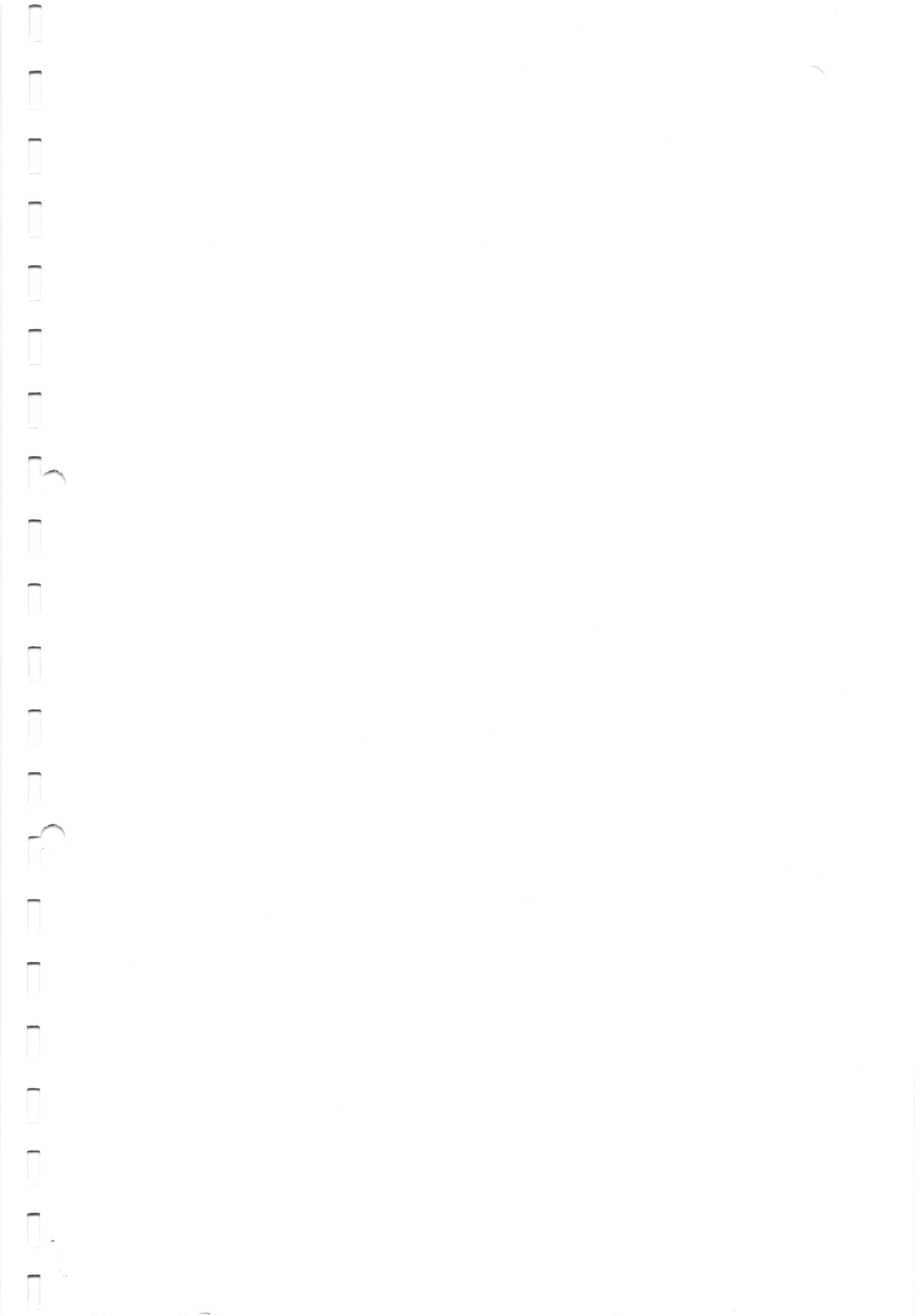
[20Q × 0.5 = 10 marks]

Fill in the blanks.

21. A watershed is generally depicted graphically through the presentation of a \_\_\_\_\_ map.

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22. \_\_\_\_\_ analysis and similitude theories are used in the process to ensure that model results can be extrapolated to the real system with confidence.
23. \_\_\_\_\_ and ordering of streams in a watershed are the determinants of surface water flow.
24. Standard method of evaporation determination is.....
25. \_\_\_\_\_ is the discharge of vapor to the atmosphere via plants.
26. Zone of aeration in sub-surface water consists of \_\_\_\_\_ water.
27. The larger the watershed, the greater the velocity and \_\_\_\_\_ of stream flow for rainfall or snowmelt.
28. A flume is an open artificial water channel, in the form of \_\_\_\_\_ chute, that leads water from a diversion dam or weir completely aside a natural flow.
29. Mulching of grass cutting may contribute to \_\_\_\_\_ problem.
30. Slips and \_\_\_\_\_ is a small slope failure, generally debris not moving far down slope.
31. Topographic, \_\_\_\_\_ and hydrologic units within a basin.
32. Watersheds are natural bio-geophysical units that are important in terms of \_\_\_\_\_ sound management.
33. Linkage among watershed practices and benefits in upstream and downstream areas includes maintenance and \_\_\_\_\_ of water quality.
34. Land capability classes are based on soil depth, \_\_\_\_\_ and moisture characteristics.
35. Subclasses of land capability classification are based upon \_\_\_\_\_ and moisture regimes.
36. \_\_\_\_\_ function of land transport of people, inputs and produce; movement of plants and animals between natural ecosystems.
37. Rhododendron Nepali national flower found above the elevation is about \_\_\_\_\_
38. WUE is defined as the ratio of \_\_\_\_\_ per unit area to transpiration (T) loss from the crop.
39. Dieldrin is hazardous \_\_\_\_\_ compound.
40. Water used for irrigation should be free of \_\_\_\_\_ compounds.



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SECTION "C"

[3Q × 7 = 21 marks]

Answer *ANY THREE* questions.

1. Explain participatory planning, monitoring and evaluation. Give an account of community envisioning exercise. [3+4]
2. Which watershed belongs to you? Explain 6 useful technologies of soil and water management with their advantage and limitation on your region [1+6]
3. Conjunctive water use is inevitable for today's society; conclude that with an essay on watershed hydrology. [5+2]
4. Elaborate the mechanism of VSAC with suitable diagrams. Is there any relation with spring water source in mountain? [5+2]

SECTION "D"

5. Write Short Notes (*ANY THREE*) [3Q × 3 = 9 marks]
  - a. SLM
  - b. Human Dimension and capabilities to manage water resource
  - c. Gender myths
  - d. Principles of land evaluation framework
6. Differentiate Clearly (*ANY THREE*) [3Q × 3 = 9Q]
  - a. RRA and PRA
  - b. Irrigation and conservation irrigation
  - c. Static versus dynamic models
  - d. Platform terraces and step terraces.
7. Give Reasons (*ANY FOUR*) [4Q × 4 = 16]
  - a. ITK are important for IWM
  - b. APA should be simple enough so that anyone can do it, but should be profound enough to change people live.
  - c. Bioengineering is important for roadside hill slop and gully stabilization.
  - d. People are responsible for degradation of the watershed they belong.
  - e. Integrated water resource management is a cross-sectoral policy.

