



UNIVERSITY OF AGRICULTURE, ABEOKUTA
DEPARTMENT OF WATER RESOURCES MANAGEMENT & AGROMETEOROLOGY

2008/2009 SECOND SEMESTER EXAMINATION

WMA 510: WATERSHED MANAGEMENT

TIME: 3 Hours

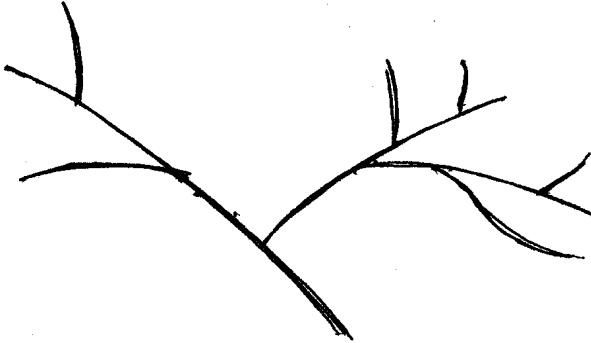
INSTRUCTIONS: Answer ALL Questions in Section A and other ANY Other THREE with ATLEAST one from Section B and Section C

SECTION A: Answer all Questions

1. is that portion of the available water that is relatively easy for a plant to use.
2.comprises both biological (e.g., bugs, fish, animals, etc.) and physical components (e.g., air, water, soil, etc.) and their interactions characterize the ecosystem.
3. Watershed management is the process of creating and implementing.....,, and..... to sustain and enhance watershed functions that affect the plant, animal, and human communities within a watershed boundary.
4. The 3 processes Involved Watershed Hydrology are?,, and
5. The watershed is often used as a or..... unit.
6. In Watershed Approaches, the 3 different approaches that may be needed are, and
7. The various tools of watershed management are,,,,
8. A is defined as the land area drained by a river and its tributaries.
9. What are the variables that constitute change in storage in Water Cycle Hydrology
10. Water depth (d) can be defined as /
11. The four principles of watershed management are,,and
12. are also distinct, measurable statements that reflect the goals, but are meant to guide ongoing implementation actions in the watershed.
13. What are the four sub-principle of watersheds management as **natural systems** that we can work with?,,, and
14. can be expressed in terms of soil water content or soil water potential (tension).
15. The 3 benefits of watershed approach are, and
16. A small watershed that nests inside of a larger watershed is sometimes referred to as a.....
17. The Watershed and Sub Watershed Management were generally driven by any or all of the following 4 factors:,, and
18. are distinct, specific, measurable statements that reflect and define each goal. They are designed to direct, track and measure progress over the next several years of preparing the Watershed Plan, but they do not necessarily guide implementing "on the ground" actions in the watershed.
19. is the branch of hydrology which deals with the effects of land management and vegetation on the quantity, quality and timing of water yields, including floods, erosion and sedimentation
20. Working with your watershed also means understanding how most in the watershed can occur in harmony with natural processes.
21. What are the 4 basic factors in understanding your watershed?,, and...

SECTION B: Answer ATLEAST one Question

- 1) (a) Explain how the drainage density influence runoff pattern of a watershed
(b) What is circularity ratio for a perfectly circular basin?
(c) Order the drainage network below according to
 - i) Straler (1964)
 - ii) Steve (1960)
iii) Calculate the bifurcation ratio of the streams with order 2 using steve method of ordering



- 2) (a) List the four factors that must be addressed to achieve integrated solid waste collection strategies. Discuss in detail any two of the factors
(b) List five options available for kerbside collection; explain how 2 of the 5 options are achieved
(c) What is the function of a baler in solid waste management?

SECTION C: Answer ATLEAST one Question

- 3) (a) Explain the terms “ Stabilisation ponds” and sewage
(b) Of what advantage are stabilization ponds compared to other forms of treatment?
(c) Explain why the interception loss of forests is much greater than that from grass, although their canopy storage capacities may be very similar
- 4) (a) Explain the concept and significance of watershed management
(b) Write explanatory notes of each of the following processes and comment on their roles in the basin hydrologic cycles
 - i) Interception
 - ii) Infiltration
 - iii) Evapotranspiration