

Subject Name: WATERSHED MANAGEMENT
Prepared by (Faculty (s) Name):Mr.P.AVINASH

Year and Sem, Department:

IV-YEAR-II SEM-DEPARTMENT OF CIVIL ENGINEERING

Unit-I: (Title)

INTRODUCTION TO BASIC CONCEPTS Of watershed, need for watershed management, concept of sustainable development. Hydrology of small watersheds

Important points / Definitions: (Minimum 15 to 20 points covering complete topics in that unit)

- 1. Watershed : Soil exploration refers to the study of obtaining soil samples for the investigation of its Engineering properties, location of water table and profiles earth strata.**
- 2. Expansive soil : Expansive soils are soils that expand when water is added, and shrink when they dry out. This continuous change in soil volume can cause homes built on this soil to move unevenly and crack. Ex- clay soil.**
- 3. Sand is challenging soil : A loose sand has a tendency to compress when a load is applied. The phenomenon is most often observed in saturated, loose (low density or un compacted), sandy soils.**
- 4. How to improve soils structure : Organic matter helps sandy soil retain moisture and improves drainage of clay and silty soils. It also increases pore space, or pockets of air. Without this pore space, roots struggle to absorb water and nutrients, and literally have no space to grow**
- 5. What is a collapsible soil : Collapsible soils are those unsaturated soils that can withstand relatively high pressure without showing significant change in volume, however upon wetting; they are susceptible to a large and sudden reduction in volume.**
- 6. Define watershed management : its refers to a technique that improves the engineering properties of the soil mass treated. Usually, the properties that are modified are shear strength, stiffness and permeability.**

Short Questions (minimum 10 previous JNTUH Questions – Year to be mentioned)

- 1. What is a watershed management -DEC 2018**
- 2. Define watershed management.DEC 2018**
- 3. Write the concept of Watershed Development -MAY 2018**
- 4. What is a Watershed? Explain -MAY 2018**
- 5. What are characteristics of watershed-DEC 2017.**
- 6. What are the major function of a watershed ? -DEC 2017**
- 7. Explain what is Hydrology -DEC 2016**
- 8. Explain what arethe methods of runoff calculation -DEC 2016**
- 9. What is meant by integrated watershed management -DEC 2014**
- 10. How is the discharge of a river calculated ? -DEC 2014**

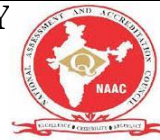


Long Questions (minimum 10 previous JNTUH Questions – Year to be mentioned)

1. What is the concept of watershed development ? —DEC 2016
2. Describe the objectives of watershed management ? —DEC 2018
3. list out the characteristics of a watershed . —DEC 2014
4. Write short notes on the following :
 - (i) Geomorphologic characteristics of a watershed
 - (ii) Socio economic characteristics of a watershed —DEC 2016
5. Briefly explain about the criteria's involved in watershed management ? Explain. DEC 2015
- 6 . What is watershed management? Do you think it can play an important role in sustainable development? Discuss —DEC 2018
7. Write a brief note on hydrological cycle. —DEC 2017
8. What is hydrograph? Explain. —MAY 2018
9. Discuss the need and significance of watershed management in india context ? —DEC 2014
10. Discuss in detail implementation of watershed management practices in india. —DEC 2016

Fill in the Blanks / Choose the Best: (Minimum 10 to 15 with Answers)

- (1) An imaginary line that divides one watershed from another is(watershed divide)
- (2) Every land area on this planet is a part of.....(water shed)
- (3) overland flow means (surface runoff)
- (4) Viscosity of water at 0°C is
- (5) How is the discharge of a river calculated.....
- (6) The major watersheds in india are(himalayas)
- (7) A plate 0.025 mm distant from a fixed plate, moves at 60 cm/s and requires a force of 2 N per unit area to maintain this speed. The viscosity between the plates is
- (8) For a liquid droplet, the internal pressure in excess of outside pressure is given by
- (9) Free Surface of a liquid tends to contract to the smallest possible area due to the force of
- (10) The percentage of potable water on the earth is.....(1 %)



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Unit-II: (Title)

Principles of soil erosion- causes of soil erosion, types of soil erosion, estimation of soil erosion from small watersheds, Control of soil erosion, methods of soil conservation – Structural and non-structural measures.

Important points / Definitions: (Minimum 15 to 20 points covering complete topics in that unit)

Define soil erosion: Soil erosion is defined as the wearing away of topsoil. Topsoil is the top layer of soil and is the most fertile because it contains the most organic, nutrient-rich materials.

Define cohesive soil : Cohesive soil is defined as sticky soil, and can be termed.

What is soil modification : Soil modification is a process of improving soil engineering properties such as shear strength, bearing capacity, permeability and etc.

What is soil compaction : One of a group of piles, driven in a pattern, to compact a surface layer of loose granular soil to increase its bearing capacity.

Define cohesion less soil : Cohesion less soil is any free running type of soil, such as sand or gravel, whose strength depends on friction between particles.

What is the use of plate compactor : Plate compactors can be used to compact sub base and asphalt on driveways, parking lots and repair jobs.

What do you mean by dynamic compaction : Dynamic Compaction (DC) is a ground Modification technique where by loose soils can be effectively and economically densified to improve its mechanical characteristics and allow construction of structures directly on compacted soil, without need of deep foundations or soil replacement.

What is explosive compaction : Explosive Compaction is the ground modification technique whereby the energy released from setting off explosives in subsoil inducing artificial earthquake effects, which compact the soil layers.

Short Questions (minimum 10 previous JNTUH Questions – Year to be mentioned)

- 1) What is soil erosion ?. –MAY 2018
- 2) What are the two major categories of soil erosion . MAY 2018
- 3) How is Soil formed naturally – DEC 2017
- 4) What is meant by the permeability of soil ?-DEC 2017
- 5) What is meant by soil degradation ? DEC 2016
- 6) What are the four ways of soil erosion by water -- DEC 2016
- 7) What are the organic components of soil ?---DEC 2016
- 8) What is meant by zoogenic erosion?--DEC 2014
- 9) What is soil conservation?-- DEC 2014
- 10) Define Uniform and Non-Uniform flows.—DEC 2014



Long Questions (minimum 10 previous JNTUH Questions)

1. Write short note on the process of soil erosion ? —DEC 2015
2. What are the factors affecting erosion ? —DEC 2016
3. Describe universal soil loss equation MAY 2018
4. Describe the effects of erosion onland fertility and land capability —DEC 2018
5. Briefly explain the classification of erosion dec-2018
6. What are the impacts of soil erosion ? discuss Dec-2015
7. Describe universal soil loss equation Dec-2018
8. Write a note on the methods of soil erosion estimation Dec-2016
9. Discuss the way to control soil erosion Dec-2017
10. Write a note on soil moisture and conservation ? Dec-2017

Fill in the Blanks / Choose the Best: (Minimum 10 to 15 with Answers)

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