



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

CIVIL ENGINEERING

DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Name	:	WATER RESOURCES ENGINEERING
Course Code	:	ACE014
Program	:	B.Tech
Semester	:	VI
Branch	:	Civil Engineering
Section	:	A&B
Academic Year	:	2019– 2020
Course Faculty	:	Ms. B.Bhavani , Assistant Professor Ms. N Sri Ramya, Assistant Professor

COURSE OBJECTIVES:

The course should enable the students to:	
I	Enrich the knowledge of hydrology that deals with the occurrence, distribution and movement of water on the earth.
II	Design unlined and lined irrigation canals; mitigate sediment problems associated with canal
III	Identifying, formulating and management of water resource related issues.
IV	Discuss the limitations and applications of hydrograph flood analysis

DEFINITIONS AND TERMINOLOGY QUESTION BANK

S.NO	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
UNIT-I						
1	What is Hydrology?	The branch of science concerned with the properties of the earth's water, and especially its movement in relation to land.	Remember	CO1	CLO 1	ACE014.01
2	Define Hydrologic cycle.	Describes the constant movement of water above, on, and below the earth's surface. Processes such as precipitation, evaporation, condensation, infiltration, and runoff comprise the cycle.	Remember	CO1	CLO 1	ACE014.01
3	What is Abrasion?	Removal of stream-bank soil as a result of sediment-laden water, ice, or debris rubbing against the bank.	Remember	CO1	CLO 2	ACE014.02
4	What is Absolute Humidity?	The actual weight of water vapor contained in a unit volume of the atmosphere, usually expressed in grams of water per kilogram of air.	Understand	CO1	CLO 1	ACE014.01

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5	What does precipitation mean?	Precipitation is rain, snow, sleet, or hail — any kind of weather condition where something's falling from the sky. Precipitation has to do with things falling down, and not just from the sky. It's also what happens in chemical reactions when a solid settles to the bottom of a solution.	Understand	CO1	CLO 2	ACE014.02
6	Explain meaning of the term 'Absorption'.	The entrance of water into the soil or rocks by all natural processes, including the infiltration of precipitation or snowmelt, gravity flow of streams into the valley alluvium into sinkholes or other large openings, and the movement of atmospheric moisture. (2) The uptake of water or dissolved chemicals by a cell or an organism (as tree roots absorb dissolved nutrients in soil). (3) More generally, the process by which substances in gaseous, liquid, or solid form dissolve or mix with other substances.	Understand	CO1	CLO 2	ACE014.02
7	What is a system Absorption Loss?	The loss of water by Infiltration or Seepage into the soil during the process of priming, i.e., during the initial irrigation of a field; generally expressed as flow volume per unit of time.	Understand	CO1	CLO 2	ACE014.02
8	What are the 6 types of precipitation?	There are many types of precipitation. Rain and drizzle are the only liquid types; the freezing types are snow, sleet, freezing rain, and hail. Hail is unique because it is frozen precipitation that generally only falls from thunderstorms in the summer.	Understand	CO1	CLO 2	ACE014.02
9	What is Acclimatization?	The physiological adjustment or adaptation by an organism to new physical and/or environmental conditions. With respect to water, it is frequently used in reference to the ability of a species to tolerate changes in water temperature, degradation of water quality, or increased levels of salinity.	Understand	CO1	CLO 2	ACE014.02
10	What is Accretion?	The slow addition to land by deposition of water-borne sediment. An increase in land along the shores of a body of water, as by Alluvial deposit.	Remember	CO1	CLO 2	ACE014.02

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11	Explain the term Acid Rain.	Rainfall with a pH of less than 7.0. One of the principle sources is the combining of rain (H ₂ O) and sulfur dioxide (SO ₂), nitrous oxides (NO _x), and carbon dioxide (CO ₂) emissions which are byproducts of the combustion of fossil fuels. These oxides react with the water to form sulfuric (H ₂ SO ₄), nitric (HNO ₃), and carbonic acids (H ₂ CO ₃). Long-term deposition of these acids is linked to adverse effects on aquatic organisms and plant life in areas with poor neutralizing (buffering) capacity. Also see Acid Deposition.	Understand	CO1	CLO 2	ACE014.02
12	What is Acre?	A measure of area equal to 43,560 square feet (4,046.87 square meters). One square mile equals 640 acres, and is also referred to as a Section.	Remember	CO1	CLO 2	ACE014.02
13	Discuss the term Adiabatic.	Applies to a thermodynamic process during which no heat is added to or withdrawn from the body or system concerned. In the atmosphere, adiabatic changes of temperature occur only in consequence of compression or expansion accompanying an increase or decrease of atmospheric pressure. Thus, a descending body of air undergoes compression and adiabatic cooling.	Understand	CO1	CLO 2	ACE014.02
14	What is Adiabatic Lapse Rate?	The theoretical rate at which the temperature of the air changes with altitude. The temperature change is due to the pressure drop and gas expansion only, and no heat is considered to be exchanged with the surrounding air through convection or mixing.	Understand	CO1	CLO 2	ACE014.02
15	What is Administered Groundwater Basin?	A groundwater basin (watershed, area, or sub-area) which, in the interest of public welfare, is monitored by an appropriate agency to insure adequate water resources for prescribed uses. Quite often, such basins will have Preferred Uses designated for future development to insure that the basin's Perennial Yield is not exceeded. Also referred to as Designated Groundwater Basin. Also see Designated Groundwater Basin.	Remember	CO1	CLO 5	ACE014.05

UNIT –II

S.NO	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
1	What is Hyetograph?	A hyetograph is a graphical representation of the relationship between the rainfall intensity and time. It is the plot of the rainfall intensity drawn on the ordinate axis against time on the abscissa axis.	Remember	CO2	CLO 3	ACE014.03
2	What is Unit Hydrograph?	It can be defined as the direct runoff hydrograph (DRH) resulting from one unit(e.g., one cm or one inch) of effective rainfall occurring uniformly over that watershed at a uniform rate over a unit period of time.	Remember	CO2	CLO 4	ACE014.04
3	What is Runoff Hydrograph?	It can be defined as the direct runoff hydrograph(DRH) resulting from one unit (e.g., one cm or one inch) of effective rainfall occurring uniformly over that watershed at a uniform rate over a unit period of time.	Remember	CO2	CLO 4	ACE014.04
4	What is Base flow?	Some part of stream flow derived from groundwater flowing into a stream or river.	Understand	CO2	CLO 5	ACE014.05
5	What is Brook?	A natural stream of water, smaller than a river or creek; especially a small stream that breaks directly out of the ground, as from a spring or seep.	Understand	CO2	CLO 3	ACE014.03
6	What is Bank?	The margins of a stream or river channel. Banks are called right or left as viewed facing downstream, in the direction of the flow.	Understand	CO2	CLO 3	ACE014.03
7	Define Capillary fringe.	A zone of partially saturated soil just above the water table. The depth of the fringe depends upon the size and distribution of the pore spaces within the soil media.	Remember	CO2	CLO 5	ACE014.05
8	Discuss Water course Channel.	An open conduit either naturally or artificially created that periodically or continuously contains moving water, or which forms a connecting link between two bodies of water. River, creek, stream, run, reach, branch, and tributary are some of the terms used to describe natural channels.	Understand	CO2	CLO 05	ACE014.05
9	What is Concentration?	The amount of a given chemical or pollutant in a particular volume or weight of air, water, soil, or other medium – often expressed as milligrams per liter (mg/l) or parts per million (ppm).	Understand	CO2	CLO 4	ACE014.04

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10	What is Cone of depression?	The lowering in groundwater levels around a well in response to groundwater withdrawal (the pumping of water). The extent of the cone of depression defines the area of influence of a well.	Understand	CO2	CLO 5	ACE014.05
11	What is Consumptive use?	The total amount of water taken up by vegetation for transpiration and/or building of plant tissue, plus any associated, unavoidable evaporation of soil moisture.	Understand	CO2	CLO 4	ACE014.04
12	Define Creek?	Small stream of water which serves as the natural drainage course for a drainage basin; a flowing stream normally smaller than a river and larger than a brook. The term is often relative according to size and locality.	Remember	CO2	CLO 5	ACE014.05
13	What do you mean by Cubic feet per second (cfs)?	A rate of the flow. One cfs is equal to a volume of water one foot deep and one foot wide flowing a distance of one foot in one second. One cfs is equal to approximately 450 gallons per minute (gpm).	Understand	CO2	CLO 4	ACE014.04
14	What is Depression storage?	The volume of water contained in natural depressions on the land surface, such as puddles.	Understand	CO2	CLO 5	ACE014.05
15	What is a stream flow hydrograph?	A hydrograph is a chart showing, most often, river stage (height of the water above an arbitrary altitude) and stream flow (amount of water, usually in cubic feet per second). Other properties, such as rainfall and water-quality parameters can also be plotted.	Remember	CO2	CLO 3	ACE014.03
UNIT –III						
1	Define Aquifer.	A geologic formation that holds and yields usable amounts of water. The water in an aquifer is called groundwater. Aquifers may be categorized into confined aquifers and unconfined aquifers.	Remember	CO3	CLO 5	ACE014.05
2	Define Confined Aquifer.	An aquifer whose upper and lower, boundary is defined by a layer of natural material that does not transmit water readily. Water is “confined” under pressure similar to water in a pipeline. Drilling a well into this type of aquifer is analogous to puncturing a pressurized pipeline. In some areas confined aquifers produce water without pumps (flowing artesian well).	Remember	CO3	CLO 5	ACE014.05

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3	Define Unconfined Aquifer.	An aquifer whose upper boundary consists of a relatively porous material that transmits water readily from the ground surface. The water level in an unconfined aquifer is the water table.	Remember	CO3	CLO 5	ACE014.05
4	What is Discharge?	The volume of water that passes a given point during a given period. It is an all-inclusive outflow term, describing a variety of flows such as from a pipe to a stream, or from a stream or river to a lake or ocean.	Understand	CO3	CLO 6	ACE014.06
5	What is Drawdown?	The distance between the static water level in well and the surface of the cone of depression.	Understand	CO3	CLO 5	ACE014.05
6	Elaborate the drainage condition.	(1) The natural movement of surface water over a land area to a river, lake or ocean (surface drainage), (2) removal of water from a soil using buried pipelines that are spaced regularly and perforated (subsurface drainage).	Understand	CO3	CLO 5	ACE014.05
7	Define Ephemeral stream.	A stream that flows in response to runoff producing precipitation events and thus discontinuing its flow during dry seasons. Such flow is usually of short duration.	Remember	CO3	CLO 6	ACE014.06
8	What are Estuarine waters?	Deep-water tidal habitats and tidal wetlands that are usually enclosed by land but have access to the ocean and are at least occasionally diluted by freshwater runoff from the land (such as bays, mouths of rivers, salt marshes).	Understand	CO3	CLO 6	ACE014.06
9	What is Erosion?	The detachment and transport of soil particles by water and wind. Sediment resulting from soil erosion represents the single largest source of nonpoint source pollution in the United States.	Understand	CO3	CLO 6	ACE014.06
10	Define Eutrophication .	The process of nutrient enrichment causing a water body to fill with aquatic plants and algae. Eutrophic lakes often are undesirable for recreation and may not support normal fish populations.	Remember	CO3	CLO 6	ACE014.06
11	What is specific retention?	Definition of specific retention. The ratio of the volume of water that a given body of rock or soil will hold against the pull of gravity to the volume of the body itself. It is usually expressed as a percentage.	Understand	CO3	CLO 6	ACE014.06

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12	What is the specific yield?	Specific yield is defined as the volume of water released from storage by an unconfined aquifer per unit surface area of aquifer per unit decline of the water table. Thus, specific yield, which is sometimes called effective porosity, is less than the total porosity of an unconfined aquifer	Understand	CO3	CLO 6	ACE014.06
13	What is Field capacity?	The amount of water a saturated soil contains after rapid internal drainage has ceased (approximately 2 days).	Understand	CO3	CLO 5	ACE014.05
14	What is Flood?	A temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters or from the unusual and rapid accumulation of runoff, an overflow or inundation that comes from a river or other body of water.	Understand	CO3	CLO 5	ACE014.05
15	What is Floodplain?	Land area adjacent to a river or stream that can be covered by water when a river or stream overflows its banks. The extent of the flood plain depends on topography and the magnitude of a given flood event.	Understand	CO3	CLO 7	ACE014.07
UNIT- IV						
1	Define Hydraulic conductivity?	A term used to describe the ease with which water moves through soil or a saturated geologic material.	Remember	CO4	CLO 6	ACE014.06
2	What is Irrigation?	The controlled application of water to arable lands to supply crop water requirements not satisfied by rainfall.	Understand	CO4	CLO 7	ACE014.07
3	Which is the major source of irrigation in Telangana state?	The economy of Telangana is mainly supported by agriculture. Two important rivers of India, the Godavari and Krishna, flow through the state, providing irrigation. Farmers in Telangana mainly depend on rain-fed water resources for irrigation. Rice is the major food crop.	Understand	CO4	CLO 7	ACE014.07
4	What are traditional methods of irrigation?	Sprinkler irrigation method is an easy and simple method of irrigation in present times. The whole land becomes available for cultivation of crops, whereas in traditional irrigation methods, 15 to 20 per cent land remains vacant in depressions and boundaries.	Understand	CO4	CLO 7	ACE014.07

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5	What is irrigation and why is it important?	Irrigation is essentially the artificial application of water to overcome deficiencies in rainfall for growing crops. Irrigation is a basic determinant of agriculture because its inadequacies are the most powerful constraints on the increase of agricultural production.	Understand	CO4	CLO 7	ACE014.07
6	Discuss Leaching process.	The removal of dissolved chemicals from soil caused by the movement of a liquid (like water) through the soil.	Understand	CO4	CLO 7	ACE014.07
7	What is Losing stream?	A stream or portion of a stream that discharges water into the groundwater, resulting in a smaller flow volume within the stream.	Understand	CO4	CLO 7	ACE014.07
8	What is Part per million (ppm)?	A measure of concentration of a dissolved material in terms of a mass ratio (milligrams per kilogram, $\mu\text{g}/\text{kg}$). For water analysis, part per million often is presented as a mass per unit volume (milligrams per liter, $\mu\text{g}/\text{l}$), 1 ppm = 1 mg/l.	Understand	CO4	CLO 7	ACE014.07
9	What is Perched water table?	Water that occurs underground when a low permeability material, located above the water table, blocks or intercepts the downward flow of water from the land surface. Water accumulates above the impermeable material, creating a saturated zone.	Understand	CO4	CLO 5	ACE014.05
10	What is Percolation?	The movement of water through saturated soil layers, often continuing downward to groundwater.	Understand	CO4	CLO 5	ACE014.05
11	What is Permeability?	A measure of the ease with which liquids or gases will move through soil or other porous material. Permeability is a characteristic of the soil media and does not depend on the type of fluid being transmitted.	Understand	CO4	CLO 5	ACE014.05
12	What is Porosity?	The ratio of the volume of open spaces or voids to the total volume of a material. For example, a sand and gravel deposit may have 20 % porosity. Porosity determines the amount of water that can be stored in a saturated formation. A saturated formation 100 feet thick with porosity of 20 % could store an equivalent water depth of approximately 20 feet.	Understand	CO4	CLO 7	ACE014.07
13	What is Precipitate?	A solid that has been deposited from an aqueous solution. For example, iron precipitates from groundwater to form a rust colored solid when exposed to air.	Understand	CO4	CLO 7	ACE014.07

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14	What is Precipitation?	Rain, sleet, snow, or hail that falls to the earth as the result of water vapor condensing in the atmosphere.	Understand	CO4	CLO 7	ACE014.07
15	What is called irrigation?	Irrigation is the artificial application of water to plants. Out of these, some methods are traditional which are used mostly at common level and some are modern irrigation method.	Remember	CO4	CLO 6	ACE014.06
UNIT-V						
1	What is Pumping water level?	The water level in a well when the pump is operating and water is being withdrawn.	Understand	CO5	CLO 9	ACE014.09
2	What is Recharge area?	The area where water predominantly flows downward through the unsaturated formation (zone) to become groundwater.	Understand	CO5	CLO 8	ACE014.08
3	What is Reservoir?	A pond, lake, tank, or basin (natural or human made) where water is collected and stored. Large bodies of groundwater are called groundwater reservoirs; water behind a dam is also called a reservoir.	Understand	CO5	CLO 8	ACE014.08
4	What is Return period?	The average elapsed time between occurrences of a hydrologic event with a specified magnitude or greater. For example, a 100-year discharge measured on a given river is equaled or exceeded, on average, once every 100 years. This does not mean that the 100-year discharge occurs once every 100 years, but that the average time between events of that magnitude or greater is 100 years. Stated another way, there is a 1% chance of a discharge equal to or greater than the 100-year flood event occurring in any given year.	Understand	CO5	CLO 8	ACE014.08
5	Define River.	A natural stream of water of considerable volume, larger than a brook or creek.	Remember	CO5	CLO 9	ACE014.09
6	What is River basin?	The area drained by a river and its tributaries.	Understand	CO5	CLO 8	ACE014.08

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7	What is Runoff?	That part of rainfall or snowmelt that does not infiltrate the soil but flows over the land surface toward a surface drain, eventually making its way to a stream, river, lake or an ocean. It can carry pollutants into receiving waters.	Understand	CO5	CLO 8	ACE014.08
8	What is Saturated formation?	The portion of a soil profile or geologic formation where all voids, spaces or cracks are filled with water. No air is present.	Understand	CO5	CLO 5	ACE014.05
9	What is Saturated thickness?	The total thickness of a saturated formation.	Understand	CO5	CLO 5	ACE014.05
10	What is Surge irrigation?	A method of irrigation using computerized valves to turn the water supply on and off to move water more uniformly down the field.	Understand	CO5	CLO 8	ACE014.08
11	What is Transpiration?	The physiological process by which water vapor escapes from a living plant, principally through the leaves, and enters the atmosphere.	Understand	CO5	CLO 8	ACE014.08
12	What is Effective rainfall (Peff)?	That part of the total rainfall that can be beneficially used by crops.	Understand	CO5	CLO 8	ACE014.08
13	What is Water table?	The upper level of a saturated formation where the water is at atmospheric pressure. The water table is the upper surface of an unconfined aquifer.	Understand	CO5	CLO 9	ACE014.09
14	What is a Water quality standard?	A group of statements that constitute a regulation describing specific water quality requirements. In Virginia, water quality standards must have at least the following three components: designated uses, water quality criteria to protect designated uses, and an anti-degradation policy. Every state is required to develop water quality standards and revise them periodically.	Understand	CO5	CLO 8	ACE014.08
15	What is Crop yield?	Represents the harvested production per unit of harvested area for crop products. In most of the cases yield data are not recorded but obtained by dividing the data stored under production element by those recorded under element: area harvested. Data are recorded in hectogram (100 grams) per hectare (HG/HA).	Remember	CO5	CLO 9	ACE014.09

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