

NEW YORK CITY COLLEGE OF TECHNOLOGY

THE CITY UNIVERSITY OF NEW YORK

DEPARTMENT OF ARCHITECTURAL TECHNOLOGY

NAME: ETHER REIN

ARCH3551 Final Take home Exam S2021

Prof. Azaroff

3551 Final Vocabulary Quiz:

Answer all of the vocabulary in each section as listed and complete both sketches 2A and 2B. All answers shall be HAND written, complete sentences to receive full credit. Once complete the pages shall be scanned and photographed then emailed in by the end of class on May 25th, 2021

Section 1 Vocabulary Answer ALL of the following questions

TROMBE WALL

Trombe wall is a wall that is built in order to maximize heat gain. The wall will be facing the sun, absorbing heat. Cool air will enter through the bottom and rise up. It can be used to store heat.

RECYCLED WATER

Recycled water is waste water that goes through filtering and mix together with fresh water. Recycled water passes through the water cycle again.

BIOSOLIDS

Biosolids are organic matter recovered from sewage and used as fertilizer. Biosolids are used for plant treatments.

DRAINAGE SWALE

Drainage swale is a device invented to control the flow of water to prevent flooding and pooling.

COMBINED STORM WATER OVERFLOW EVENT (CSO)

Combined storm water overflow is increase of overflow, both waste water and storm water will be discharged to rivers.

RAMMED EARTH

Rammed earth is a technique for construction to use all types of raw material to build.

GRAY WATER

Gray water is water wastewater from households sinks and showers. Gray water can be used again to flush toilets.

BLACK WATER

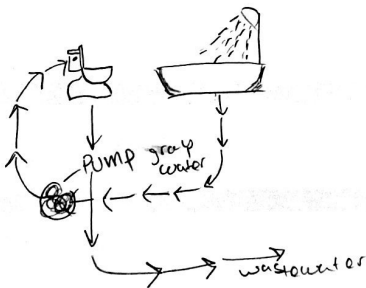
Black water is water used to flush toilets and urinals. Black water can also be infected and cause further respiratory problems.

GROUND WATER	
Ground water is water found under-ground and is usually <u>trapped</u> between layers of soil.	
CO GENERATION	
Co-generation is a combined heat and power generator and increases energy efficiency.	
AQUIFER	
Aquifer is an underground layer of water-bearing rock and can be used for wells.	

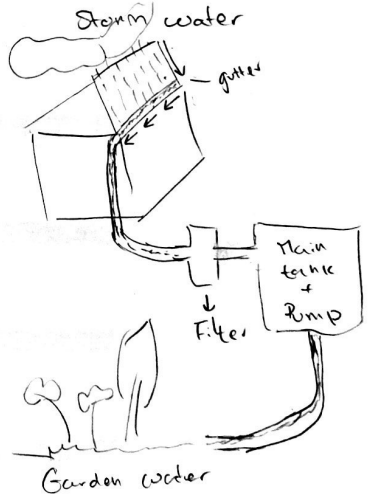
PART 2A: Answer the following questions in complete sentences. Sketch your answer in a diagram with explanation.

Provide and illustrate two methods by which Architects/Engineers can control the quantity and quality of water that exits a building or site before it joins the municipal sewer system? Describe each in YOUR OWN WORDS!!!!

Gray water



Fresh water is used for Shower but is not going to sewer. Instead, using a gray water system, water will be used again to flush toilet and only then be wasted



Storm water can be harvest in a tank and can be used for flushing, Garden watering.

Section 2

3551 Final Vocabulary Quiz: Answer and complete ALL of the following nine definitions.

MACROCLIMATE

Macroclimate is the climate of a large area such as ocean or a continent. Speaking of macroclimate will refer to climate in a large area.

MICROCLIMATE

Microclimate is climate in a small area within a surrounding climate zone. Microclimate areas will differ of the climate in this zone.

MESOCLIMATE

Mesoclimate is a climate in a specific area which doesn't represent the climate in the zone but this specific area.

SIRR Report

SIRR stands for "Special Initiative for Resilience and Resilience". The report was issued after hurricane Sandy to focus on rebuilding against the impact of climate.

DRY BULB TEMPERATURE

Dry bulb temperature is temperature measured in open air while avoiding radiation and moisture. It is usually considered air temperature.

RESILIENT

Resilient is the ability to withstand or recover from something.

RELATIVE HUMIDITY

Relative Humidity tells us how much water vapor is in the air compared to how much it could hold at this temperature.

DEGREE DAYS (HEATING & COOLING)

Degree day is a measure of an expected temperature and helps determine the heating and cooling require for a building.

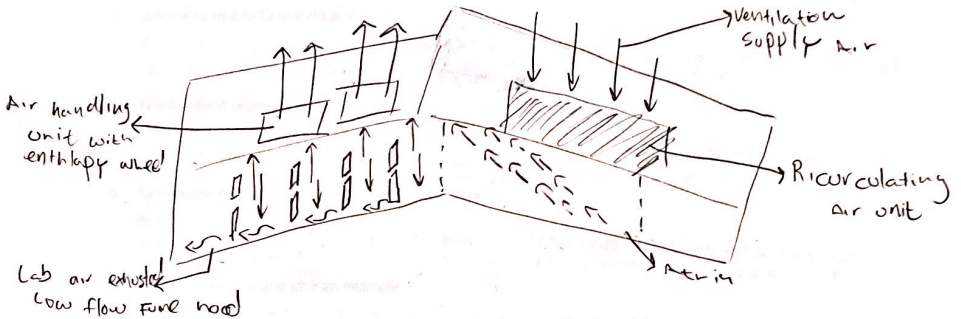
BIOCLIMATIC CHART

Bioclimatic chart assist to determine the selection of cooling. These charts are based on dry bulb temperature and humidity extract.

PART 2B: Answer the following questions in words and Sketch format.

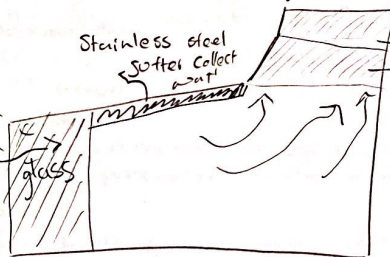
Sketch 2 examples of Atria and the advantages or qualities they bring to a project. Be specific in your description and use graphics such as arrows to show how the Atria work.

a) Building area



High efficiency chiller plant saves approx 250,000 gallons of water
~~fluorocarbon gas screen that reduces atrium cooling loads.~~ The daylight
 harvesting minimize the energy used.

b) Large area
 for sunlight
 glazing



and glazed roof with interglaz
 cells to provide supplementary
 power for light and computers

Section 3

3551 Final Vocabulary Quiz: Answer ALL of the vocabulary in section 3 with complete sentences.

1. LEED

LEED stands for "Leadership in energy and environmental design" is an organization that is widely used for green building rating.

2. What is Cradle to Cradle mean?

Cradle to cradle is a biometric approach to the design of products and systems to be used as a life cycle.

3. Frankenstein products

Frankenstein product is a product that is made out of two components that are recycled but once these components are together it cannot be recycled.

4. Renewable Resource vs Non-Renewable Resource

Non-renewable resources are natural resources such as gas but can only be used once whereas renewable resources are replenished and can be reused.

5. Circular economy and give an example

Circular economy is an approach to an economy that thing don't go to waste, recycling is an example of circular economy.

6. Passive Solar Systems

Passive solar system are independent of all external device, solar panels are used to capture sun beams through glass windows that absorb and retain heat.

7. Active Solar Systems

Active solar systems use solar radiations to convert the energy into a more usable form. The system also uses external devices.

8. Carbon Emissions

Carbon emissions are the carbon footprints created by human action, generating carbon dioxide.

9. GHG

GHG stands for greenhouse gases which are gases in the atmosphere that trap heat such as water vapor and carbon dioxide.

10. Superfund Site

Superfund sites are sites that require immediate attention to be cleaned up since its contaminated.

11. Brownfield

Brownfield land is a location that is not currently used but was previously used for an industrial location and may be contaminated.

12. Urban Infill

Urban infill is a new development on a vacant property in an area that is developed.

13. Ecological Footprint

Ecological Footprint measures the amount of biologically productive level and soil area in a region.

14. Define Lux and Lumens

Lux and lumens are both metrics of light. Lux measures the light that falls on surface and lumens measure the total amount of light in all directions.

15. Building Commissioning

Building Commissioning is the process designated to optimize the building environment to energy efficiency to reduce costs and enhance building performance.

16. R Value / U Value

U Value is used to measure characteristics of glass and how much heat flow and heat loss occurs.
R-Value is used to measure other parts such as walls, floors.

17. I.C.F.'s

I.C.F. stands for Insulating Concrete Form. They are sandwiched between two layers of concrete and have energy efficient.

18. Heat Island Effect

Heat Island effect is a temperature difference in urban areas that is higher than the temperature in a rural area caused by human activities.

19. Low 'E'

Low E is low emissivity refers to a surface that is low in heat transfer.

20. Fritted Glazing

Fritted glazing is used for exterior products. It helps reduce glare and lower the danger of birds getting crushed into glass.

21. S.I.P's

S.I.P. is session initiation protocol and is used to support voice calls.

22. SRI

SRI stands for Social Responsibility Investment which represents the nature of the business to be socially responsible.

23. upcycle

upcycle is to have unwanted material and create a waste product.

24. Energy Audit

Energy audit is usually done to assess building energy need and energy efficiency.

25. Solar Heat

Solar heat is to use the sun to warm up a building or warm up water. two types of solar heating, Passive and Active.

26. Geothermal Heat-Pumps

Geothermal heat pump is a type of ground sourced pump to exchange heat with ground.

27. Building Management Systems

Building management system is a computer based system that is used to control all systems used in a building.

28. Commissioning

Commissioning is a process of planning and documenting to provide a fully functional system.

29. Eco Efficient

Eco efficiency is a term used for creating goods while using less resources.

30. Renewable Energy - Distributed Generation

Distributed generation is a term used when electricity is generated from renewable energy.

31. Direct solar gain systems list 2 advantages

Direct solar advantages are reduced bills and using renewable energy source.

32. Direct solar gain systems list 2 disadvantages

Direct solar disadvantages is weather dependent and space. Solar requires large area of panels to be effective.

33. Indirect solar gain systems list 2 advantages

Indirect solar saves money for heating up water and reduce overall water use.

34. Indirect solar gain systems list 2 disadvantages

Indirect solar is not available always, and also limits use of water.

35. Eco Effective

Eco effective does not focus on emission but rather focus on creating a product in reality.

36. What does DFE stand for?

DFE stands for design flood elevation to determine elevation of new structure within flood zone.

37. What does BFE stand for?

BFE stands for base flood elevation defining the elevation for potential flood.

38. Define Freeboard

Freeboard is the elevation of a building's lowest floor to height above the BFE.

39. What does the cherry tree represent in our readings?

Cherry tree in Cradle to Cradle represent eco-efficiency where the waste is decomposed and doesn't cause damage

40. Who was Rachel Carson and name two of her contributions to sustainability

Rachel Carson was a marine biologist known for launching environmental movement and for her book *Silent Spring*

41. Who was Ian McEarg and name one of his major contributions to sustainability

Ian McEarg was a Scottish Architect brought awareness about environmental concern and ecological planning methods

42. What does 80 x 50 stand for?

80 x 50 is a plan of having reduced emission by 80 percent in 2050

43. Biomass

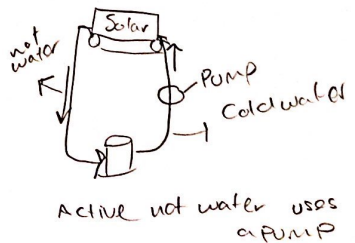
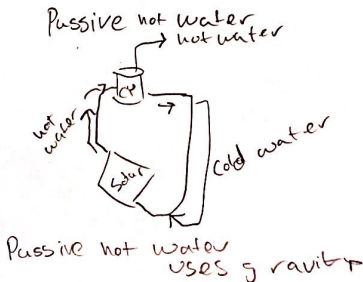
Biomass refers to mass of living organisms, including plants and animals. Biomass is used for fuel in many countries

44. Name 3 SDGs

1) No poverty 2) Quality education 3) Clean water

3A. Sketch the following (Extra Credit)

Sketch or diagram a Passive Hot Water heating system and an Active Hot Water heating system. Describe in your own words the way in each system works in detail. How does the system heat water? How does the system maintain heated water?



1) the system pumps up the cold water using sun to warm up the water. the storage tank is painted dark to maintain heat.