

Notre Dame University
Faculty of Natural & Applied Sciences
Department of Sciences
ENS 201 – Introduction to Environmental Science
Sample- Final Exam

Multiple Choice Questions:

- 1- One of the most toxic substances that are considered as environmental hormones are
 - a. Fluorides
 - b. Dioxins
 - c. Arsenic
 - d. Asbestos

- 2- A method of waste disposal that will become increasingly important in the future is
 - a. Chemical detoxification
 - b. Incineration
 - c. Recycling
 - d. Dumping waste on your neighbors

- 3- A vital part of recycling is for
 - a. Manufactures to label what is the container quality
 - b. The recycling industries to know how a product should be recycled
 - c. Consumers to recognize a product that is recyclable
 - d. All of the above

- 4- Partially biodegraded vegetation, usually yard waste, often described as having the consistency and appearance of chocolate cake crumbs is called
 - a. Sludge
 - b. Compost
 - c. Slurry
 - d. Litter

- 5- Which of the following statement is false?
 - a. Water pollution has two underlying causes: industrialization and the human population explosion
 - b. Much of our water pollution comes from point sources, that occupy large areas and have many routes, known and unknown, into the water supply
 - c. Ground water usually becomes contaminated when polluted water percolates down through the soil into the ground water below
 - d. Pollutants discharged into deep lakes tend to accumulate because the water stays in one place for many years

- 6- Lakes relatively shallow
 - a. Oligotrophic lakes.
 - b. Poor food lakes.
 - c. Eutrophic lakes
 - d. Nonproductive lakes.

- 7- Water pollutants include
 - a. Soil sediments.
 - b. Leaves and twigs
 - c. Pesticides
 - d. All of the above

- 8- Detergents and fertilizers containing _____ are important sources of nutrient pollution.
- Iron & calcium.
 - Calcium & Magnesium.
 - Phosphorus & Nitrates.
 - Sulfur & Nitrates.
- 9- We can become part of the solution instead of part of the pollution by
- Educating ourselves and others about the sources of water pollution, and individually avoiding activities that contribute to the problem.
 - Voting for politicians who will ensure industries do not to dump their wastes into our water.
 - Purchasing vegetables and fruits free of toxic chemicals forcing farmers to use less pesticides and fertilizers.
 - All of the above.
- 10- Select the correct statement about worldwide human population growth
- The human population is growing linearly.
 - The human population is growing exponentially.
 - The curve formed by human population growth is J-shaped.
 - (a) and (c).
 - (b) and (c).
- 11- CO₂ is released into the atmosphere from
- Aerobic respiration of organisms.
 - Extraction and burning of fossil fuels.
 - Volcanic eruptions.
 - Photosynthesis carried by plants.
 - All of the above.
 - (a), (b) and (c).
- 12- Which of the following statements is false?
- Eroding soil and other particles washing into a lake can block sunlight to water, reducing photosynthesis.
 - Sediments can carry also pesticides into the water.
 - Warm water contains more Oxygen than cold, and water full of nutrients contains more Oxygen.
 - Plant nutrients washing into a lake can cause an increase in plant growth.
- 13- Most nonhazardous waste is
- Burned, contaminating the air.
 - Dumped at sea, contaminating the ocean.
 - Deposited in landfills, contaminating the soil.
 - All of the above.
- 14- Which of the following statements is false?
- Dumps prevent leakage by lining landfills with plastic or clay
 - Landfills generated methane.
 - The earlier produced plastics were biodegradable but now plastics are almost all nondegradable.
 - Toxic waste can injure or kill.

15- Biodegradable wastes

- a. Are natural products so they do not cause problems.
- b. Often accumulated and do not decompose
- c. Make up the biggest percent of today's wastes.
- d. Are decomposed by bacteria.

16- Lead is a metal element that is very poisonous and is now banned in developed countries in most products where it is used to occur, but there is still plenty of it around which is ingested

- a. In water that has run through lead pipes.
- b. In batteries.
- c. In the air.
- d. All of the above.

17- Toxic substances that cannot be broken down, either chemically or by decomposer organisms, or any other means are

- a. Plastics.
- b. Heavy metals.
- c. Organic compounds.
- d. All of the above.

18- Select the incorrect statement about LDCs

- a. Account for most of the world's human population.
- b. Use less of commercial energy compared to MDCs
- c. Consume less of world's fossil fuel compared to MDCs
- d. None of the above.

19- All of the following resources can not be recycled or reused except:

- a. Coal.
- b. Uranium.
- c. Aluminum.
- d. Sand.

20- The severity of a pollutant is determined by all except:

- a. Its chemical nature
- b. Its source
- c. Its concentration
- d. Its degradability

21- The impact of a population on the environment depends on

- a. The population size
- b. Average consumption of resources per individual
- c. Technology used to produce and consume resources
- d. All of the above
- e. (a) and (b).

22- CFCs are believed to be harmful to the ozone because

- a. Under the influence of UV, CFCs release reactive chlorine
- b. CFCs may interact directly with O₃ to release chlorine and O₂
- c. CFCs releases bromine which interacts with ozone and convert it to O₂
- d. One molecule of CFC can break down only one molecule of ozone

- 23- "Aquifer" refers to
- A body of surface water.
 - Groundwater storage area
 - Aquatic system
 - Water locked in ice glaciers
- 24- Point sources of water pollution include all the following except
- Sewage treatment plants
 - Factories
 - Storm water runoff
 - Offshore oil wells
- 25- "Eutrophication" in lakes
- Correlates with oxygen depletion
 - Caused by high levels of nitrates and phosphates in lake water
 - Correlates with excess water in lakes
 - All of the above
 - A and B
- 26- The effects of oil on ocean ecosystems depends on
- Type of oil
 - Source of oil pollution
 - Average water temperature
 - All of the above
 - A and C
- 27- Key factors that play a role in the formation of photochemical smog include
- Nitrogen oxides from automobile exhaust
 - Volatile organic compounds (HCs) from many sources
 - Sunlight
 - All of the above
 - A and C
- 28- Asbestos is widely used in
- Plywood
 - Paneling
 - Insulation of heaters and pipes
 - Upholstery
- 29- Prolonged exposures to asbestos fibers may cause
- Cataracts
 - Brain tumor
 - Breathing difficulty
 - Nausea and vomiting
- 30- Radon gas can be released from
- Unsealed foundation
 - Building materials made from radon-rich deposits
 - Soil cracks
 - Aquifers through plumbing installations
 - All of the above
 - (a), (b) and (c)

- 31- Which of the following gases *if* released into the atmosphere contributes significantly to acid deposition?
- Nitrogen dioxide
 - Carbon monoxide
 - Sulfur dioxide
 - All of the above
 - (a) and (c)
- 32- Which of the following gases most severely inhibits oxygen transport in animals when inhaled?
- CO
 - NO
 - SO₂
 - CO₂
- 33- A reddish brown gas that gives photochemical smog its distinctive color is
- Carbon dioxide
 - Nitrogen dioxide
 - Ozone
 - Methane
- 34- Natural sources of air pollution include the following
- Forest fires
 - Eruption of volcanoes
 - Evaporation of sea spray
 - All of the above
 - None of the above
- 35- The frequency and severity of photochemical smog in an area depend on the
- Local climate
 - Topography of the area
 - Density of the population
 - Amount of industry
 - All of the above
 - (a), (b) and (d)
- 36- A decrease of pH of rain by one unit compared to natural precipitation means that it has become
- Ten times less acidic
 - Ten times more acidic
 - Half as acidic
 - Hundred times more acidic
- 37- Air pollution contributes to several human diseases such as
- Bronchitis
 - Ulcers
 - Skin burns
 - Asthma
 - All of the above
 - (a) and (d)

- 38- The most important indoor air pollutant(s) is (are)
- Cigarette smoke
 - Asbestos
 - Formaldehyde
 - Peroxyacid nitrate
 - All of the above
 - (a), (b) and (c)
- 39- Radon gas is produced naturally from radioactive decay of the element
- Radium
 - Rhodium
 - Vanadium
 - Uranium
 - Rubidium
- 40- Exposure to high levels of radioactive radon gas may make individuals at high risk of developing
- Hyperactivity
 - Neurological disorders
 - Vision blindness
 - Lung cancer
 - Skin infections
- 41- Harmful effects of acid rain include
- Washing away of soil nutrients
 - Damages to marble statues and buildings
 - Clogging of fish gills
 - All of the above
- 42- Our hearing is affected by
- Natural processes of aging
 - A lifetime of noise
 - A lifetime of upper respiratory diseases
 - All of the above
 - (a) and (b)
- 43- The constant noise of modern industrialized cities can cause
- Loss of hearing activity
 - Stress reactions
 - Low attention span and irritability
 - All of the above
- 44- Which of the following is not a Major Green House Gas?
- Water vapor
 - CO₂
 - SO₂
 - CH₄
 - a and c
- 45- Which of the following statements regarding CO₂ is Not True?
- CO₂ is responsible for most of Global warming produced by human activities
 - The major sources are Land Clearing (25%) and Fossil Fuel Burning (75%)
 - An increasing fraction comes from motor vehicle exhaust
 - More CO₂ produced by Carbon Cycle → Cooling effect on climate
 - a, b and c

- 46- Methane is produced from:
- Plastic foams and aerosol propellants
 - Breakdown of organic matter in moist places by anaerobic bacteria
 - Production of nylon bags
 - Fertilizers
 - None of the above
- 47- Which of the following is true about Earth's Climate and Temperature
- Heat trapped by green house gases allows the present diversity of life found on earth
 - Change in temperature $> 1^{\circ}\text{C}$ leads to droughts and floods
 - Earth's climate is the result of complex reaction among sun, atmosphere, oceans, land and biosphere
 - b and c
 - a, b and c
- 48- Changes in climate as a result of human activities and natural processes can lead to:
- Increased rainfall and storms
 - Rising sea level
 - Floods
 - Droughts
 - All of the above
- 49- Which of the following statements regarding the 4 main projections of global temperature is not correct?
- Earth's mean temperature will rise from $1.5-5.5^{\circ}\text{C}$
 - Using 4 models scientists estimate that we need to cut down on global CO_2 emission by 60-80%
 - Temperature near the equator will rise more than the global average
 - Southern Hemisphere will warm more than the Northern Hemisphere because it contains more Oceans.
 - None of the above
- 50- Nitrous Oxide is produced from:
- The decay of Uranium-238
 - Livestock wastes
 - Natural wetlands
 - Rice paddies
 - None of the above
- 51- Some possible effects of a warmer world include:
- Shift in vegetation coverage (forests and planted areas)
 - Reduction in water supply
 - Massive wildfires
 - Threats to human health
 - All of the above
- 52- To slow down global warming:
- Shift to renewable resources
 - Reduce deforestation
 - Improve energy efficiency
 - b and c
 - a, b and c

- 53- CFC-11 and CFC-12 are
- Chemically stable, odorless, non flammable compounds
 - Corrosive, cheap, and toxic
 - Popular as coolants in air conditioners, propellants in aerosol spray cans
 - a and c
 - a, b and c
- 54- Which of the following statements is true regarding green house gases
- CFC's take 10-20 years to reach the stratosphere and generally they trap more heat per molecule than CO_2
 - Each molecule of CH_4 traps about 25 times heat molecule as much as CO_2
 - N_2O can trap more heat per molecule the CFC
 - a and b
 - None of the above
- 55- Major substitutes for CFCs:
- Hydrochlorofluorocarbons
 - Trichlorofluoromethane
 - Dochlorofluoromethane
 - b and c
 - a, b and c
- 56- CFC's are not the only "Ozone Eaters" other "Ozone Eaters" include:
- Fumigants/ fire extinguishers
 - Dry cleaning solvents
 - Sterilants for hospital instruments
 - Metal cleaning solvents
 - All of the above
- 57- Which of the following compounds deplete ozone?
- Compounds that release Br and Cl
 - Methyl chloroform
 - Carbon tetrachloride
 - a and c
 - a, b and c
- 58- Which of the following is true concerning ozone?
- Leaking air conditioners and refrigerators can contribute to O_3 depletion
 - An increase in ozone depletion could lead to a drop in the yield of key food crops
 - Currently the rate of O_3 destruction in the stratosphere is equal to its rate of formation
 - a and b
 - a, b and c
- 59- Between 1990 and 1994, the Intergovernmental Panel on Climate change (IPCC) published evidence concerning past climate change, green house effect and changes in Global Temperature. All of the following statements constituted current scientific consensus except:
- Earth's average surface temperature has fluctuated considerably over geologic times including ice ages
 - Levels of CO_2 , CFC's methane and nitrous oxides have increased over the past 1600,000 yrs due to human activities
 - For the past 10,000 the temperature on earth had minor fluctuations which prevented drastic changes in nature of soil and vegetation
 - None of the above

60- Global warming poses threats to human health due to:

- a. Increase cataract cases
- b. Increase fungal and yeast diseases
- c. Spread of Tropical diseases (Malaria and Yellow Fever)
- d. B and c
- e. None of the above

61- Reusing:

- a. Extends resources supplies and reduces energy used and pollution more than recycling
- b. Can be thought of as a closed loop in which a product is reused for the same purpose it served before
- c. Can be thought of as an open loop in which a product is converted into another product of a different nature
- d. A and b
- e. A, b and c

62- Reusable items include all of the following except:

- a. Metal or plastic lunch boxes
- b. Glass beverage
- c. Plastic containers to store food
- d. Paper
- e. B and d

63- Compost can be used as:

- a. Soil fertilizer
- b. Topsoil cover
- c. Landfill cover
- d. Restorer of eroded soil
- e. All of the above

64- To ensure a good compost process:

- a. Control odors
- b. Overcome site problems
- c. Exclude toxic materials
- d. A and b
- e. A, b and c

65- Which of the following sentences regarding Reusing and Recycling is/are true:

- a. Recycling and Reusing are two processes by which waste and pollution can be reduced
- b. Reusing is more cost effective and consumes less energy than recycling
- c. All items that can be reused can be recycled
- d. A and b
- e. A, b and c

66- While recycling:

- a. It is more desirable to recycle items to be used for the same purpose as before recycling
- b. It is more desirable convert material into different products
- c. Wastes are be produced
- d. A and c
- e. B and c

- 67- Water uses worldwide:
- Used for irrigation
 - For domestic and municipal use
 - For oil and gas production, power plant cooling and industrial processes
 - A and b
 - All of the above
- 68- Urbanization can reduce areas recharged by water through:
- Construction
 - Over cultivated land loss
 - Building roads and pavements
 - Cutting trees
 - All of the above
- 69- The ocean:
- Receives most of precipitation
 - Is the ultimate sink for much of the waste matter we produce
 - Can dilute, disperse and degrade large amounts of raw sewage
 - B and c
 - All of the above
- 70- When oil is accidentally or deliberately released into the ocean:
- Can kill a number of aquatic animals
 - Coats feathers of birds and marine mammals destroying their natural insulation and buoyancy
 - Can suffocate crabs and oysters
 - A and b
 - All of the above
- 71- When ground water becomes contaminated:
- It can cleanse itself of degradable wastes
 - Contaminants can not effectively be diluted
 - Contaminants can be effectively dispersed
 - All of the above
 - None of the above
- 72- Primary sewage treatment:
- Is a mechanical process that use screens to filter out debris
 - Use chemically treated polymers to remove suspended solids thoroughly
 - Is a series of specialized chemical and physical processes that remove specific pollutants left in the water after primary treatment
 - Is a biological process in which aerobic bacteria are used to remove biodegradable, oxygen demanding wastes
 - None of the above
- 73- Shortages of freshwater could be caused by
- Dry climate
 - Rapid population growth
 - Less precipitation than normal
 - Land degradation caused by deforestation
 - All of the above

- 74- Select the incorrect statement about the carbon cycle
- It determines the amount of CO_2 in the atmosphere
 - Changes in the carbon cycle can affect climate
 - Changes in the carbon cycle can affect the types of life that can exist on the planet
 - If the carbon cycle removes too much CO_2 from the atmosphere, the Earth will get warmer

Answer by Yes or No:

- _____ Formaldehydes are very aggressive compounds that results from the interaction of hydrocarbons and nitrogen.
- _____ Oxygen is the most abundant gas in the atmosphere
- _____ Volume of water vapor in the stratosphere is 1000 times less than the troposphere whereas volume is 1000 times more than the troposphere
- _____ Each atom of CL released can convert 1,000,000 molecules of O_3 to O_2
- _____ Burning oil and coal in large boilers with reasonable good pollution control devices decrease the problem of gray-air smog
- _____ A sustainable yield is the highest rate at which a potentially renewable resource can be used indefinitely its available supply
- _____ Consumption overpopulation is said to exist in LDC's where they use resources at very high rates leading to significant pollution, environmental degradation and resource depletion.
- _____ In the Earth's Worldview, success depends on learning to cooperate with one another and with nature.
- _____ The upper surface of the zone of saturation in an aquifer is the water table
- _____ Over pumping of groundwater may lead to destruction of buildings and railroads
- _____ Drawbacks of desalination is cost
- _____ Water stress is due to shortages in annual precipitation
- _____ The effect of oil spillage in the ocean persists much longer in warm waters compared to cold waters
- _____ The sewage sludge is a concentrate of increased toxicity, that is why it should be incinerated and buried in secure landfills
- _____ The recovery of the marine life from exposure to oil, whether crude or refined takes 3 to 10 years respectively
- _____ Polluting the oceans with the oily tarlike makes seals and seabirds die loosing their body heat
- _____ Dysentery causing dehydration is caught from waters that are not contaminated with sewage
- _____ Heavy metals are actually essential trace elements for our organism, but once they exceed the allowed concentrations they become toxic
- _____ Chlorine when used in excess is not harmful, that is why it is used for disinfecting all kinds of waters
- _____ Plastic cups & bags are behind the death of million seabirds & marine animals each year
- _____ Natural waters might have dissolved ions in them reflecting the chemical composition of the aquifer where from they are extracted
- _____ Skin cancer (Melanoma) is caused by global warming
- _____ LCDs generate most of the pollution and wastes
- _____ Forest trees, grass lands, wild animals and fertile soil are example of renewable resources
- _____ Ozone is not an important component of photochemical smog
- _____ Air in troposphere is calm as opposed to stratosphere