

		ESCUELA SUPERIOR POLITÉCNICA DEL LITORAL FACULTAD DE CIENCIAS NATURALES Y MATEMÁTICAS DEPARTAMENTO DE CIENCIAS QUÍMICAS Y AMBIENTALES	
Año Académico: 2017 – 2018		Término: II	
Materia: Introducción a la Gestión Ambiental		Profesor:	
Evaluación: Segunda		Fecha: 2 febrero 2018	
COMPROMISO DE HONOR			
<p>Yo, al firmar este compromiso, reconozco que el presente examen está diseñado para ser resuelto de manera individual; que solo puedo comunicarme con la persona responsable de la recepción del examen; y, cualquier instrumento de comunicación que hubiere traído, debo apagarlo y depositarlo en la parte frontal del aula, junto con algún otro material que se encuentre acompañándolo. No debo además, consultar libros, notas, ni apuntes adicionales a las que se entreguen en esta evaluación. Los temas debo desarrollarlos de manera ordenada.</p> <p>Firmo al pie del presente compromiso, como constancia de haber leído y aceptar la declaración anterior.</p> <p><i>"Como estudiante de ESPOL me comprometo a combatir la mediocridad y actuar con honestidad, por eso no copio ni dejo copiar".</i></p>			
Firma		NÚMERO DE MATRÍCULA: PARALELO:	

TOPIC I: CRITICAL READING ANALYSIS (5 POINTS): Then you will find a paragraph. "Human alteration of environments produces multiple effects, some advantageous to societies, such as enhanced food production, and some detrimental, like environmental pollution with toxic chemicals, excess nutrients and carbon emissions from fossil fuels, and the loss of wildlife and their habitats. The key to better environmental outcomes is not in ending human alteration of environments but in anticipating and mitigating their negative consequences. These decisions and trade-offs should be guided by robust evidence, with global-change science investigating the connections and tradeoffs between the state of the environment and human well-being in the context of the local setting, rather than by framing and reframing environmental challenges in terms of untestable assumptions about the virtues of past environments."(Paragraph from the article *"Can Humanity's 'Great Acceleration' Be Managed and, If So, How?"* by Andrew C. Revkin, *New York Times Blog* (2015)) According to the reading, complete the following sentences:

- Why carbon emissions from fossil fuels are a detrimental effect to the ecosystem? (Circle the right answer)

a) It pollutes due to the spill of the fuels used.	b) There is bast scientific evidence that suggests the incidence on climate change	c) The author of the article has not considered certain evidence that suggests that carbon emissions are not a pollution problem.
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- What is the main problem derived from the excess of nutrients applied to the ecosystem? (Circle the right answer)

a) Solid waste accumulation	b) Deforestation	c) Eutrophication
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- The author of the paragraph suggests that instead of ending human alterations to the environment, one should anticipate and mitigate their negative consequences. In other words, this means: (Circle de right answer)

a) Humanity must continue doing what it has done, but controlling the negative of that activity as far as possible.	b) Humanity should continue to carry out its activities in a normal way, and not worry about what will happen in the future.	c) Humanity must apply prevention in the performance of its activities, and perform control in the event of something negative occur.
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- The paragraph mentioned above is part of one of the autonomous works sent through the course slides, and related to the definition of the planetary limits theory (Rockström et al, 2009; Steffen et al, 2015) taught in the matter during the last weeks. Do you consider that the author of the paragraph: (Circle de right answer)

a) Agrees with the planetary limits theory.	b) Disagrees with the spatial context of the application of planetary limits.	c) He did not establish any relationship with the theory of planetary limits.
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5. Mention a planetary boundary of those studied in class presented by Rockström et al (2009) and Steffen et al (2015)

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TOPIC II (10 POINTS): In the far right column, type the literal that corresponds to the correct term.

A	WETLANDS	Global sustainable development approach that considers current problems whose thresholds should not be exceeded so that humanity has a "safe space" to develop.	
B	CARBON CREDIT	Main substance causing depletion of the ozone layer	
C	BLACK WATER	Volume of fresh water required daily by a person, community or industrial sector to carry out its activities.	
D	SMOG	Contamination of surface water by introduction of excess nutrients such as nitrates and phosphates.	
E	UV RADIATION (ultraviolet)	Atmospheric phenomenon characterized by increasing air temperature as height increases above ground level.	
G	WATER FOOTPRINT	Wastewater characterized by containing fecal matter and bacteria Escherichia Coli	
H	CFCS (Chlorofluorocarbons)	Radiation related to depletion of the ozone layer	
I	EUTROPHIZATION	Tool developed as a mechanism for implementing the Kyoto Protocol for environmental compensation for greenhouse gas emissions and which can be traded on the global stock market.	
J	THERMAL INVERSION	Form of air contamination with presence of contaminants such as ozone, particulate matter and unburned hydrocarbons, characterized by the stagnation of contaminated air and decreased visibility due to the presence of a long period of high atmospheric pressures.	
K	PLANETARY BOUNDARY	Natural filtration systems that trap nutrients and contaminants and prevent the last ones from entering lakes, rivers or estuaries	

TOPIC III. THEORETICAL KNOWLEDGE (35 points): Mark on the **RESPONSE MATRIX TOPIC III** the correct answer that corresponds to each item.

1. The atmosphere for its study is divided into layers. What are these layers?

- A. Mesosphere, stratosphere and thermosphere or ionosphere
- B. Stratosphere, thermosphere or ionosphere and mesosphere
- C. Troposphere, stratosphere, mesosphere and thermosphere or ionosphere
- D. Stratosphere and mesosphere.

2. The air primary pollutants are:

- A. Particulate matter, Nitrogen Oxides (NOX), Sulfur Compounds (SOX, H2S), Carbonated Compounds (COX, CH4), Volatile Organic Compounds (VOCs - solvents and hydrocarbons)
- B. Acid Rain, Smog, Asbestos Radon, PVC
- C. Trichloroethane, Methyl Bromide, Tetrachloride, Halons
- D. CFC, HCFC, Tropospheric Ozone, Benzene, Toluene

3. What is carbon footprint and how is it measure?

- A. The carbon footprint is a statement of the impact that the human being has on the environment. It has metric units of tons / individual.
- B. The carbon footprint is the measure of the impact of human activities on the environment and is determined by the amount of GHG emissions produced, measured in units of carbon dioxide equivalent. C. Carbon footprint is one of the simplest ways to measure environmental impacts and pollution generated by companies.
- D. The carbon footprint measures the amount of land area and volume of water needed according to our lifestyle.

4. Determine the correct concept of emissions of an air pollutant

- A. Discharge of a contaminant into the atmosphere from a mobile or fixed source. Measured as milligram of contaminant per m³ of air under normal conditions.
- B. It is the allowable limit of a pollutant in the breathable air. Measured as microgram of contaminant per m³ of air.
- C. Discharge of a pollutant into the atmosphere whose allowable limit does not affect the air we breathe.
- D. Discharge of liquid contaminants to the gaseous phase that affect air measured per unit area.

5. What is the definition of water pollution?

- A. Presence in the water of chemicals that could cause harm to living beings.
- B. Absence of dissolved oxygen as a result of excess phytoplankton in the water.
- C. Presence in the water of organic matter that could cause damage to living beings.
- D. Qualitative state (quality) of water defined by the presence of impurities or "dirt" in the liquid that could cause damage to the health of living beings.

6. Which of the following examples is considered a punctual discharge in water bodies?

- A. Release of contaminants from the bottom of water bodies.
- B. Wastewater discharge.
- C. Infiltration from contaminated areas.
- D. Transport of contaminants from growing areas.

7. The physical-chemical parameters that usually detect water contamination are:

- A. Temperature, dissolved oxygen, pH, suspended solids.
- B. Temperature, nutrients, pH, suspended solids, pesticides.
- C. Heavy metals, dissolved oxygen, hydrocarbons, suspended solids, coliform bacteria.
- D. Pesticides, hydrocarbons, pH, suspended solids, coliform bacteria.

8. A BIO - INDICATOR is a:

- A. An organism that is resistant to pollution, its presence and quantity determines how healthy the aquatic ecosystem is.
- B. Saprophytic organisms with a low presence in the aquatic ecosystem indicate a high rate of contamination
- C. An organism that is sensitive to pollution and its presence and quantity determines how healthy the aquatic ecosystem is.
- D. Aquatic insects with a high presence in the aquatic ecosystem indicate high pollution rate.

9. One of the DISADVANTAGES of alternative treatment of wastewater through oxidation ponds is:

- A. You need sophisticated machinery for your operation.
- B. It occupies large space.
- C. The generation of sludge is continuous and in great quantity.
- D. High operating and maintenance costs.

10. Select the right alternative for the concept of resilience:

- A. Capacity that has a system, be it at the level of individual, a forest, a city or an economy, to generate disturbances and thus can continue its development.
- B. Capacity that has a system, be it at the level of individual, a forest, a city or an economy, to significantly alter its characteristics of structure and functionality due to a disturbance.
- C. Capacity that has a system, be it at the level of individual, a forest, a city or an economy, to face the changes and thus can continue its development.
- D. Capacity that has a system, be it at the level of individual, a forest, a city or an economy, to face changes of the permanent and irreversible type.

11. Geographic explosion is related with:

- A. Increase of birth rate and decrease of mortality rate
- B. Increase of mortality rate and decrease of birth rate
- C. Increase of migration rate and decrease of the Gross Domestic Product
- D. Increase of fertility rate and decrease of energy consumption

12. What kind of relationship exists between biodiversity and resilience in ecosystems?

- A. Inversely proportional.
- B. Directly proportional.
- C. Neutral.
- D. Antagonistic

13. According to the Stockholm Resilience Center, how many planetary boundaries exist?

- a) Three
- b) Ten
- c) Seven
- d) Nine

14. In reference to Agenda 21, select the correct option:

- A. Binding and voluntary action plan for nations related to sustainable development.
- B. This Agenda was constituted by 2 sections.
- C. Agenda 21 was promulgated at the Rio Conference, Brazil - 1992.
- D. Agenda 21 was promulgated at the Montreal Conference, Canada - 1989.

15. The main objective of the Montreal Protocol was:

- A. Reduce the emission of greenhouse gases.
- B. Protection of the ozone layer.
- C. Establish the transfer, management and use of living modified organisms through modern biotechnology.
- D. Designate Antarctica as a "natural reserve dedicated to peace and science".

16. The Sustainable Development Goals of the United Nations are valid until the year:

- A. 2025
- B. 2020
- C. 2035
- D. 2030

17. Since the Kyoto Protocol has been signed, the concentration of atmospheric carbon dioxide has:

- A. Decrease
- B. Increase
- C. Has not change

18. Which of the following countries did not ratify the Kyoto Protocol:

- A. Ecuador
- B. U.S
- C. Australia
- D. Japan

19. A mechanism to combat the effects of eutrophication in a reservoir is:

- A. Prohibition of phosphate detergents
- B. Manual withdrawal of aquatic vegetation
- C. Prevention of agricultural runoff
- D. Swamp Control

20. Group of organisms of the same species that inhabit a certain geographical area:

- A. Community
- B. Biosphere
- C. Population
- D. Ecosystem

21. According to the water footprint, the highest water consumption occurs in:

- A. The industrial sector
- B. The agricultural sector
- C. Related to domestic consumption
- D. In recreation

22. The RAMSAR convention is a protection mechanism for:

- A. Moorland
- B. Polar ice caps
- C. Wetlands and lowlands
- D. Aquifers

23. Regarding the availability of water. When human, institutional and financial capital limits access to water even if it is available locally to meet demands, it is known as:

- A. Physical water scarcity
- B. Economical water scarcity
- C. Water vulnerability
- D. Water stress

24. Which of the following are considered abiotic factors

- A. Plants and temperature
- B. Soil and solar radiation
- C. Plants and animals
- D. Water and microorganisms

25. How the atmospheric layer is called, where the climatic phenomena occur

- A. Troposphere
- B. Mesosphere
- C. Stratosphere
- D. Ionosphere

26. Which of the following is a source of methane emission?

- A. Aforestation
- B. Cattle raising
- C. Overfishing
- D. Deforestation

27. In the environmental disaster that occurred in Chernobyl, Ukraine what type of pollutant was released?

- A. Radioactivity
- B. CFC
- C. Pesticides
- D. DDT

28. What involved the environmental catastrophe called Minamata disease?

- A. Explosion of a nuclear reactor and subsequent fire that emitted a radioactive cloud over 2000 km².
- B. Incident related to the bio-accumulation of methyl mercury in a bay that caused multiple cases of severe neurological syndrome and death.
- C. Uncontrolled emission of methyl isocyanate gases from a Union Carbide pesticide plant that caused more than 6000 deaths
- D. DDT poisoning contained in pesticides to which they are related to sterility.

29. What is the largest oil spill in the ocean?

- A. Exxon Valdez
- B. Shipwreck of the Jessica Ship
- C. Deep Water Horizon Platform
- D. Chevron-Texaco Case

30. What is one of the problems causing eutrophication?

- a) Direct discharge of waste water into water bodies
- b) Discharge of hydrocarbons into water bodies
- c) Acid rain
- d) Use of water for cooling generators

31. The atmospheric CO₂ that is in contact with the surface of the ocean.

- A) It dissolves in sea water and reacts with other components to form weak acids
- B) Produce eutrophication of the ocean by introducing carbon in large quantities into the food chain
- C) It does not dissolve in sea water and accumulates causing oxygen depletion in the upper ocean layer
- D) It does not allow sunlight to pass through the deep ocean layers, preventing photosynthesis

32. How the atmosphere is compose:

- a) N₂ 78%, O₂ 21%, CO₂ 0.033%, others 1%
- b) N₂ 80%, O₂ 12%, CO 6.999%, others 1%
- c) N₂ 50%, O₂ 25%, CO₂ 25%, others 1%
- d) N₂ 75%, O₂ 20%, CO₂ 3.5%, others 1%

33. The photochemical SMOG is the result of:

- A) Acid rain with ph of less than 6.5
- B) The reaction of sulfuric acid and water vapor
- C) The interaction of nitrogen oxide and sun light
- D) The Ozone depletion in due to sun light

34. Which of the following gases is able to trap more heat and have a larger impact of global warming?

- A. Volatile Organic Compounds
- B. Methane
- C. Carbon Dioxide
- D. CFC

35. Indicate which of the following statements is FALSE:

- A) The troposphere is the layer of the Earth's atmosphere that is in contact with the surface of the earth
- B) In the troposphere is 90% of the mass of the whole atmosphere and its thickness is only 10% of the whole atmosphere
- C) In the troposphere is the ozone layer
- D) The ionosphere is used for transmission of radio waves and long distance communications.

RESPONSE MATRIX TOPIC III. Mark using a pen with an "X" the correct answer from Section III. No studs or pencils are allowed.

Question	Answer			
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