1. What does the term combined sewers cover?

    a) Sewers combine the dwellings in a settlement
    b) Both black water and grey water runs in the sewers
    c) Rainwater runs together with domestic wastewater in the sewers

2. Which environmental effects may domestic wastewater have if let out untreated to surface water?

    a) Eutrophication
    b) Ecosystem disturbance
    c) Spreading of antibiotic resistance genes
    d) Acidification
    e) Algae death
    f) Dead sea bottom
    g) None, only industrial activities have environmental effects

3. Which microorganism may be found in domestic wastewater?

    a) Coliforms only
    b) Coliforms and Enterococci
    c) Any kind of enteric microorganism

4. What is a major concern regarding the microbial content in wastewater?

    a) They may cause algae bloom
    b) They take up the oxygen in the recipient and cause oxygen depletion
    c) They include pathogenic organisms
    d) They include antibiotic resistant organisms that may transfer antibiotic resistance genes to natural organisms in the recipient

5. Which constituents may cause eutrophication and dead sea bottom?

    a) Nitrogen, phosphorous and organic matter
    b) Anthropogenic compounds
    c) Only nitrogen
    d) Only phosphorous
    e) Only organic matter
    f) Medical residues and PPCP's

6. Which wastewater constituents have conventional wastewater treatment plans been optimized to remove?

    a) Pharmaceuticals and personal care products (PPCP´s)
    b) Nutrients (P and N)
    c) Organic matter (COD/BOD)
    d) Medical residues
    e) Particles
    f) Heavy metals
    g) Microorganisms

7. Primary treatment refers to:

    a) Treatment of prime quality with effluent of drinking water quality
    b) The first and most simple treatment step in a conventional treatment plant in which larger particles are removed
    c) Treatment which should be prioritized above other treatments

8. Removal of medical residues is obtained most efficiently by:

    a) Primary treatment
    b) Secondary treatment
    c) Tertiary treatment
    d) None of the above, conventional treatment plants are inefficient in removal of medical residues

9. Significant reduction of microbial content is obtained most efficiently by:

    a) Flocculation and removal of sludge
    b) Primary treatment
    c) Secondary biological treatment
    d) Disinfection

10. Cold temperatures affect treatment the following ways:

    a) Particles sediment faster
    b) Bacteria die off faster
    c) Particles sediment more slow
    d) Pathogens survive longer
    e) Filtration happens more slowly
    f) Biological treatment slows down

11. Freezing and freeze thaw cycles may be useful for treatment of blackwater and sludge due to:

    a) Dewatering effects
    b) Efficient reduction of gram negative bacteria
    c) Efficient removal of viruses
    d) Energy production

12. The main reasons for not having wastewater treatment in Greenland and Svalbard are:

    a) It is impossible
    b) No technology has been developed yet to cope with the conditions
    c) Conventional technologies are very expensive to implement and run in small remote communities
    d) No environmental effects have been observed

13. What are the favorable chemical properties of contaminants in solved sewage?
    a. Lipophilic
    b. Hydrophilic
    c. Neutral

14. What is the origin of the majority of the contaminants identified in Arctic sewage?
    a. Human consumption
    b. Long-range transport
    c. Industry
    d. Veterinary applications
    e. Agriculture

15. How are Sewage related contaminants behaving in the Arctic aqueous environments compared middle latitude regions?
    a. Prolonged life time
    b. Spread wider quicker in the surface water
    c. Slow microbial transformation
    d. More effective photochemical transformation
    e. Seasonal transformation pattern

16. What are the major challenges of sewage related pollutant release in the Arctic?
    a. Local water pollution
    b. up-take in fish caught for local consumption
    c. Change in the local biosphere composition
    d. Temperature increase in the recipient water

17. Identify the major water pollutants in Arctic water
    a. Organic pollutants
    b. Metals
    c. Pathogens
    d. Nutrients

18. Identify the sources for water pollutants in the Arctic
    a. Domestic activities
    b. Municipal activities
    c. Industrial activities
    d. Tourism

19. How are pollutants detected?
    a. Visual inspection
    b. Laboratory based analysis
    c. Field sample analysis
    d. Remote sensing

20. What is heat pollution?
    a. Continuous high temperature release into the aqueous environment
    b. Heated wastes destroy the cleaning process in the treatment plant
    c. Chemical reactions producing heat which in turn reduces the effectivity of the biofouling in sewage treatment plants
    d. High ambient temperatures reduce the effectivity of drinking water / sewage treatment

21. Why is unretained pollution release into Arctic environments of special concern for environmental risk assessment?
    a. Low biotransformation in cold aqueous environments
    b. No photochemical transformation in winter (polar night)
    c. Extended life time of otherwise readily degradable substances
    d. Higher emission rates in untreated Arctic waste waters

22. What factors determine the amount of released pollution into Arctic aqueous environments?
    a. Human population density
    b. Treatment technology
    c. Ambient temperatures
    d. The pollutants environmental stability

23. How are pollutants from water treatment effecting the local environment?
    a. Toxic effects on local organisms
    b. Adaptation of the local micro fauna (resistance to chemical pollution)
    c. Influencing the oxygen demand in the micro fauna and flora
    d. Increasing the water temperature
    e. Contributing to increased algae growth

24. What consequences can local pollution from sewage have on local people?
    a. Pollution of local food resources
    b. Transfer of diseases
    c. Abundance of fish for local food supply
    d. Introduction of new fish species as local food source

25. What cofounding factors are influencing the pollution release and effects in the Arctic environment
    a. Climate change
    b. Technology and processing strategies
    c. Population density
    d. Water quality

26. How can sewage and sewage sludge be utilized in a sustainable way?
    a. Soil amendment
    b. Fertilizer
    c. Biogas production
    d. Electric power production