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# HSSC-I NATIONAL BOOK FOUNDATION FBISE

## CHEMISTRY TEST - CHAPTER 14: ENVIRONMENTAL CHEMISTRY WATER

| Name: | | Roll No. | | Section: |
|---|---|---|---|---|

**Total Time: 2:30 Hour**
**Time Allowed: 150 Minutes**

**Total Marks: 150**

**PAPER OBJECTIVE**
**SECTION-A (MARKS 150)**

**NOTE: Section-A is compulsory. All parts of this section are to be answered on these pages and handed over to the center superintendent. Deleting / overwriting is not allowed. Do not use lead pencil.**

**Q.1 Fill the relevant bubble for each part. All parts carry one mark.**

| Questions | A | B | C | D | A B C D |
|---|---|---|---|---|---|
| 1. Water composes the part of the environment known as the: | biosphere | lithosphere | hydrosphere | atmosphere | ○○●○ |
| 2. The world's total water is classified into two major categories: saltish (oceanic) water and: | distilled water | fresh water | mineral water | rain water only | ○●○○ |
| 3. Out of the total water on the globe, about how much is present as saltish water in oceans and seas? | 71% | 97% | 3% | 50% | ○●○○ |
| 4. About 2% of the Earth's water is present as solid in the form of: | ice caps | clouds | groundwater | ocean water | ●○○○ |
| 5. Only about what percentage of the Earth's water is fresh water available for use? | 10% | 25% | 50% | 1% | ○○○● |
| 6. Water is known as the universal solvent because: | it is colourless | it is heavy | many compounds dissolve in it | it boils at 100 °C | ○○●○ |
| 7. Water is rarely found in a pure form because it: | evaporates quickly | is a gas | is hard to store | dissolves many substances | ○○○● |
| 8. The sources of water pollution are classified into: | primary and secondary only | point and nonpoint sources | natural and artificial only | solid and liquid only | ○●○○ |
| 9. Point sources of water pollution are those whose outlet or location is: | widespread | unknown | specified | undetectable | ○○●○ |
| 10. An example of a point source of water pollution is: | effluent from an industry | roadside runoff | runoff from farms | seepage of pesticides | ●○○○ |
| 11. Point sources can be identified and: | stopped easily | only stopped by nature | never stopped | only stopped by rain | ●○○○ |
| 12. Nonpoint sources of water pollution are: | only industrial | only natural | specified in location | widespread and not specified in their location | ○○○● |
| 13. An example of a nonpoint source of water pollution is: | a sewage treatment plant | runoff of fertilisers from fields | an oil tanker spill | a factory discharge pipe | ○●○○ |
| 14. Nonpoint sources of pollution include: | only radioactive waste | only oil spills | only industrial effluents | pesticides, fertilisers and detergents | ○○○● |



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| Questions | A | B | C | D | A B C D |
|---|---|---|---|---|---|
| **15. Oil spills from an industry related to petroleum are examples of:** | point source pollution | natural pollution | nonpoint source pollution | air pollution | ●○○○ |
| **16. Pesticides can harm aquatic life by:** | increasing oxygen | producing food | cleaning water | entering water bodies through runoff | ○○○● |
| **17. Some pesticides are designed to persist, which:** | makes them harmless | increases their environmental impact | breaks them down fast | decreases their toxicity | ○●○○ |
| **18. Fertilisers, pesticides and herbicides reach nearby water bodies when they mix with:** | rainwater | sunlight | oil | sea salt | ●○○○ |
| **19. Oil leaks from ships or off-shore drilling cause:** | oxygen increase | oil spills in ocean waters | clean oceans | more fish | ○●○○ |
| **20. Crude oil forms a black sheet over water, which stops:** | aeration and light penetration | boat movement only | waves only | evaporation only | ●○○○ |
| **21. Untreated sewage in water bodies leads to pollution by:** | oxygen | nutrient-free water | chlorine | bacteria and other pathogens | ○○○● |
| **22. Mining produces a lot of grit that is drained into water bodies by rain, which makes them:** | colder and clearer | saltier and cleaner | shallow and filthy | deeper and cleaner | ○○●○ |
| **23. Industrial effluents often contain heavy metals such as:** | carbon, nitrogen and oxygen | sodium, potassium and calcium | lead, mercury and cadmium | helium, neon and argon | ○○●○ |
| **24. Heavy metals are persistent pollutants which accumulate in:** | sediments and aquatic organisms | only air | only clouds | only rocks | ●○○○ |
| **25. The increase in concentration of a pollutant in an organism over time is called:** | biodegradation | bioaccumulation | neutralisation | hydrolysis | ○●○○ |
| **26. The increase in the concentration of a pollutant along the food chain is called:** | biomagnification | eutrophication | bioaccumulation | sedimentation | ●○○○ |
| **27. Industrial effluents containing heavy metals can also affect:** | only the air | only the temperature | only noise | soil quality and agricultural productivity | ○○○● |
| **28. Pollutants may leach into groundwater, thus increasing the risk to:** | only plants | only fish | only rocks | human health | ○○○● |
| **29. Contaminated water and poor sanitation are linked to the transmission of:** | cholera, typhoid and hepatitis A | asthma only | cancer only | diabetes only | ●○○○ |
| **30. Which of the following is a waterborne disease?** | Arthritis | Cholera | Asthma | Diabetes | ○●○○ |
| **31. Which of these diseases is transmitted through contaminated water?** | Typhoid | Hypertension | Eczema | Migraine | ●○○○ |



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| Questions | A | B | C | D | A B C D |
|---|---|---|---|---|---|
| **32. Contaminated water commonly spreads which of the following diseases?** | Heart attack | Cancer from smoking | Dysentery | Osteoporosis | ○○●○ |
| **33. A disease linked with poor sanitation and unsafe water is:** | Polio | Rickets | Scurvy | Anaemia | ●○○○ |
| **34. Heavy metals like cadmium, mercury, arsenic, lead and copper can cause:** | better kidney function | improved memory | stronger bones | neurotoxicity and nephrotoxicity | ○○○● |
| **35. Neurotoxicity refers to damage to the:** | hair | nervous system | skin | bones | ○●○○ |
| **36. Nephrotoxicity refers to damage to the:** | kidneys | lungs | heart | liver | ●○○○ |
| **37. Bioaccumulation of heavy metals can lead to severe problems like:** | improved immunity | vitamin synthesis | enhanced vision | cancer | ○○○● |
| **38. Polluted water cannot support fisheries because of the leaching of ___ ions from the soil.** | calcium | aluminium | potassium | sodium | ○●○○ |
| **39. Aluminium ions form gelatinous aluminium hydroxide which:** | increases oxygen | purifies water | clogs the gills of fish | feeds the fish | ○○●○ |
| **40. Excessive use of fertilisers causes:** | fish growth only | algal bloom | oxygen increase | clean water | ○●○○ |
| **41. Excess nutrients from fertilisers entering a lake cause:** | neutralisation | disinfection | eutrophication | distillation | ○○●○ |
| **42. Eutrophication is the enrichment of water bodies with:** | nutrients such as nitrates and phosphates | metals only | salt only | oxygen | ●○○○ |
| **43. Eutrophication ultimately leads to:** | extinction of a lake or pond | more oxygen | more fish | clearer water | ●○○○ |
| **44. Which nutrients are responsible for eutrophication?** | Chlorides and sulphates | Carbonates and silicates | Nitrates and phosphates | Hydrogen and helium | ○○●○ |
| **45. Natural habitats destroyed by water pollution include:** | deserts | coral reefs and wetlands | glaciers only | mountains | ○●○○ |
| **46. Water obtained from groundwater, a river or a lake before treatment is called:** | soft water | treated water | raw water | distilled water | ○○●○ |
| **47. Raw water is contaminated with grit and:** | only nitrogen | pathogens | only salt | only oxygen | ○●○○ |
| **48. The first step in raw water treatment is:** | disinfection | screening (removal of debris) | sedimentation | filtration | ○●○○ |

| Questions | A | B | C | D | A B C D |
|---|---|---|---|---|---|
| **49. Screening removes debris such as:** | dissolved salts | viruses | sticks and leaves | bacteria | ○○●○ |
| **50. In coagulation, ___ is used to form flocs that gather impurities.** | alum | chlorine | ozone | charcoal | ●○○○ |
| **51. The process of forming flocs that gather impurities is called:** | desalination | disinfection | aeration | coagulation | ○○○● |
| **52. In sedimentation, raw water is left to stand in large tanks for about:** | 1 minute | 12 hours or more | 5 minutes | 10 seconds | ○●○○ |
| **53. In sedimentation, the solid particles that settle at the bottom form:** | alum | chlorine | ozone | sludge | ○○○● |
| **54. Filtration of water can be done through:** | only cotton | activated charcoal, sand and gravel | only clay | only paper | ○●○○ |
| **55. Which of these is used as a filter medium in water treatment?** | Chlorine | Activated charcoal | Ozone | Alum | ○●○○ |
| **56. Killing pathogens in water is called:** | sedimentation | coagulation | screening | disinfection | ○○○● |
| **57. Methods of disinfection include chlorination, ozonation and:** | filtration only | UV treatment | sedimentation | screening | ○●○○ |
| **58. Chlorination of water is done to:** | kill microorganisms | remove hardness | increase pH | remove debris | ●○○○ |
| **59. Which of these methods is NOT a method of disinfection?** | UV treatment | Sedimentation | Chlorination | Ozonation | ○●○○ |
| **60. Aeration is used in water treatment to:** | kill bacteria | increase hardness | remove smell | remove salt | ○○●○ |
| **61. Desalination is used to:** | kill bacteria | add salt to water | remove salts from sea water | increase pH | ○○●○ |
| **62. Ion exchange treatment is used to remove:** | dissolved ions | bacteria | debris | sand | ●○○○ |
| **63. Water is passed through different filters, such as sand, to remove:** | only gases | only salts | impurities, pathogens and fine particles | only colour | ○○●○ |
| **64. Membrane filtration helps remove:** | fine particles and impurities | only heat | only gases | large stones | ●○○○ |
| **65. The treatment of used water before releasing it into water bodies is called:** | wastewater treatment | desalination | evaporation | raw water treatment | ●○○○ |



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| Questions | A | B | C | D | A B C D |
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| **66. Wastewater must be treated before being discharged because it can:** | increase oxygen | improve water bodies | purify rivers | severely contaminate water bodies | ○○○● |
| **67. Screening and sedimentation are part of the:** | advanced oxidation | secondary treatment | tertiary treatment | primary treatment | ○○○● |
| **68. Biological processes that break down organic matter in wastewater make up:** | screening | primary treatment | filtration only | secondary treatment | ○○○● |
| **69. Common biological methods include:** | desalination | screening and grit removal | activated sludge and trickling filters | chlorination and ozonation | ○○●○ |
| **70. Tertiary treatment is an ___ treatment that further purifies water.** | advanced | initial | primary | basic | ●○○○ |
| **71. Tertiary treatment removes nutrients such as:** | alum | nitrates and phosphates | sticks and leaves | sand and gravel | ○●○○ |
| **72. Advanced oxidation processes use ___ to break down persistent organic compounds.** | sunlight only | only filters | strong oxidising agents | strong reducing agents | ○○●○ |
| **73. Natural or artificial wetlands can be used to:** | increase pollution | treat wastewater | make salt | produce fuel | ○●○○ |
| **74. Which of the following is a law related to water pollution in the USA?** | Kyoto Protocol | Clean Water Act | Pakistan Environmental Protection Act | Water Pollution Control Act (China) | ○●○○ |
| **75. The primary objective of the Clean Water Act (USA) is to:** | promote desalination only | increase industrial output | restore the biological, physical and chemical integrity of US waters | ban all fishing | ○○●○ |
| **76. The law that sets national standards for drinking water quality in the USA is the:** | Clean Air Act | Montreal Protocol | Kyoto Protocol | Safe Drinking Water Act | ○○○● |
| **77. The Water Pollution Control Act of China sets:** | only dam rules | water standards, monitoring procedures and penalties | only air standards | only fishing rules | ○●○○ |
| **78. In Pakistan, the legal framework for conservation, protection and improvement of the environment is the:** | Safe Drinking Water Act | Pakistan Environmental Protection Act 1997 | Clean Water Act | Kyoto Protocol | ○●○○ |
| **79. The Pakistan Environmental Protection Act was enacted in:** | 1973 | 2010 | 1947 | 1997 | ○○○● |
| **80. The Pakistan Environmental Protection Act empowers the Environmental Protection Agency to:** | control and regulate water pollution | only plant trees | only collect taxes | only study weather | ●○○○ |
| **81. NEQS stands for:** | National Environmental Quality Standards | New Environmental Quality Standards | National Energy Quality System | National Emission Quality Survey | ●○○○ |
| **82. NEQS in Pakistan ensures the quality and standards of pollutants according to:** | only local rules | only EU rules | WHO and EPA standards | no standards | ○○●○ |



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|---|---|---|---|---|---|
| **83. The Kyoto Protocol was done in a city of:** | Japan | France | China | USA | ●○○○ |
| **84. The Kyoto Protocol mainly focuses on:** | water pollution only | noise pollution | air pollution | soil erosion only | ○○●○ |
| **85. Human activities that affect water resources include:** | only earthquakes | only volcanoes | only rainfall | deforestation, industrialisation and agriculture | ○○○● |
| **86. The primary and biggest user of freshwater is:** | homes | agriculture | transport | industry | ○●○○ |
| **87. Agriculturally used water takes a lot of time to:** | freeze | turn into oil | become part of the water cycle again | evaporate | ○○●○ |
| **88. Fertilisers cause eutrophication and:** | algal bloom | noise | heat | oxygen formation | ●○○○ |
| **89. Poor land management and extra tilling cause:** | snow | soil erosion | more rain | soil fertility | ○●○○ |
| **90. Soil erosion fills the beds of water bodies making them:** | salty | shallow | clear | deep | ○●○○ |
| **91. Excessive pumping from tube wells creates a shortage of:** | rain | sunshine | oil | groundwater | ○○○● |
| **92. Replenishment of an aquifer depends upon:** | volcanoes | wind | sunlight only | rainfall | ○○○● |
| **93. Which technology can save water in agriculture?** | Flood irrigation | Open ditches | Drip irrigation | Sprinklers running all day | ○○●○ |
| **94. Industries use water for condensation, cooling and as a:** | catalyst only | fuel | solvent | insulator | ○○●○ |
| **95. Large dams and canals can change the water pathway and:** | stop evaporation | stop rainfall | disrupt the natural aquatic ecosystem | improve all ecosystems | ○○●○ |
| **96. Industries release heat in the form of hot water to nearby rivers, which increases the:** | fish population | temperature of the water | water volume | oxygen solubility | ○●○○ |
| **97. Thermal pollution decreases the ___ of oxygen in water.** | solubility | production | density | colour | ●○○○ |
| **98. Fish such as trout cannot survive in hot waters because of the decrease in:** | light | pH only | dissolved oxygen | salt | ○○●○ |
| **99. Increase in temperature of water ___ the solubility of oxygen.** | has no effect on | decreases | doubles | increases | ○●○○ |



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| Questions | A | B | C | D | A B C D |
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| **100. Mining can destroy:** | streams in a local area | only mountains | only deserts | only oceans | ●○○○ |
| **101. Water-saving measures at home include:** | watering lawns in noon | leaving taps open | washing cars daily | low-flow fixtures and appliances | ○○○● |
| **102. Rainwater harvesting is used for:** | industrial acid | cooking only | non-potable uses like irrigation and toilet flushing | drinking only | ○○●○ |
| **103. Restoration of natural watersheds includes:** | more mining | more deforestation | erosion control and reforestation | more construction | ○○●○ |
| **104. The cities located near the oceans can use ___ water as a source of freshwater.** | distilled | desalinated | acidic | polluted | ○●○○ |
| **105. Reuse of treated wastewater is promoted for:** | medicine | drinking directly | irrigation and industrial processes | food only | ○○●○ |
| **106. Governments should invest in research for:** | more pollution | bigger factories | more mining | innovative water-saving technology | ○○○● |
| **107. Cooperation between neighbouring countries is needed for:** | only fishing | only earthquakes | transboundary water issues | only rainfall | ○○●○ |
| **108. The properties of water that make it an excellent solvent include polarity, hydrogen bonding and:** | non-polar nature | a high dielectric constant | low surface tension | a low dielectric constant | ○●○○ |
| **109. Rainwater containing dissolved $CO_2$ can dissolve:** | silica only | carbonate rocks | glass | plastic | ○●○○ |
| **110. Carbonic acid converts insoluble carbonates into:** | soluble hydrogencarbonates | chlorides | oxides | insoluble sulphates | ●○○○ |
| **111. Organic compounds such as alcohols, amines and carboxylic acids are soluble in water due to:** | hydrogen bonding | ionic bonding | covalent network | metallic bonding | ●○○○ |
| **112. Because of its high surface tension, most microbes can:** | walk over the surface of water | not live in water | not use water | sink quickly | ●○○○ |
| **113. Water has a very high heat capacity, so it:** | has no temperature change | boils at 0 °C | loses heat very quickly | absorbs a lot of heat from industries | ○○○● |
| **114. Surfactants and soaps in water can leach out:** | sugar | nitrogen gas | oxygen | metal ions from minerals | ○○○● |
| **115. Monitoring water quality involves assessing changes in the:** | properties of water | mass of the Earth | colour of the sky | temperature of space | ●○○○ |
| **116. Which pollution can cause cancer?** | Sunlight | Pesticides and heavy metals | Clean rain | Distilled water | ○●○○ |



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| Questions | A | B | C | D | A B C D |
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| **117. Disinfection of water is done by:** | all of these | chlorination | ozonation | UV treatment | ●○○○ |
| **118. In which method are small particles coagulated into big flocs?** | Aeration | Screening | Coagulation | Chlorination | ○○●○ |
| **119. World sources of fresh water are ___ day by day.** | increasing | doubling | constant | decreasing | ○○○● |
| **120. Which type of pollutants can cause eutrophication?** | Oil | Nutrients (nitrates and phosphates) | Heavy metals | Plastics | ○●○○ |
| **121. How much of the total water of the planet is present in oceans?** | 50% | 10% | 3% | 97% | ○○○● |
| **122. Raw water treatment is the cleaning of water from:** | rainwater only | sea water only | reservoirs like dams and lakes before use | used household water | ○○●○ |
| **123. Waste water treatment is the cleaning of:** | sea water for drinking | rain water for crops | used water before discharge | raw water before drinking | ○○●○ |
| **124. Which of the following causes algal bloom in lakes?** | Sand | Heavy metals | Oil | Excess fertilisers | ○○○● |
| **125. Oxidising agents used in advanced oxidation processes break down:** | persistent organic compounds | noble gases | salts | sand | ●○○○ |
| **126. A farmer uses large amounts of fertiliser and a nearby pond turns green and loses its fish. This is due to:** | neutralisation | eutrophication | disinfection | desalination | ○●○○ |
| **127. A factory discharging hot water into a river reduces fish population because of:** | increased salt | increased dissolved oxygen | decreased pH only | reduced dissolved oxygen | ○○○● |
| **128. Oil spreads on a sea surface, and aquatic plants die because the oil stops:** | wind | salt entering | light penetration and aeration | rainfall | ○○●○ |
| **129. A village's well becomes unfit for drinking after sewage seeps into it. The cause is:** | excess oxygen | added chlorine | filtration | contamination by bacteria and pathogens | ○○○● |
| **130. A city decides to add chlorine and ultraviolet light to its water supply. This step is:** | disinfection | screening | coagulation | sedimentation | ●○○○ |
| **131. A lake near an industrial area has high levels of mercury in its fish. This is an example of:** | bioaccumulation and biomagnification | coagulation | eutrophication only | desalination | ●○○○ |
| **132. Pesticide runoff from farm fields entering a river is a:** | natural source | point source of pollution | air source | nonpoint source of pollution | ○○○● |
| **133. A sewage plant discharging untreated water from one outlet is a:** | diffuse source | natural source | point source of pollution | nonpoint source of pollution | ○○●○ |



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| Questions | A | B | C | D | A B C D |
|---|---|---|---|---|---|
| **134. Cholera, diarrhoea and hepatitis A are spread mainly through:** | contaminated water and poor sanitation | noise | polluted air | sunlight | ●○○○ |
| **135. Inappropriately managed water and sanitation services expose individuals to:** | longer life | better health | stronger immunity | preventable health risks | ○○○● |
| **136. Water pollution can harm human health, causing epidemics, stomach problems and:** | stronger bones | improved vision | better sleep | hepatic (liver) problems | ○○○● |
| **137. Which of these is a harmful effect of oil spills in oceans?** | More oxygen in water | Higher fish catch | Cleaner beaches | Destruction of aquatic ecosystems | ○○○● |
| **138. The global water distribution is about 97% oceans, 2% ice caps and ___ fresh water.** | 3% | 0.1% | 10% | 1% | ○○○● |
| **139. Alum added to turbid water works by:** | killing bacteria | causing particles to clump together and settle | removing smell | adding minerals | ○●○○ |
| **140. After coagulation and sedimentation, the water is next passed through:** | boilers | deserts | dams | filters | ○○○● |
| **141. Which step in raw water treatment follows filtration?** | Sedimentation | Screening | Coagulation | Disinfection | ○○○● |
| **142. The treatment methods that remove nitrates and phosphates from wastewater belong to:** | tertiary treatment | screening | primary treatment | sedimentation | ●○○○ |
| **143. Activated sludge is a process used in:** | desalination | screening | biological wastewater treatment | ozonation | ○○●○ |
| **144. Heavy metals in water are persistent because they:** | break down quickly | dissolve completely in oil | do not break down easily | evaporate | ○○●○ |
| **145. Agricultural runoff reaching a river typically contains:** | only sand | fertilisers, pesticides and herbicides | only salt | only distilled water | ○●○○ |
| **146. Water pollution laws are made globally to:** | reduce pollution and protect water reservoirs | stop rainfall | promote mining | increase pollution | ●○○○ |
| **147. The high heat capacity of water means industrial cooling water:** | freezes the river | has no effect on aquatic life | carries away a lot of heat and may harm aquatic species | cools the river | ○○●○ |
| **148. Water is a suitable habitat for microorganisms because of its:** | low density only | colour | high surface tension and solvent properties | taste | ○○●○ |
| **149. Due to hydrogen bonding, which organic compounds are soluble in water?** | Waxes and fats | Alkanes and alkenes | Benzene and hexane | Alcohols, amines and carboxylic acids | ○○○● |
| **150. Sustainable agricultural methods help to:** | conserve water resources | increase pollution | waste water | increase erosion | ●○○○ |



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