Current affair

Olympiad

Comprehensive

Study the following examples.

Example – 1 \geq

Read the passage carefully and answer the questions that follow.

The release of sulfur and nitrogen into the atmosphere by power plants and agricultural activities plays a minor role in making the ocean more acidic on a global scale, but the impact is greatly amplified in the shallower waters of the coastal ocean, according to new research by atmospheric and marine chemists.

Ocean "acidification" occurs when chemical compounds such as carbon dioxide, sulfur, or nitrogen mix with seawater, a process which lowers the pH and reduces the storage of carbon.

Ocean acidification hampers the ability of marine organisms- such as sea urchins, corals, and certain types of plankton- to harness calcium carbonate for making hard outer shells or "exoskeletons." These organisms provide essential food and habitat to other species, so their demise could affect entire ocean ecosystems.

'Acid rain isn't just a problem of the land; it's also affecting the ocean/' said Scott Doney, lead author of the study and a senior scientist in the Department of Marine Chemistry and Geochemistry at the Woods Hole Oceanographic Institution (WHOI). He further added, 'That effect is most pronounced near the coasts, which are already some of the most heavily affected and vulnerable parts of the ocean due to pollution, over-fishing, and climate change."

In addition to acidification, excess nitrogen inputs from the atmosphere promote increased growth of phytoplankton and other marine plants which, in turn, may cause more frequent harmful algal blooms and eutrophication (the creation of oxygendepleted "dead zones") in some parts of the ocean.

Doney collaborated on the project with Natalie Mahowald, Jean-Francois Lamarque, and Phil Rasch of the National Center for Atmospheric Research, Richard Feely of the Pacific Marine Environmental Laboratory, Fred Mackenzie of the University of Hawaii, and Ivan Lima of the WHOI Marine Chemistry and Geochemistry Department.

"Most studies have traditionally focused only on fossil fuel emissions and the role of carbon dioxide in ocean acidification, which is certainly the dominant issue/ Doney said. "But no one has really addressed the role of acid rain and nitrogen."

The research team compiled and analyzed many publicly available data sets on fossil fuel emissions, agricultural, and other atmospheric emissions. They built theoretical and computational models of the ocean and atmosphere to simulate where the nitrogen and sulphur emissions were likely to have the most impact. They also compared their model results with field observations made by other scientists in the coastal waters around the United States.

Farming, livestock husbandry, and the combustion of fossil fuels cause excess sulfur dioxide, ammonia, and nitrogen oxides to be released to the atmosphere, where they are transformed into nitric acid and sulfuric acid. Though much of that acid is deposited on land (since it does not remain in the air for long), some of it can be carried in the air all the way to the coastal ocean.

When nitrogen and sulfur compounds from the atmosphere are mixed into coastal waters, the researchers found, the change in water chemistry was as much as 10 to 50 percent of the total changes caused by acidification from carbon dioxide.

This rain of chemicals changes the chemistry of seawater, with the increase in acidic compounds lowering the pH of the water while reducing the capacity of the upper ocean to store carbon.

The most heavily affected areas tend to be downwind of power plants (particularly coal-fired plants) and predominantly on the eastern edges of North America, Europe, and south and east of Asia.

Seawater is slightly basic (pH usually between 7.5 and 8.4), but the ocean surface is already pH units lower than it was before the Industrial Revolution. Previous research by Doney and others has suggested that the ocean will become another 0.3 to 0.4 pH units lower by the end of the century, which translates to a 100 to 150 percent increase in acidity.

1. Acidification reduces the storage of:

- (a) Hydrogen (b) Carbon
- (c) Oxygen (d) Nitrogen
- (e) None of these

2. Excess of nitrogen into the ocean may cause:

- (a) Insects (b) Phytoplankton
- (c) Herbs (d) Fishes
- (e) None of these

3. With increase in acidity of sea water;

- (a) PH increases.
- (b) PH decreases.
- (c) PH dissent changes.
- (d) Oxygen increases.
- (e) None of these

4. The rain of chemical changes the chemistry of:

- (a) Sea water
- (b) Well water (d) Rain water
- (c) Mineral water(e) None of these

Example - 2 Read the passage carefully and answer the questions that follow.

Drinking chamomile tea daily may help prevent the complications of type 2 diabetes, such as loss of vision and nerve and kidney damage, a study says. UK and Japanese researchers fed a chamomile extract to diabetic rats. The extract appeared to cut blood sugar levels and block activity of an enzyme associated with the development of diabetic complications. Charity Diabetes UK cautioned against patients acting on the findings until further research had been carried out. However, researchers say the Journal of Agricultural and Food Chemistry Study raises hope of a new anti-diabetes drug. More research would be needed before we can come to any firm conclusions about the role chamomile tea plays in fighting diabetes-related complications. Cases of type 2 diabetes, many of which are linked to obesity are on the increase throughout the developed world. Chamomile, also known as manzanilla, has been used for years as a medicinal cure-all to treat a variety of medical problems including stress, colds and menstrual cramps. Researchers from University of Toyama, led by Atsushi Kato, fed chamomile extract to a group of diabetic rats for 21 days and compared the results with a group of control animals on a normal diet. Blood glucose levelshigh levels of which are a sign of diabetes- were significantly lower in the animals fed the extract, which appeared to inhibit production of the sugar in the liver. Tests also showed reduced activity of an enzyme called aldose reductase in tissue samples from the extract group. This enzyme helps change glucose into a sugar alcohol called sorbitol. In people with type 2 diabetes, the activity of aldose reductase increases as glucose levels rise in the blood. However, sorbitol does not move easily across cell membranes and it can collect in excess quantity, particularly in eye and nerve cells, where it can cause serious damage.

Dr. Victoria King, of the Charity Diabetes UK, said: "More research would be needed before we can come to any firm conclusions about the role chamomile tea plays in fighting diabetes-related complications. "Diabetes UK wouldn't recommend people with diabetes increase their chamomile tea intake just yet. Eating a healthy balanced diet, taking regular physical activity and adhering to any prescribed medicines remain key ways to effectively control blood glucose levels, blood pressure and blood fats. Good diabetes management will help reduce the risk of serious complications such as heart disease, stroke and blindness".

1. Loss of vision and kidney damage can be prevented by having daily:

- (a) Proper diet
 - (b) Chamomile tea
- (c) Rice

2.

- (d) Pulse
- (e) None of these

The researchers of _____ fed a chamomile extract to diabetic rats.

- (a) UK and Japan
- (b) America and Africa
- (c) US and Japan
- (d) India and China
- (e) None of these

3. Type diabetes is linked with:

- (a) Obesity
- (b) Blindness

- (c) Kidney failure
- (d) Loss of control on mind
- (e) None of these

4. Chamomile has been used for years as a medicinal cure-all to a variety of medical problems, one of them being:

- (a) Menstrual cramps
- (b) Heart attack (d) Dumbness
- (c) Deafness
- (e) None of these

Answer

Example-1	1.	(b)	2.	(b)	3.	(b)	4.	(a)
Example-2	1.	(b)	2.	(a)	3.	(a)	4.	(a)