H5N1

- There has been an unprecedented spread of the H5N1 strain of avian influenza in wild birds.
- The virus seems to be spreading in wild birds more easily than ever before.
- The infected wild birds then spread the virus around the world, posing a significant risk to vulnerable species, which makes the virus hard to contain.

H5N1

- Influenza A virus subtype H5N1 (A/H5N1) is a subtype of the influenza A virus which can cause illness in humans and many other animal species.
- A bird-adapted strain of H5N1, called HPAI A (H5N1) for highly pathogenic avian influenza virus of type A of subtype H5N1, is the highly pathogenic causative agent of H5N1 flu, commonly known as avian influenza ("bird An inflammation of the bones in the spine is called spondylitis. One severe, arthritic form of spondylitis is called ankylosing spondylitis (AS).
- The term 'ankylosing' refers to new bone formation leading to the cementing together of a set of adjacent vertebrae, usually in the lower back.
- Spondylitis is different from spondylosis, which is the wearing away of the vertebral column flu").
- It is enzootic (maintained in the population) in many bird populations, especially in Southeast Asia. One strain of HPAI A (H5N1) is spreading globally after first appearing in Asia.
- It is epizootic (an epidemic in nonhumans) and panzootic (affecting animals of many species, especially over a wide area), killing tens of millions of birds and spurring the culling of hundreds of millions of others to stem its spread. Many references to "bird flu" and H5N1 in the popular media refer to this strain.

THE HINDU

Phytoplankton and global warming

- An international team of scientists have found a remarkable type of fossilisation that has remained almost entirely overlooked until now.
- The fossils are microscopic imprints, or 'ghosts,' of single-celled plankton, called coccolithophores, that lived in the seas millions of years ago, and their discovery is changing our

understanding of how plankton in the oceans are affected by climate change.

- Declines in the abundance of coccoliths fossils have been documented from multiple past global warming events, suggesting that these plankton were severely affected by climate change and ocean acidification.
- But a study found (Science) new global records of abundant ghost fossils from three Jurassic and Cretaceous warming events (94, 120 and 183 million years ago), suggesting that coccolithophores were more resilient to past climate change than was previously thought.

THE HINDU

Ankylosing spondylitis (AS)

- An inflammation of the bones in the spine is called spondylitis. One severe, arthritic form of spondylitis is called ankylosing spondylitis (AS).
- The term 'ankylosing' refers to new bone formation leading to the cementing together of a set of adjacent vertebrae, usually in the lower back.
- Spondylitis is different from spondylosis, which is the wearing away of the vertebral column.
- An important immune system component, the human leukocyte antigen (HLA) complex, helps distinguish self from non-self-normal proteins that are part of your body versus proteins that are from invasive organisms, or even damaged or deformed versions of your own normal proteins.
- The HLA complex achieves this by showing a particularly 'foreign'-looking piece of a bacterial molecule (the antigen) to other immune system components that will hunt down anything resembling this piece.
- Some variants of the HLA gene (e.g., HLA-B27) are predisposed to AS and other conditions that cause chronic inflammation of the joints of the spine.

THE HINDU

Bacteria in Antarctica

- A bacteria have been discovered in Antarctica with genes that give them natural antibiotic and antimicrobial resistance and have the potential to spread out of the Polar Regions, according to scientists in Chile.
- Scientists from the University of Chile collected several samples from the Antarctic Peninsula from 2017 to 2019.

- They found that the Pseudomonas bacteria, one of the predominant bacteria groups in the Antarctic Peninsula, are not pathogenic but can be a source of 'resistance genes', which are not stopped by common disinfectants such as copper, chlorine or quaternary ammonium.

THE HINDU

Nanorobots

- Once the shooting pain has been diagnosed as being due to a bacterial infection within the tooth, the dentist drills a hole, scoops out the infected pulp, disinfects the tooth and fills the space with an antibacterial sealant like bleach or hydrogen peroxide
- A common cause of failure is that the underlying bacteria, usually Enterococcus faecalis, hasn't been completely eliminated paving the way for reinfections that can necessitate extracting the tooth.
- A Bengaluru based start-up incubated at the Indian Institute of Science, aspires to go one up by employing nanotechnology.
- By deploying an army of so called 'nanobots', or tiny 'robots' that are helical crawlers made of silicon dioxide coated with iron, the aim is to have the bots move as close to where the bacteria abound.
- The bots' movement can be controlled using a device that generates a low intensity magnetic field.
- In their tests, Theranautilus scientists injected these nanobots into extracted tooth samples and tracked their movement via a microscope.

THE HINDU