Alcohol Sanitizers and Coronaviruses

Part of: GS Prelims and GS-III- S&T

- The novel coronavirus has a lipid envelope. Soap being a detergent destroys this envelope. The same is true for alcohol also.
- Structure of Lipid Envelope:
  - SARS-CoV-2 particles, like other coronaviruses, are spherical and have proteins called spikes protruding from their surface.
  - These spikes latch onto human cells, then undergo a structural change that allows the viral membrane to fuse with the cell membrane. The viral genes can then enter the host cell to be copied, producing more viruses.
  - Recent work shows that, like the virus that caused the 2002 SARS outbreak, SARS-CoV-2 spikes bind to receptors on the human cell surface called angiotensin-converting enzyme 2 (ACE2).
  - All of this is held together by a fatty layer, called an envelope.
- Functioning of Alcohol in Sanitizers:
  - The Envelope layer is disrupted when it comes into contact with soap or a hand sanitiser with more than 60% alcohol.
  - Disruption of the envelope leads to the killing of the virus.
  - Handwashing for 20 seconds at least kills the virus.