



Mains Marathon

Day 39: How can technology be used to preserve sculptures, monuments, and paintings? (150 Words)

18 Aug 2022 | GS Paper 1 | Indian Heritage & Culture

Approach / Explanation / Answer

Approach

- Introduce briefly by stating that with the passage of time, artwork, sculptures, monuments and paintings is damaged.
- Discuss the technologies used to preserve them with a few examples.
- Conclude suitably.

Answer

As the passage of time necessarily degrades art, often in the form of dirt or cracks. The use of two technologies, **laser ablation and bacteria**, is helping to restore artwork to its intended form. **Laser ablation involves the removal of dirt through the excitation of particles with light energy.** Bacteria are used both to remove polluting materials and to fill cracks in sculpture. The trend of restoration, however, is frowned upon by some purists as an aesthetic process that is not in accordance with traditional ideas of art preservation.

Artwork, like all of antiquity, is at the mercy of time: time brings prolonged exposure to light, moisture, dust, and other elements of nature that cause artwork to become dirty and often permanently damaged. The pollution caused **because of factories and oil refineries** around **the Taj Mahal** has caused **its colour to turn yellow** and lose its luster over the years.

Technologies that can be used to preserve sculptures, monuments, and paintings are:

- **Laser Ablation:** This technique will remove **dirt and varnish**, but not as much with the surface of the art itself.
- **Laser Induced Breakdown Spectroscopy (LIBS):** This technology eliminates the need for human guesswork and thus safeguards the artwork. It can only superficially restore the work.
- **Bacteria can be used to remove** many of the common pollutants found in artwork without damaging the artwork as they eat dirt. For example: **Pseudomonas s tutzeri**. They also help in **restoring cracked sculptures such as Bacillus cereus that produces calcium carbonate.**
- **Electric vehicles** can be used to control air pollution so that there is little chance for acid rain which mainly destroys the sculptures.

- **Artificial intelligence:** AI will also make **restoration and preservation of existing cultural heritage** far easier and vastly superior to previous methods. **Information is digitized**, and AI algorithms alter the pixels of damaged areas by cross-referencing them mathematically with the undamaged. AI will do **real time monitoring of air pollution** and give information, thus helping in conserving.
- **Use of renewable energy:** Renewable energy such as solar energy and wind energy can be used instead of thermal energy, which will reduce pollution thereby helping in conservation of arts.
- **Absorbers, filters, air purifiers based on ozone-free negative ions generation technology**, can be used at the factories to control air pollution.

Advances in science and technology have led to safer and more effective approaches for preserving art, sculptures and paintings. **Modern conservation practice adheres to the principle of reversibility**, which dictates that **treatments should not cause permanent alteration to the object**.

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