Prelim Bits 24-04-2017

'Junior Heritage Mistri' programme

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- The scheme comes under the **Centre's Heritage Mason programme.** Rajasthan was chosen as a pilot State for the scheme in view of its rich architectural heritage.
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- Rajasthan government is raising a new class of masons to help conserve the State's rich architectural heritage.
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- Under the programme, the government has started training youths on indigenous building practices, arts and crafts, traditional structures and knowledge systems, with an emphasis on preservation of heritage architecture.
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- The institution promotes construction practices based on adaptive reuse of traditional technology blended with modern techniques.
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Stereolithography

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- Scientists have developed a novel way to 3D-print objects using glass.
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- Researchers mixed nanoparticles of high-purity quartz glass and a small quantity of liquid polymer and allowed the mixture to be cured by light at specific points — by means of stereolithography.
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- Stereolithography is a form of 3D-printing technology used for creating models, prototypes, patterns and production parts in a layer by layer fashion using **photopolymerisation.**
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- Photopolymerisation is a process by which light causes chains of molecules to link, forming polymers.

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- A variety of 3D-printing techniques available so far have been used on polymers or metals, but rarely on glass.
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- Scientists have developed a new method to 3D-print objects using glass, an advance that could be used to make **very small optical components for complex computers.**
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- The 3D-printed glass can be used for many applications, including data technology.
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Vitamin C

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- During times of stress or hostile conditions, such as increased temperature and presence of antibiotics, bacteria tend to come together and form a **biofilm** to protect themselves.
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- The stress response pathway is crucial for bacteria to survive during hostile conditions. So blocking this pathway is a sure way of killing the bacteria.
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- New study at IISc has found the molecular mechanism by which vitamin C impedes the formation of biofilm and even kills **Mycobacterium smegmatis,** *a* non-pathogenic bacterium t hat belongs to the same genus as the TB-causing mycobacteria.
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- **Other uses of Vitamin C:** Boosts and strengthens immunity. It speeds-up recovery from tuberculosis and impedes the TB causing bacteria from causing disease, and even kill the bacteria in culture at high concentration.
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Biological sensors

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- Migratory birds have biological sensors that can sense the earth’s magnetic field, and guide them in their long journeys spanning continents.
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- One might, mistakenly assume that these sensors would be located in the

brain. Contrarily, they are located in the eyes, **more specifically, in the right eye.**
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- Birds' biological compass is due to the **interplay of chemical reactions, electron spins and the magnetic fields** present.
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- Thus, understanding the avian compass is a lesson in quantum biology. This may be of use, one day, in engineering quantum computers.
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