3D printing

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In news- Centre of Excellence in Additive Manufacturing under the Ministry of Electronics and Information Technology has invited applications for a Grand Challenge for Most Profitable 3D printing Business(for digital toys).

About the challenge-

It is divided into **two parts:**

- The first part includes the development of a 3D printed working prototype using Fused Deposition Modelling (FDM) or Digital Light Processing (DLP) for given specifications.
- The second part involves preparation of a business case for the prototype in a given format.

3D printing is an alternative viable next-generation technology with many advantages over moulding technologies such as no recurring mould cost, better market resilience, lower capital cost per machine etc.

What is Fused Deposition Modelling (FDM)?

- FDM also known as Fused filament fabrication or called filament freeform fabrication, is a 3D printing process that uses a continuous filament of a thermoplastic material.
- It is used in 3-D printing or the design of solid models and prototypes in a layered or additive approach.

What is Digital Light Processing(DLP)?

- It is a set of chipsets based on optical micro-electro-mechanical technology that uses a digital micromirror device.
- DLP technology is common for rear projection in TVs and

it is also used in front projectors for units designed for businesses and classrooms.

- It was originally developed in 1987 by Larry Hornbeck of Texas Instruments.

What is 3D printing?

- 3D printing, or **additive manufacturing,** is the construction of a three-dimensional object from a Computer-aided design (CAD) model or a digital 3D model.
- It is **'additive' in that it doesn't require a block of material or a mold to manufacture physical objects,** it simply stacks and fuses layers of material.
- 3D printing began as an idea for accelerating industrial product development through faster prototyping.
- **Chuck Hull** is typically credited with the invention of the 3D printer via his **Stereolithography Apparatus (SLA), patented in 1984.**
- One of the key advantages of 3D printing is the ability to produce very complex shapes or geometries that would be otherwise impossible to construct by hand, including hollow parts or parts with internal truss structures to reduce weight.
- 3D printing has been used in manufacturing, medical, industry and sociocultural sectors (Cultural Heritage, etc.), humanitarian and development sector to produce a range of medical items, prosthetics, spares and repairs etc..