C.A Dated on 28-Jan-2019

GS-1

Harappan Civilisation:

Why in News?

A team led by Prof. Vasant Shinde, Vice-Chancellor, Deccan College Post-Graduate and Research Institute, Deemed University, Pune, is on the brink of recreating the faces of a few skeletal remains, dug up during the excavation of a Harappan site at Haryana's Rakhigarhi village in Hisar, in collaboration with South Korean scientists.

Details:

- The team was recreating the faces of five skeletal remains and the results would be available within the next two months.
- The archaeologist, who along with his 25-member team — comprising experts from different fields — had excavated the site from 2012-16, said they had dug up cemeteries in a targeted excavation to find about 40 human remains.

How is it being done?

- The skeletal remains were CT scanned and the data fed into a programme developed by the Korean scientists to fill them "layer by layer with blood and flesh to show as to how the Harappan people looked like.
- While the technique in itself is not new, with forensic scientists having helped investigators probe crimes by recreating faces using this technology, it will be the first instance when it will be used in India for the ancient population.
- The technique has also been used to recreate faces for the inhabitants of Egyptian and the Mesopotamian civilizations, but never for the Harappan population.

About Rakhigarhi Site:

- Rakhigarhi is one of the largest sites of the Harappan civilisation.
- The major objectives behind the excavation there, were to trace its beginnings and to study its gradual evolution from 6000 BCE to 2500 BCE,

besides protecting it from encroachment by the locals since the village is settled exactly on top of it.

- Another aim was to find out who the Harappan people were.
- There was a lot of debate whether they had come from West or were locals.

Significance of Find:

- The findings from excavation have now largely substantiated that the Harappans were locals. explaining that the excavation hinted at the gradual evolution of the Harappans proving that they were locals.
- The structural activity, pottery, jewellery and other crafts seem to have evolved gradually.
- They did not immediately start with town and villages but started with circular structures to evolve to rectangular ones and then arranged them in a pattern in the third stage before setting up cities in the fourth stage.
- It substantiates the hypothesis that they were locals and did not come from outside, contrary to the view held by some scholars.
- Harappans, credited with several present day traditions such as the folded hands greeting or *namaste*, chicken tandoor, use of the *bindi* and yoga, also seemed to have started the marriage system.

GS-2

Groundwater Pollution:

Why in News?

Scientists have found microplastics contaminating a groundwater source that accounts for 25% of the global drinking water supply.

Details of Study:

- Microplastics are already known to contaminate the world's surface waters, yet scientists have only just begun to explore their presence in groundwater systems.

C.A Dated on 28-Jan-2019

- Fractured limestone aquifers are a groundwater source that accounts for 25% of the global drinking water supply.
- The study, published in the journal *Groundwater*, identified microplastic fibres, along with a variety of medicines and household contaminants, in two aquifer systems in the U.S.
- It is estimated that 6.3 billion metric tonnes of plastic waste have been produced since the 1940s, and 79% of that is now in landfills or the natural environment.

Effects of Plastic:

- Plastic in the environment breaks down into microscopic particles that can end up in the guts and gills of marine life, exposing the animals to chemicals in the plastic..
- As the plastics break down, they act like sponges that soak up contaminants and microbes and can ultimately work their way into our food supply.
- Groundwater flows through the cracks and voids in limestone, sometimes carrying sewage and runoff from roads, landfills and agricultural areas into the aquifers below.
- The researchers identified a variety of household and personal health contaminants along with the microplastics, a hint that the fibres may have originated from household septic systems.

GS-3

UDAN 3.0 results

Why in News?

The union Minister for Civil Aviation and Commerce Shri Suresh Prabhu announced the results of *UdeDeshKaAamNaagrik* **(UDAN)** Scheme here today.

UDAN Round 3

C.A Dated on 28-Jan-2019

Ministry of Civil Aviation launched the largest bidding round under the highly successful UDAN Scheme, also integrating a number of iconic tourism sites in coordination with the Ministry of Tourism.

Key Features of UDAN 3 included:

1. Inclusion of Tourism Routes under UDAN 3 in coordination with the Ministry of Tourism
2. Inclusion of Seaplanes for connecting Water Aerodromes, and
3. Bringing in a number of routes in the North-East Region under the ambit of UDAN

Effective implementation

To ensure effective implementation of the Scheme and quick commencement of operations once the bidding process is over, MoCAand AAI, in parallel, are also coordinating with the Ministry of Tourism, Ministry of Defenceand the State Governments for various facilitating actions.

Way forward

- Requests from few state governments, including north-eastern region,would be considered to cover specific pre-determined routes under the special round of the UDAN Scheme.
- This is expected to help in connecting remote areas which have not been connected yet. Unserved routes connecting served airports would be considered for bidding with the support from the concerned State Governments / Ministry of Tourism / DoNER etc.

PSLV-C44 successfully launches Microsat-R and Kalamsat-V2

Context:

India's Polar Satellite Launch Vehicle (PSLV-C44) successfully injected Microsat-R and Kalamsat-V2 satellites into their designated orbits. .

Significance:

C.A Dated on 28-Jan-2019

- This flight marked the first mission of PSLV-DL, a new variant of PSLV with two strap-on motors.
- In the previous PSLV launch on November 29, PSLV-C43 had successfully launched India's HysIS as well as 30 customer satellites from abroad.
- In his post-launch address, Chairman Dr K Sivan said the PSLV-C44 mission was unique as it was for the first time ISRO used the last stage of the rocket as a platform to perform experiments in space.
- This new low cost technology will help students to conduct several inspiring experiments in space by attaching their instruments to the last stage of the rocket.

About the Mission:

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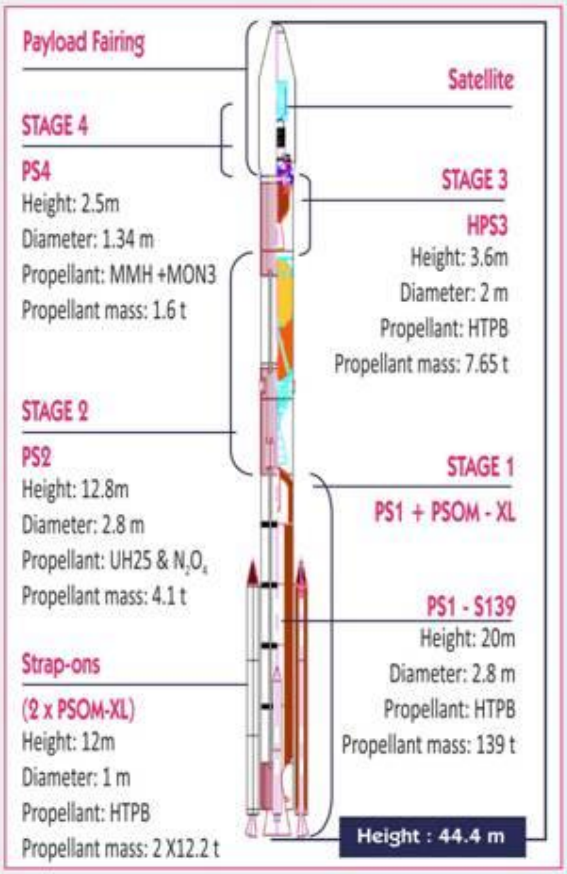
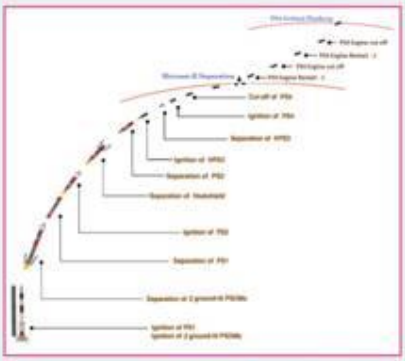
C.A Dated on 28-Jan-2019

PSLV-C44 Successfully Launched from First Launch Pad at Satish Dhawan Space Centre SHAR, Sriharikota

- PSLV-C44 is the 46th Flight of PSLV and 1st Flight of PSLV-DL (with two strap-ons) variant
- PSLV-C44 was launched from the First Launch Pad (FLP) at Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota
- Kalamsat, a student satellite, is the first to use fourth stage of PSLV as orbital platform
- Microsat-R is an imaging satellite





Event Name	Time after lift-off	Altitude (km)	Inertial Velocity (m/s)
PS1 Ignition	0.00	0.025	451.9
PSLV Strap-On Motor Ignition	0.42	0.025	451.9
PSLV Strap-On Motor Separation	69.90	23.941	1078.4
PS1 Separation	109.58	59.077	1871.3
PS2 Ignition	109.78	59.281	1870.4
Heat Shield Separation	168.58	115.751	2377.4
PS2 Separation	262.12	187.751	4055.6
PS3 Ignition	263.32	188.551	4053.8
PS3 Separation	487.72	273.906	6529.1
PS4 Ignition	498.12	275.310	6527.2
PS4 Engine Cut-off	766.56	276.576	7735.2
MICROSAT-R Separation	813.56	277.295	7740.0
PS4 Engine Restart-1	3275.52	269.040	7748.3
PS4 Engine Cut-off Restart-1	3291.68	269.057	7794.4
PS4 Engine Restart-2	6026.52	450.145	7591.7
PS4 Engine Cut-off Restart-2	6041.26	450.215	7638.1
Start of Orbital Platform function	6151.00	450.000	
End of Orbital Platform function	54000.00	450.000	

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C.A Dated on 28-Jan-2019

Successful Flight Test of LRSAM

Why in News?

Ship launched Long Range Surface-to-Air Missile (LRSAM) has been successfully test fired from INS Chennai against an incoming aerial target flying at low altitude,today.

About the Missile:

- The missile destroyed the target with a direct hit. All the mission objectives have been met.
- **Barak 8** also known as LR-SAM or as MR-SAM is an Indian-Israeli surface-to-air missile (SAM), designed to defend against any type of airborne threat including aircraft, helicopters, anti-ship missiles, and UAVs as well as ballistic missiles, cruise missiles and combat jets.
- Both maritime and land-based versions of the system exist.
- Barak 8 was jointly developed by Israel Aerospace Industries (IAI), India's Defence Research & Development Organisation (DRDO), Israel's Administration for the Development of Weapons and Technological Infrastructure, Elta Systems, Rafael and other companies. Bharat Dynamics Limited (BDL) produce the missiles.