LUNAR CIVIL INFRASTRUCTURE

Moon, its evolution in planetary system - Lunar Temperature and gravity conditions - Meteoroid impacts and its radioactive effects - Formation of Lunar craters and their distribution across the surface - Formation of Lunar regolith and its engg. Properties across the depth.

Moonquakes - Types and their intensities along with frequency of occurrence - Lunar crust – Its Natural Recourses (For alternative source of energy).

Mineral and chemical composition of lunar soil and its suitability for foundation designs based on static and dynamic properties - Lunar dust – Its formation and characteristics - "Space flight worthy" materials and their engg. Properties – Regolith modified building materials *(Futuristic proposals)*.

Robotic engg. – Its applications in Civil Engg. constructional activities - Pavement designs on soft soils.

Radiation effects on building elements and design criteria for attenuation - Vacuum conditions on lunar surface – its criticality for human survival -Futuristic Moon colonization – pros and cons - its socio economic impacts on technology.

Reference books:

1) Grant H.Heiken, David T. Vaniman and Bevan M. French (1991). *Lunar Source Book- A User's Guide to the Moon*, Cambridge University Press, Houston, Texas.
2) Paul D Spudis (2016). *The Value of the Moon- How to Explore, Live and Prosper in Space*, Smithsonian Books.
3).Kramer, S. L. (1996). *Geotechnical Earthquake Engineering*, Prentice Hall, New Jersey.
4). Ishihara, K. (1996). *Soil Behaviour in Earthquake Geotechnics*, Clarendon Press, Oxford.
5). Stein, S. and Wysession, M. (2003). *An Introduction to Seismology, Earthquakes, and Earth Structure*, Blackwell Publishing, Oxford.

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