Duration: 3hrs **[Max Marks: 80]**

N.B.: (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		**Attempt any FOUR**	[20]
	a	What do you mean by limits of visibility? Explain	[5]
	b	What is the significance of bath tub curve w.r.t. satellite communication?	[5]
	c	How to mitigate losses involved in satellite communication?	[5]
	d	Differentiate Geostationary launch vehicles (GSLV) and polar satellite launch vehicles (PSLV).	[5]
	e	Briefly explain thermal control system (TCS) in Nano satellite.	[5]
2	a	How to select launching site? Explain in detail. What do you mean by launch window?	[10]
	b	Write short note on: i)TT and C Subsystem ii) Power system design of Nano satellite	[10]
3	a	What do you mean by orbital perturbation? Explain in detail.	[10]
	b	What do you mean by saturation flux density? An uplink at 14GHz requires a saturation flux density of -91.4dBW/m² and an input Back off of 11dB. The satellite [G/T] is -6.7dBK^{-1}, and receiver feeder losses amount to 0.6 dB. Calculate the carrier-to-noise density ratio.	[10]
4	a	With the help of block diagram explain receive only type of earth station. Mention its limitations.	[10]
	b	List the types of structure designs and explain them.	[10]
5	a	Write short note on: i) Effect of rain with uplink fade margin and down link fade margin ii) Input back off and output back off	[10]
	b	Describe function and design consideration of deployment mechanisms. Mention the types of deployment mechanism.	[10]
6	a	Explain Earth observation payload and communication payload w.r.t. Nano satellite.	[10]
	b	Explain a) Quality assurance and product assurance w.r.t. Nano satellite. b) Antenna misalignment losses	[10]