Name: Enrolment No:	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2021

Programme Name: B.Tech ASE+AVE **Semester : VII**
Course Name : Satellite Communication **Time : 03 hrs**
Course Code : ECEG 4025 **Max. Marks : 100**
Nos. of page(s) : 02

SECTION A
[4x5=20]

Type the Answers

S. No.		Marks	CO
Q 1	Discuss the various frequency bands used for the satellite communication for navigation purposes.	**4**	**CO1**
Q 2	How solar time and sidereal time are differs?	**4**	**CO2**
Q 3	Discuss the term "Orbit Perturbations". How it affects the satellite movement in orbit?	**4**	**CO 3**
Q 4	Describe the difference between AM and FM modulation for the data communication	**4**	**CO 4**
Q 5	What are the applications of GEO satellites?	**4**	**CO1**

SECTION B
[10x4=40]

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Q 6	Discuss how uplink and downlink works? Draw the schematic diagram for the satellite technology	**10**	**CO2**
Q 7	How does the flux density changes with distance? Discuss the equation for the case of deep space communication.	**10**	**CO 3**
Q 8	Derive the relationship for modulation index for modulating and career voltages. How the factor affects in the multiple modulation indexing's?	**10**	**CO 3**
Q 9	Draw the schematic diagram for the orbital parameters defining the Kepler's law. Discuss the laws. Describe the argument of Perigee and Apogee.	**10**	**CO 2**

SECTION-C
[2x20=40]

Q 10. A geostationary satellite transmits 5 W of power with an antenna having a gain of 28dB. The downlink is operated at 4GHz and the receive antenna is a dish with diameter of 3.6m. Compute EIRP transmitted and the power received by station. Assume the receive antenna efficiency to be 0.7 and all the other losses to be 2dB CO 4 20

Q 11. Derive the relationship for ERP and Range using FRIIS equations. Discuss each terminology in detail. 20 CO 3