Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2021

Programme Name: B.Tech ASE+AVE | **Semester : VI**
Course Name : Electromagnetic Waves and Antennas | **Time : 03 hrs**
Course Code : ECEG 3014 | **Max. Marks : 100**
Nos. of page(s) : 03

SECTION A
[5x6=30]

Type the Answers

S. No.		Marks	CO
Q 1	How polarization affects the Maxwell's equation in variation of electric and magnetic fields?	**5**	**CO1**
Q 2	How noise affects the wave propagation?	**5**	**CO2**
Q 3	Describe the Ground Wave Propagation and Sky wave propagation	**5**	**CO 3**
Q 4	Discuss the term Antenna. How the directive gain could be useful in defining the characteristics?	**5**	**CO 4**
Q 5	How dB and Neper is correlated? Discuss why its an important unit for the wave propagation	**5**	**CO1**
Q 6	Describe Ionosphere propagation with various layers.	**5**	**CO4**

SECTION B
[10x5=50]

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Q 7	Discuss the filed strength at a finite distance due to the Ground Waves. Also, discuss what if the flat surface presence. Write down all its nomenclatures.	**10**	**CO2**
Q 8	If the power transmitted from a transmitter is 20 W and gains of transmitting and receiving antennas are 30dB then calculate the maximum power received at a distance of 100km over free space for 0.04 m transmission wavelength.	**10**	**CO 3**
Q 9	Derive FRIIS equation for the wave propagation is space	**10**	**CO 3**
Q 10	Derive the relation for gain value of parabolic antenna. How gain is an important parameters for defining the directivity. Discuss in detail.	**10**	**CO 4**
Q 11	Discuss Maxwell's equation for the wave propagation in free space. How Gauss theorem affects the modes of propagation while transmission and reception of the waves.	**10**	**CO 1**

SECTION-C
[1x20=20]

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The remote sensing scanning system as shown in Figure1 with narrow and wider swath.

a) What does it indicates?
b) Explain the basic function of the satellite remote sensing and why the narrow and wider swath is required for the operation?
c) What kind of antennas are used for the scanning
d) Discuss FRIIS equation if earth is the receiver section

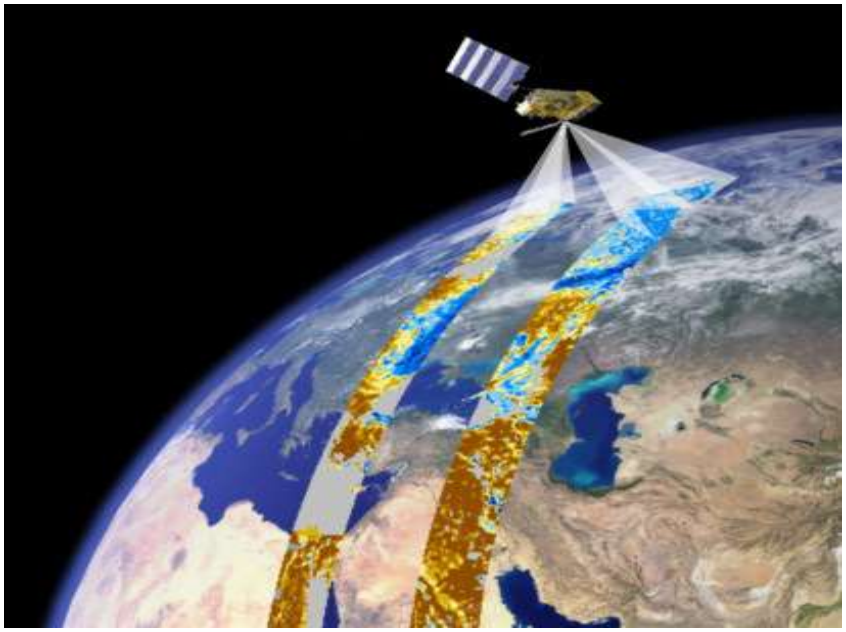

Figure 1