

Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, May 2020

Course: Thermal and Microwave Remote Sensing Program: B. Tech. GIE Course Code: GIEG 423	Semester: VIII Time 03 hrs. Max. Marks: 100
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SECTION A

S. No.	Instructions: Fill the blank spaces / Tick the correct answer	Marks	CO
Q 1	The computed value of evaporative fraction, with given data, $\lambda = 0.5$; $ET = 10$; $G = 0.2$ and $R_n = 5$, is. a. 0.55 b. 0.82 c. 1.04 d. 0.75	5	CO2
Q2	GHF is related with 10 parameters of surface energy balance model and these parameters are -----, -----, -----, -----, -----, -----, -----, -----, -----, -----.	5	CO1
Q3	The estimated value of height of object with the given data, look angle = 30 degree; $R_1 = 300$ KM; $R_2 = 200$ KM; Baseline distance = 100KM; Baseline angle = 20 degree, height of satellite = 400 KM is a. 250.75m b. 280.5m c. 265.45m d. 277.6m	5	CO3
Q4	----- and ----- are sensitive to ----- and ----- components of dielectric constants, respectively. SLC SAR data is generally require for -----.	5	CO3
Q5	Several factors affect SAR subsurface penetration capability such as ----- surface roughness; ----- wavelength; ----- polarization; ----- texture / grain of materials; ----- dielectric constant	5	CO3
Q6	FRP of MODIS data calculated using given data - $T_{mir} = 80$ degree C and $T_{mir,b} = 50$ degree C and pixel size = 500 m, is a. 0.355 b. 456 c. 0.854 d. 0.652	5	CO1

SECTION B

	Instructions: Write short / brief notes on:		
Q 7	Use of optical remote sensing data in estimation of TIR surface emissivity. Use of multispectral TIR RS derived various rock indices in identification of rock forming minerals.	5 + 5	CO2
Q 8	TIR remote sensing of crop / vegetation stress assessment.	10	CO2
Q 9	Advantages of passive MW remote sensing compare to active microwave remote sensing. Advantages of SAR polarimetry.	5 + 5	CO3
Q 10	List the parameters to be consider for processing LIDAR data. The concept of improvement of azimuth spatial resolution of a Radar system in SAR mode of data collection.	5 + 5	CO5
Q 11	Principle of microwave radiometry and its applications	10	CO4

	OR		
	Approaches of application of microwave remote sensing in agriculture		
SECTION-C			
Q 12	The principle and data process steps of Interferometric SAR, and elaborate the use of this technique in geosciences.	15 + 5	CO4
	OR		
	Discuss in details, approaches of soil moisture estimation using active and passive microwave RS techniques.	20	