UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December, 2021

Course: UAV Remote Sensing   **Semester: VII**
Program: B. Tech. GIE   **Time 03 hrs.**
Course Code: PEGI 4007P   **Max. Marks: 100**
Nos. of pages: 2
Instructions:

S. No.	SECTION A	Marks	CO
	SECTION A		
S. No.		**Marks**	**CO**
Q 1	List four advantages and disadvantages of fixed wing and multi-rotors UAVs	**4**	**CO1**
Q 2	Briefly summerize the advantages and disadvantages of CCD and CMOS sensors use in UAV optical remote sensing payloads.	**4**	**CO2**
Q 3	Explain the radiation laws – (i) relate spectral emittance, wavelength and object temperature, (ii) object's thermal emissivity and surface reflectivity.	**4**	**CO4**
Q 4	Write short note on concept of OBIA and its importance in UAV remote sensing data analysis	**4**	**CO5**
Q 5	Explain the integrated approach of dam-break flood simulation using UAV remote sensing inputs and collateral data.	**4**	**CO5**
	SECTION B		
Q 6	Discuss the applications, advantages and disadvantages of various UAV imaging sensors. Write short note on the functionalities of fully autonomous UAV system	**5 + 5**	**CO4**
Q 7	Describe the characteristics, advantages and disadvantages of suitable power system use for fixed wing UAVs. Write the advantages and disadvantages of various devices used as navigation control system.	**5 + 5**	**CO3**
Q 8	Give an account of UAV flight planning and flight parameters computation for stereoscopic imaging mission.	**5 + 5**	**CO5**
Q 9	What are the advantages and disadvantages of use of UAV remote sensing in forestry? With case example discuss the approach of tree species mapping using UAV remote sensing derived image texture and spectral, vegetation indices and tree height structural parameters.	**3 + 7**	**CO6**
	OR		
	Discuss with flow diagrams the approaches of wildfires and urban vegetation mapping using UAV remote sensing	**5 + 5**	**CO6**
	SECTION-C		
Q 10	Discuss the factors to be considered for generation of digital rock outcrop model using UAV imaging hyperspectral remote sensing data.	**5 + 15**	**CO6**

	Discuss in details the integrated use of UAV hyperspectral and SfM remote sensing data in mineral exploration (use a case example with details of data analysis methodology)		
Q 11	Discuss the uses of visible, multi-spectral, hyperspectral, thermal UAV remote sensing and spectral vegetation indices in precision agriculture. Describe in details with a case example the application of deep learning technique in crop disease detection and mapping utilizing UAV remote sensing derived spectral information.	10 + 10	CO 6
	OR		
	Discuss in details techniques of target feature and anomaly detection using hyperspectral UAV remote sensing data.	20	CO 6