UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, January, 2022

Course: Remote Sensing in Geosciences | **Semester: I**
Program: M. Sc. Petroleum Geoscience | **Time 03 hrs.**
Course Code: PEGS 7107 | **Max. Marks: 100**
Nos. of pages: 2
Instructions:

SECTION A

S. No.	**Answers all questions. Each question carry 4 marks. Total marks – 20**	**Marks**	**CO**
Q 1	Write five advantages of oblique aerial photograph over vertical photographs.	**4**	**CO1**
Q 2	Write brief note on characteristics and importance of various spectral regions of electro- magnetic spectrum used in remote sensing.	**4**	**CO2**
Q 3	Discuss briefly the principle of PCA analysis and importance of PCA in Geosciences.	**4**	**CO2**
Q 4	Which are the cations, anions and chemical constituents of rocks give characteristics absorptions in SWIR and TIR regions of EMR.	**4**	**CO4**
Q 5	Give five examples of geomorphology and terrain association.	**4**	**CO4**

SECTION B

	Questions nos. Q6, Q7 & Q8 are compulsory. In question no. Q9 answer any one question. Each question carry 10 marks. Total marks – 40	**Marks**	**CO**
Q 6	Write short notes of four Electromagnetic radiation laws commonly used in remote sensing. What are the challenges of remote sensing?	**6 + 4**	**CO1**
Q 7	Write short notes on types of atmospheric correction of remote sensing data and the importance of atmospheric correction of RS data. Describe the methods of absolute atmospheric of remote sensing data.	**4 + 6**	**CO2**
Q 8	Discuss the approaches of mineral exploration guides formed by rock alteration and role of remote sensing with examples.	**10**	**CO4**
Q 9	Describe with diagrams the techniques of identification of various types of geological structural fold using remote sensing derived drainage patterns. Write the RS derived image and terrain characteristics used for identification of sedimentary rocks – Dolomite and Limestone.	**5 + 5**	**CO3**
	OR		
	Write the RS derived image and terrain characteristics used for identification of sedimentary rock shale. Describe with diagrams approaches of identification and mapping of geological structure – bedding using remote sensing data.	**5 + 5**	**CO3**

SECTION-C			
	Questions no. Q 10 is compulsory. In question no. Q11 answer any one question. Each question carry 20 marks. Total marks – 40	**Marks**	**CO**
Q 10	Discuss in detail the approaches of use of hyperspectral and thermal remote sensing techniques in hydrocarbon exploration. Give an account of various geo-botanical methods used in mineral exploration and role of remote sensing.	**12 + 8**	**CO3**
Q 11	Discuss in details Remote Sensing based approaches of neo-tectonic evidences used for seismic hazard zonation. Give an account of techniques of subsurface coal fire detection using Remote Sensing data.	**10 + 10**	**CO4**
	OR		
	Elaborate in detail remote sensing based techniques for monitoring and early warning of volcanic eruption. Draw the schematic diagram of methodology of RS & GIS based mineral exploration.	**14 + 6**	**CO4**