UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, May 2021

Programme: B. TECH GSE **Semester: VI**
Course: GIS & Satellite Navigation Systems **Time: 3 hrs.**
Course Code: PEGI 3002 **Max. Marks: 100**

SECTION A

All Questions are Compulsory.

S. No.		Marks	CO
Q 1.	a) How many minimum numbers of satellites are required to calculate 3D positions?	2	CO4
	b) List any three advantages of using GPS technology in surveying.	3	
Q 2.	a) What is the UTM Zone for Dehradun (coordinates 30.3157° N, 78.3586° E). Show the calculations.	2	CO2
	b) What is a standard parallel and its importance? Name the type of projection with two standard parallels.	2+1	
Q 3.	a) Differentiate between a one-to-one relationship between tables and a many-to-one relationship? Give examples.	2	CO4
	b) If each of the following data was stored as rasters, state which ones would be discrete (categorical) and which ones would be continuous: rainfall, soil type, voting districts, temperature, slope, and vegetation.	3	
Q 4.	a) Briefly explain the term Proximity Analysis and its importance.	2	CO3
	b) Differentiate between Clip and Intersection in vector geoprocessing.	3	
Q 5.	a) Identify the advantages and disadvantages of converting vector data into raster using automated software.	2	CO1
	b) Differentiate between a large-scale map and a small-scale map with examples. Out of the two, what scale would you prefer for optimal pipeline route selection and why?	3	
Q 6.	a) How is a GIS different from a static map? List five advantages that a GIS would have over a static map.	5	CO2
SECTION B			
Q 7.	Describe the four types of data recognized in a GIS with examples.	10	CO1

Q 8.	a) GIS is routinely used in applications such as siting new industrial developments. What are the advantages of using GIS in this context?	5	CO2
	b) Describe the working of Differential GPS. Why is it better than GPS position determinations?	2+3	
Q 9.	Answer the following question: Delhi Municipal Corporation wishes to identify areas suitable for a waste disposal site and to notify all residents within two kilometers of the selected sites, by ordinary letter post that they are close to a selected site. The criteria for selection are: • An impervious rock type underlying a site, • A slope over a site of less than five degrees, • No permanent water body (stream or lake) within a site, • Road access not more than 500 meters away from a site, • A site to be not more than 10 kilometers from the city boundary. Answer the following questions to create a GIS for the scenario, and draw a flowchart depicting your methodology. i) What map layers would you create? ii) Which attributes would you put into data tables? iii) Which analysis technique would you use to find areas 'within two kilometers of ' and 'not more than 10 kilometers from'?	10	CO3
Q 10.	Discuss why projection systems are important in mapping. Cite examples of how one type of projection system would be preferable over another, depending upon your goal (e.g., direction vs size vs area vs distance)?	5+5	CO3
Q 11.	Explain the process of Trilateration by which GPS receiver determines its position. Draw diagrams.	10	CO4
SECTION C **ATTEMPT any ONE.**		
Q12.	Discuss the two types of coordinate systems enumerating how coordinates are measured in each system. Draw suitable diagrams. **OR** Give the steps involved in a geodatabase development process, detailing the steps involved at each of the conceptual, logical, and physical design phases.	20	CO2