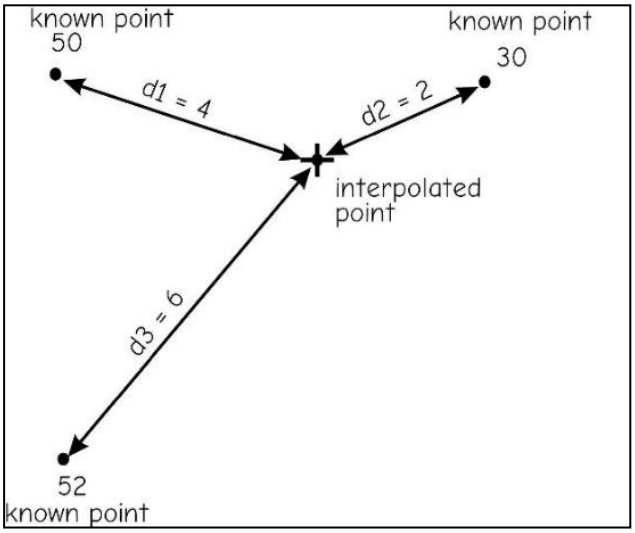
Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2021

Programme Name: B.Tech GIE **Semester : VII**
Course Name : Spatial Data Analysis and Modeling **Time : 3 hrs.**
Course Code : PEGI 4003 **Max. Marks : 100**
Nos. of page(s) : 2
Instructions: All Questions are Compulsory.

SECTION A

S. No.		Marks	CO
Q 1	Explain the significance of Cross-Validation in Kriging.	4	CO4
Q 2	Explain the importance of "lag distance" in Kriging.	4	CO4
Q 3	Differentiate between "lattice" and "grid" map display forms.	4	CO3
Q 4	Differentiate between Criteria and Constraints in GIS-MCDA.	4	CO3
Q 5	What is the significance of a larger circle and a smaller circle in Standard Distance tool when analyzing the distribution of a particular crime in a city?	4	CO1
	SECTION B (Attempt any four questions)		
Q 6	Using IDW algorithm calculate the interpolated value at the X mark in the diagram below, using a Power of 1 and then a Power of 2. **(***d1, d2 and d3 are the distances to known points and 50,30,52 are the measured values of a particular phenomenon at those points***)** 	10	CO3
Q 7	With the help of a simple example, illustrate how weighted linear combination method is used for Vector and Raster Based index model. You can assume arbitrary cell values for each input grid.	10	CO2
	OR		
	Explain the importance of linear regression with a suitable geospatial analysis example.	10	CO2

<table>
<tr><td>Q 8</td><td>Match the following Tools with the given Examples and briefly tell why you consider it the best tool.<table><tr><th>Tool</th><th>Example</th></tr><tr><td>Cluster and Outlier Analysis (Anselin Local Moran’s I)</td><td>A florist identifies those customers closer to each other than by chance, and possibly target these areas for deliveries.</td></tr><tr><td>Standard Deviation Ellipse</td><td>What is the orientation of the debris mean? Where is the debris concentrated?</td></tr><tr><td>Average Nearest Neighborhood</td><td>Where do we find anomalous spending patterns in Dehradun?</td></tr><tr><td>Hot Spot Analysis (Getis-Ord Gi*)</td><td>Where are kitchen fires a higher than expected proportion of residential fires?</td></tr></table></td><td>2.5*4= 10 marks</td><td>CO1</td></tr>
<tr><td>Q 9</td><td>Describe the three basic methods for representing a surface in GIS analysis, listing the advantages and disadvantages of each method.</td><td>10</td><td>CO3</td></tr>
<tr><td></td><td>SECTION C</td><td></td><td></td></tr>
<tr><td>Q 10</td><td>Describe a case study of AHP with calculation of each step upto Consistency Index.</td><td>20</td><td>CO4</td></tr>
<tr><td>Q 11</td><td>a) Explain spatial autocorrelation and how do you correlate it with Moran’s I index values?</td><td>10</td><td>CO1</td></tr>
<tr><td></td><td>b) Describe the Natural Neighbour Interpolation method specifying how the weights for interpolation are chosen?</td><td>10</td><td>CO3</td></tr>
<tr><td></td><td>OR</td><td></td><td></td></tr>
<tr><td></td><td>Discuss the different Interpolation methods in GIS citing the advantages and disadvantages of each method.</td><td>20</td><td>CO3</td></tr>
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