End Semester Examination –May, 2018

Program/course: B.TECH/ GIE	**Semester – VI**
Subject: GIS & Satellite Navigation Systems	**Max. Marks : 100**
Code : GIEG 313	**Duration : 3 Hrs**
No. of page/s: 03	

All questions are compulsory.

SECTION –A   [20 marks]

Ques1. a) Define the term "lag distance" in Kriging? **3 marks**

b) 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? **3 marks**

c) Briefly state the benefits of spatial statistics over a-statistics or traditional statistics? **4 marks**

Ques2. a) What are Z-scores and how do they relate to hot spot analysis? **3 marks**

b) What is the difference between "lattice" and "grid" map display forms? **3 marks**

c) Explain the significance of Cross-Validation in Kriging? **4 marks**

SECTION –B   [10 X 4 = 40 marks]

Ques3. a) Define the 3 parameters that describe a standard deviational ellipse? **5 marks**

b) What is spatial autocorrelation? How do you correlate Moran's I index values with spatial autocorrelation? **5 marks**

Ques4. a) Differentiate between TIN and DEM as a method for representing surface? **5 marks**

b) Describe the Natural Neighbor Interpolation method specifying how the weights for interpolation are chosen. **5 marks**

Ques5. Match the following Tools with the given Examples and briefly tell why you consider it the

best tool. [**2 X 5 = 10 marks**]

Tool	Example
Cluster and Outlier Analysis (Anselin Local Moran's I)	A florist identifies those customers closer to each other than by chance, and possibly target these areas for deliveries
Standard Deviation Ellipse	Where is the population centre and how is it changing over time.
Mean Centre	What is the orientation of the debris mean? Where is the debris concentrated.
Average Nearest Neighborhood	Where do we find anomalous spending patterns in New Delhi?
Hot Spot Analysis (Getis-Ord Gi*)	Where are kitchen fires a higher-than-expected proportion of residential fires?

Ques6. 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, 32,*

50 are the measured values of a particular phenomenon at those points)   [**5 + 5 = 10 marks**]
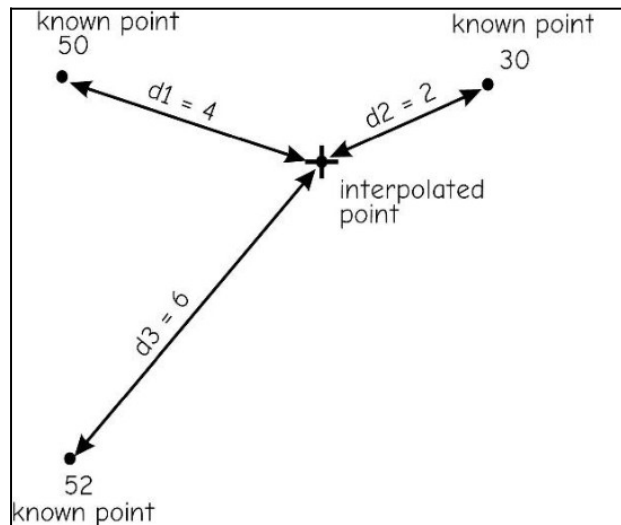
SECTION –C   [**20 X 2 = 40 marks**]

Ques7. a) What are the different tools available for measuring geographic distributions? Explain

with relevant examples for each? **10 marks**

b) Explain the different steps to create a prediction surface map using Kriging? **10 marks**

Ques8. Differentiate between local and global statistics? What all the major tools available in

ArcGIS for both local and global statistical calculations? **20 marks**