# UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
## End Semester Examination, December 2018

Programme Name: B. Tech. GIE                                Semester    : V
Course Name        : GIS and Satellite Navigation Systems    Time       : 02 hrs.
Course Code        : GIEG 313                                 Max. Marks: 100
Nos. of page(s)    : 2
Instructions:

| SECTION A | | 20 Marks | |
|---|---|---|---|
| S. No. | | Marks | COs |
| **Q 1** | a) What are four major categories of spatial objects dealt in GIS?<br>b) Give examples in each category. | 2+2 | CO3 |
| **Q 2** | Write short notes on types of map projects preserving – shape and area? | 4 | CO2 |
| **Q 3** | Differentiate between "spatial statistics" and "spatial analysis". | 4 | CO1 |
| **Q 4** | List any four common network problems in GIS? Give example. | 4 | CO4 |
| **Q5** | What is the significance of taking population weight with mean center when selecting a suitable site for the construction of a new hospital? | 4 | CO2 |
| SECTION B | | 40 Marks | |
| **Q 6** | a) Discuss concept of GIS network data model; and forward.<br>b) Reverse star method of representation of networks in GIS. | 3 + 5 | CO3 |
| **Q 7** | List five functionalities of GIS based spatial network analysis. Give brief account of various methods of raster overlay spatial analysis methods with hypothetical examples. | 2 + 6 | CO3 |
| **Q 8** | What is the significance of using Index models? Using a simple example, illustrate how weighted linear combination method is used for Raster Based index model. You can assume arbitrary cell values for each input grid. | 8 | CO4 |
| **Q 9** | Briefly describe 1) a spatial condition that has a positive spatial autocorrelation, 2) a spatial condition that has negative spatial autocorrelation, and 3) a spatial condition that has no spatial autocorrelation. | 8 | CO3 |
| | **Or**<br>List the four different ways in which GIS Models could be classified. Illustrate your answer with relevant examples for each. | 2+6 | CO4 |
| **Q 10** | Discuss with illustrations and hypothetical example terrain curvature analysis using spatial neighbourhood function<br>**Or**<br>Discuss in details the concept and approach with hypothetical example terrain hill shade analysis using spatial neighbourhood function. | 8 | CO3 |
| SECTION-C | | 40 Marks | |

| Q 11 | Give an account on various methods of neighbourhood spatial analysis following diffusion concept. Discuss with illustrations and hypothetical example terrain curvature analysis using spatial neighbourhood function. | 5 + 15 | CO3 |
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| Q 12 | Describe all the statistical tools available in ArcGIS along with their applications. Cite suitable examples for each. | 12 + 8 | CO3 |
| | **Or** | | |
| | Discuss in details various methods of retrieval of data & information using spatial selection queries in GIS. Discuss various measurements analysis to be performed using vector and raster data. | 10 + 10 | CO3 |