BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MSC **SEMESTER : III**
BRANCH: MGI **SESSION : MO/18**

SUBJECT: SGI3001 SPATIAL ANALYSIS MODELLING & DSS

TIME: 03:00 HRS. **FULL MARKS: 60**

INSTRUCTIONS:
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
2. Candidates may attempt any 5 questions maximum of 60 marks.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a) Define spatial analysis technique. Give two examples of single layer operations which are also non-topological vector analysis techniques with proper descriptions. [6]

Q.1(b) What do you understand by a model? How is Process model different from representation model in GIS? [6]

Q.2(a) In the Fig, given below, there are two raster layers Crop and Soil raster having 1Km and 500m spatial resolutions respectively. Soil type S1 is suitable for Crop type C1. Find out the total area having correct combination of C1and S1and draw the output. [6]

C1	C1	C1	C2
C1	C2	C2	C2
C1	C2	C2	C1
C1	C1	C1	C1

Crop

S1	S1	S1	S1	S1	S2	S2	S2
S1	S1	S1	S1	S2	S2	S2	S2
S1	S1	S1	S1	S1	S2	S2	S2
S1	S1	S2	S2	S2	S2	S2	S2
S1	S1	S2	S2	S2	S2	S2	S2
S1	S1	S1	S1	S2	S2	S2	S2
S1	S1	S1	S1	S2	S2	S2	S2
S2	S2	S2	S2	S2	S2	S2	S2

Soil

Q.2(b) What is linear referencing? Can it be used for overlay analysis? Give two real world application of linear referencing. [6]

Q.3(a) Thiessen Polygon is coming under which class of interpolation, Global or Local and why? Explain Thiessen Polygon with proper diagram using 7 points and mention some of its applications. [6]

Q.3(b) What is Kriging? Describe types of Kriging in brief. [6]

Q.4(a) Describe different stages of any Decision Making Process. [6]

Q.4(b) Define DSS. Who had classified DSS as per types of operations and when? Airline reservation system is one form of real time DSS, how? [6]

Q.5(a) What are different types of decisions? Describe with proper example. [6]

Q.5(b) What is a decision table? Design a problem and construct a decision table for that. [6]

Q.6(a) Explain 3 different types of normalization techniques with figure and equations for BENEFIT and COST criteria? [6]

Q.6(b) You are asked by the Mayor of a town to solve a Water Crisis. How will you solve this spatial problem using MCDM? Make your own assumptions, criteria and alternatives.

Q.7(a) What are the basic principles behind AHP? Draw Analytical Hierarchical Diagram related to purchasing a House. [6]

Q.7(b) Solve the below effect table using AHP and find the best GIS software. [6]

	Cost	Functionalities	Help document
GIS-1	12,00,000	Excellent	Good
GIS-2	9,00,000	Good	Excellent
GIS-3	11,00,000	Good	Excellent

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