CLASS: MSc   SEMESTER : IIIrd
BRANCH: GEOINFORMATICS   SESSION : MO/2024

SUBJECT: GI602 ADVANCED GEOSPATIAL MODELLING AND DECISION SUPPORT SYSTEM

TIME: 3 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
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.

			CO	BL
Q.1(a)	Define spatial analysis process and explain the importance of 2nd step in the entire spatial analysis process to solve the real-world problem.	[5]	CO1	BL2

Q.1(b)	Water extent layer has been extracted from Sentinel-2 image and it is covering 900 square Km on the ground.
	It has to be overplayed with LU/LC raster of same spatial extent extracted from LANDSAT 8 image. Find out the following:
	  i) The no of pixels in Sentinel-2 derived water extent layer
	  ii) The no of pixels in final overlayed output
	  iii) Aggregation co-efficient
		[5]	CO2	BL4

Q.2(a)	(i) Elucidate the problems you may face while interpolating rainfall data in a Hilly Region. (ii) Classify different Interpolation Techniques. (iii) Describe situations where IDW will be useful, and What are its drawbacks?	[2+1+2]	CO2	BL4 & BL2
Q.2(b)	(I) What do you understand by SILL, RANGE, NUGGET in Variogram? (ii) Explain the various steps involved in using Kriging Technique.	[2+3]	CO2	BL2
Q.3(a)	Describe advantages of DSS and their different subclasses suggested by Alter with proper example of each subclass.	[5]	CO3	BL2
Q.3(b)	What are the phases of any planning process? Explain in context of solving spatial problem.	[5]	CO3	BL3
Q.4(a)	How will you decide whether a particular criterion is a COST criteria or BENEFIT criteria? Explain with examples.	[5]	CO4	BL2
Q.4(b)	Describe different elements of MCDM in brief. What is constraint and what is its role in MCDM technique?	[5]	CO4	BL3
Q.5(a)	What is the 9points scale used in AHP?	[2]	CO4	BL2
Q.5(b)	What is the Problem in the given pairwise comparison matrix (PCM)? Pinpoint the error. Rectify the Error with correct value. Calculate the Consistency ratio for the PCM with error and for the PCM without error. Assume 1st Row is correct.	[8]	CO4	BL5

Q.5(b) matrix:

	C1	C2	C3
C1	1	7	3
C2	1/7	1	5
C3	1/3	1/5	1