

Name:

Reg no.

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

C

**FIRST SEMESTER M.TECH. DEGREE EXAMINATION DEC 2017
(Civil Engineering)**

(Water Resources and Hydroinformatics)

07-CE-6405 GIS AND HYDROINFORMATICS

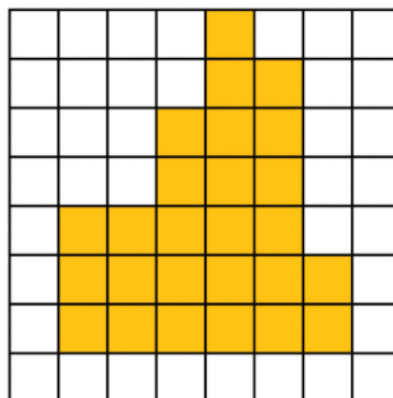
Time:3 hours

Max.marks: 60

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question (not both)

q.no.	Module 1	Marks
1a	Differentiate between (i) azimuthal projection and conical projection (ii) tangent projection and secant projection	4
	Answer b or c	
b	What are the benefits of GIS?	5
c	In a resampling process, the coordinates of point to be re-sampled is obtained as (24, 13). Coordinates of the centres of the neighbouring cells are (05, 05), (35, 05), (35, 35), and (05, 35) and their corresponding pixel values are 135, 138, 140 and 137. Determine the Pixel value to be put in the resampled image if nearest neighbour method is to be used.	5
	Module 2	
2a	What is meant by relational data base? Demonstrate with example	4
	Answer b or c	
b	What is meant by topology? Write six examples of topological relationships	5
c	Represent the following raster by run length encoding and also find the approximate reduction (if any) in size for such representation.	5



q.no.	Module 3	Marks
3a	Differentiate between (i) union and merge (ii) Union and symmetrical difference. What shall be output from these operations if the spatial extents of both layers are same?	4
	Answer b or c	
b	Indicate the different type of scales used in the data representation and the operations that are possible on each category	5
c	Site for a new school in an area is to be located based on the following criteria. It should not be located within 1km from existing school. It shall be located on firm ground (not on marshy land). It should have access to main road which has a width more than 12m. Slope of the area shall not exceed 3%. It should be within 800m from main water source or water storage (water tank). Indicate the layers to be formed and operations that are to be carried out for locating the school.	5
	Module 4	
4a	What is meant by meta data ? What is the information that is required to be provided in meta data?	4
	Answer b or c	
b	Demonstrate the use VIP algorithm in the conversion of DEM to TIN	5
c	What are the different countries maintaining their own Global positioning System? Indicate the names of these systems. Why do we need a separate system of this kind?	5
	Module 5	
5a	You have been approached by a new mobile company to locate their tower locations such that the minimum number of towers with maximum coverage is obtained. How do you accomplish this?	5
	Answer b or c	
b	Classify the methods of Interpolation based on different criteria	7
c	What is meant by kriging? Detail the procedure of Kriging	7
	Module 6	
6a	Indicate how GIS is useful in Groundwater modelling.	5
	Answer b or c	
b	Indicate how GIS is useful in flood modelling and flood mitigation.	7
c	What are the components of a water supply system? How do we combine the use of EPANET with GIS.	7