

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

CLASS: M. Sc.
BRANCH: Geoinformatics

SEMESTER: II
SESSION: SP/22

SUBJECT: GI 515 GEOINFORMATICS FOR HYDROLOGY & WATER RESOURCES

TIME:

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.
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Q.1(a)	Explain Thiessen polygon method. OR Explain how head loss of an aquifer is determined with a diagram	[5]
Q.1(b)	Explain with diagram the piezometric level of a confined aquifer. Also explain artesian well condition. OR What is an unconfined aquifer? Explain storage coefficient with a diagram with a diagram.	[5]
Q.2(a)	What are lineaments? Write their significance in ground water prospects mapping? OR What are important fluvial landforms? Write their ground water prospects.	[5]
Q.2(b)	Give a typical reflectance curve of surface water body. Also, Mention sources of pollutants in water. OR Explain the use of various satellite data-based indices for water quality determination.	[5]
Q.3(a)	Explain different drainage patterns and their significance in deriving inferences on subsurface Geology. OR How are watershed codes decided?	[5]
Q.3(b)	Explain with diagram influent and effluent rivers OR What is the classification approach used for delineation of basin, catchment etc. in India?	[5]
Q.4(a)	What are the objectives of watershed management program? Write practices used to conserve soil, forest and water in the watershed management program. OR Explain criteria used for selecting suitable sites for Check dam, nalla bund, percolation tank	[5]
Q.4(b)	What are morphometric parameters evaluated to study the watershed? OR Write short notes on the followings a) Bifurcation ratio b) drainage density and c) drainage frequency	[5]
Q.5(a)	How are flood vulnerability and risk mapping performed using satellite data? OR What is difference between flood vulnerability and flood risk? How are satellite data used in flood risk mapping?	[5]
Q.5(b)	Distinguish between Erodibility and Erosivity. Write significance of satellite data in calculating soil erosion using USLE model. OR What is Accumulation Area Ratio Method? How satellite data can be used in calculating glacier mass balance?	[5]