



## MANIPAL INSTITUTE OF TECHNOLOGY

## VII SEMESTER B.TECH. (COMPUTER SCIENCE AND ENGINEERING) MAKEUP EXAMINATIONS, DEC 2018

SUBJECT: GRAPH ANALYTICS FOR BIG DATA [CRA 4008] REVISED CREDIT SYSTEM

(XX/12/2018)

Time: 3 Hours

MAX. MARKS: 50

	Instructions to Candidates:				
	✤ Answer ALL the questions.				
	<ul> <li>Missing data may be suitably assumed.</li> </ul>				
1A.	What is Graph Analytics?				
1B.	Explain, how graphs can be used in smart cities project.	5M			
2A.	Draw the graph network for "AirTraffic" with the following description:				
	• Airports are nodes and airlines are edges.				
	Consider three airports Bangalore, Mumbai and Mangalore				
	• SpiceJet and Indigo airline flies between Mumbai to Bangalore				
	• Jet and Indigo airline flies between Mangalore to Bangalore				
	Assuming node type as "AirTrafficNode" and edge type as "AirTrafficRelation", write the technical text description of the graph and actual CYPHER code to create				
	the Airfrance network.	5 M			
2B.	Consider the graph network described in Q.2.A, perform the following operations using CYPHER code to:				
	• View the graph				
	• Save the degree of the node as a new node property				
	Construct the Adjacency Matrix of the graph				
	• Find the indegree of all nodes	5M			
3A. 3B.	Explain graph analytics for big data using Biology as an example.	5M			
	Find the indegree and outdegree of each of the edges of the graph in Fig Q3B.1				
	Compute the degree table and graph histogram for this graph.				



**4B.** Of the two graphs (A or B) in **Fig Q4B.1**, is more connected? Justify your choice. **3M** 



**4C.** Find the diameter of the graphs below Fig 4C.1





5A.	Define the following terms used in graphs with an example:					5M
	i. Walk	ii. Trail	iii. Circuit	iv. Path	v. Cycle.	

**5B.** Describe the GraphLab implementation of PageRank with the corresponding code and how is it different form Google's Pregel? **5M** 

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