Time: 03 Hours **Marks: 80**

Note: 1. Question 1 is compulsory
2. Answer any three out of the remaining five questions.
3. Assume any suitable data wherever required and justify the same.

Q1 Write short notes on: **[20]**
a) Big Data and its characteristics
b) Distance measures for Big Data
c) The Map and Reduce Tasks
d) Bloom filter for stream data mining

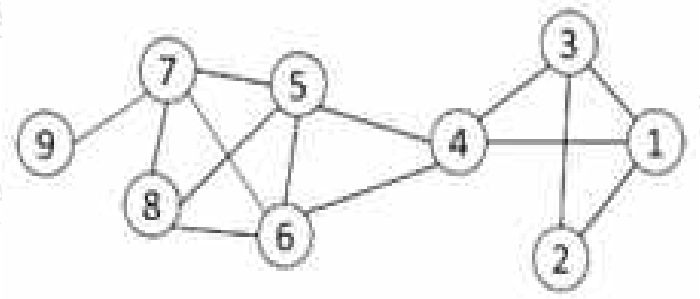
Q2 a) Explain HDFS architecture. **[10]**
b) Explain Column family store and Graph Store NoSQL architectural pattern with example. **[10]**

Q3 a) Write a Map reduce pseudo code to multiply two matrices. Illustrate with an example showing all the steps. **[10]**
b) Explain Issues in Data stream query processing **[10]**

Q4 a) List the main components of Map reduce execution pipeline. **[10]**
b) Explain DGIM algorithm. **[10]**

Q5 a) Explain Collaborative filtering system. How is it different from content based system . **[10]**

b) What is clique percolation method Write an algorithm on (CPM). **[10]**
Also show how the CPM finds clique for the following graph. Explain with steps.



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Q6 a) Explain PageRank algorithm. **[10]**
b) Explain CURE algorithm. **[10]**

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Duration: 3hrs **[Max Marks:80]**

(1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt any **four**	**[20]**
	a)	What are Feed Forward Neural Network?	
	b)	Explain Gradient Descent in Deep Learning.	
	c)	Explain the dropout method and it's advantages.	
	d)	What are Undercomplete Autoencoders?	
	e)	Explain Pooling operation in CNN.	
2	**a)**	What are the Three Classes of Deep Learning, explain each?	**[10]**
	b)	Explain the architecture of CNN with the help of a diagram.	**[10]**
3	**a)**	What are the different types of Gradient Descent methods, explain any three of them.	**[10]**
	b)	Explain main components of an Autoencoder and it's architecture.	**[10]**
4	**a)**	Explain LSTM model, how it overcomes the limitation of RNN.	**[10]**
	b)	What are the issues faced by Vanilla GAN models?	**[10]**
5	**a)**	What are L1 and L2 regularization methods?	**[10]**
	b)	Explain any three types of Autoencoders.	**[10]**
6	**a)**	What is the significance of Activation Functions in Neural Networks, explain different types Activation functions used in NN.	**[10]**
	b)	What are Generative Adversarial Networks, comment on it's applications.	**[10]**

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