



Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2022

Course: NoSQL Database
Program: M.Tech
Course Code: CSDA7005

Semester: II
Time: 03 hrs.
Max. Marks: 100

Instructions:

SECTION A

1. Each Question will carry 4 Marks

2. Instruction: Write short answers for the following questions. (60-70 words)

S. No.		Marks	CO
Q1	Why are graph database schema optional?	4	CO2
Q2	What are the key differences between attributed stores and graph databases?	4	CO1
Q3	What is the role of directed multigraph for designing graph databases?	4	CO3
Q4	Discuss the importance of schema in NoSQL graph databases?	4	CO1
Q5	Define the role of triples in designing graph databases? What are the core differences between RDF and LPG stores?	4	CO4

SECTION B

1. Each question will carry 10 marks.

2. Instruction: Write short / brief notes (100-150 words)

3. For question 6 choose between part a and b.

4. Attempt any one question for question 6

5. There is no such option for other questions in this section

Q6	Define the core differences between ACID and BASE? Also discuss the core principles of CAP theorem? OR	5 5	CO3
	Define the core principles for designing a graph database? Discuss the core differences between conceptual, logical and physical graph schema?	5 5	
Q7	Discuss the use of Json data format with respect to aggregated stores? Discuss the use of Json data format in data models such as 1. Document stores 2. Column stores	4 2 2	CO1

Please Turn Over

	3. Key value stores	2	
Q8	What are structured languages, discuss by using few examples? XML is a structured language justify with a suitable example?	5 5	CO2
Q9	What are directed multigraphs? Discuss the use of directed multigraph in creating node labeled and edge labeled graphs? Discuss the use of directed multigraphs in creating labeled property graph databases?	3 3 4	CO4
SECTION-C			
<p>1. Each Question carries 20 Marks.</p> <p>2. Instruction: Write long answer. (Up to 350 words while explaining)</p> <p>3. For question 10 choose between part a and b</p> <p>4. Attempt any one question for question 10.</p> <p>5. There is no such option for other question 11.</p>			
	What are the core principles of an Entity Relationship diagrams? What are the different types of relationships that are valid with respect to relational databases? Some relationships that are valid in graph databases are not valid in relational databases. Justify why?	6 6 8	CO4
Q10.	Define the three core operators present in FLASc for designing a conceptual graph schema? Demonstrate the use of FLASc operators for constructing a conceptual graph schema. Also discuss the domain and ranges of node, edge labeling functions, source and target functions when we apply the three FLASc operators on any two conceptual graph schemas? In case we wish to delete an existing node from a conceptual graph schema what FLASc operations are needed? Discuss with examples the deletion of node if the following scenarios:	6 6 2	

Please Turn Over

	1. Node is not connected to any other node in a conceptual graph schema. 2. Node is connected to other nodes in a conceptual graph schema.	3 3	
Q11.	Define the various formalisms for querying graph databases? What is the core difference between a navigation and graph pattern? We need the formalism for regular path queries for expressing graph navigation queries. Justify why? What the core clauses of Cypher query languages? Define the use of MATCH clause in Cypher? Define the use of WHERE clause in Cypher?	6 4 4 2 2 2	CO3

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