**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **3BT5172** | Roll No. | Total Printed Pages: 2 |
| **3BT5172** |  |
| B. Tech. III Year V-Semester (Main/Back) End Semester Examination, November 2022  **(AI & DS)** | |
| **BDS05102 / BAI05103 : NoSQL Database** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2.------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | | **Bloom Level** | |
| **Q.1** | **(a)** | Differentiate between ACID and BASE property of databases. | **(6)** | **Comparing** | |
|  |  |  |  |  | |
|  | **(b)** | Compare NoSQL databases with Relational Databases. | **(6)** | **Comparing** | |
|  |  |  |  |  | |
|  |  | **OR** |  |  | |
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| **Q.2** | **(a)** | Elucidate NoSQL databases. Explain all the features in detail. | **(6)** | **Remembering** | |
|  |  |  |  |  | |
|  | **(b)** | Assume an organization needs to create an online platform for its employees to create posts and add various images, videos, audio, and comments. Any employee can comment on these posts and rate them. Employees can join different groups as per their interests. The landing page will have a feed of posts that employees can share and interact with.  For the given scenario, suggest which type of database implementation (SQL / NoSQL) would be most suitable and specify appropriate reasons for your choice of the database implementation. | **(6)** | **Analyzing** | |
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|  |  | **UNIT-II (CO2)** |  |  | |
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| **Q.3** | **(a)** | You are working as database engineer. Prepare a document which should show alternate database of RDBMS for your company’s upcoming social media project. | **(6)** | **Evaluating** | |
|  |  |  |  |  | |
|  | **(b)** | Which database is suitable for sparsely populated tables that are too big for relational databases and also related data grouped together? Justify your answer with the appropriate reason. | **(6)** | **Applying** | |
|  |  |  |  |  | |
|  |  | **OR** |  |  | |
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| **Q.4** | **(a)** | Suppose if you need to ensure product delivery timeliness while dispatching items ordered by customers across various locations. Which database is most suitable for the given scenario? Justify your answer. | **(6)** | **Evaluating** | |
|  |  |  |  |  | |
|  | **(b)** | Explain the search features in NoSQL databases. | **(6)** | **Understanding** | |
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|  |  | **UNIT-III (CO3)** |  |  | |
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| **Q.5** | **(a)** | Explain the pros and cons of Master-slave architecture of key-value databases. | **(6)** | **Analyzing** | |
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|  | **(b)** | i) Find documents in employee collection that match both the following conditions   * job\_role is equal to “Store Associate” * emp\_age is between 20 and 30   ii) Find documents in employee collection that do not match either of the following conditions.   * job\_role is equal to “Senior Cashier” or “Store Manager”   iii) Find documents in employee collection where they do not match the given condition.   * emp\_age is not greater than or equal to 40 | **(6)** | **Applying** | |
|  |  |  |  |  | |
|  |  | **OR** |  |  | |
|  |  |  |  |  | |
| **Q.6** | **(a)** | Describe how keys are useful to avoid write problems. | **(6)** | **Remembering** | |
|  |  |  |  |  | |
|  | **(b)** | What is Aggregation in MongoDB? Explain the following aggregation stages with example: i) $group ii) $unwind | **(6)** | **Remembering** | |
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|  |  | **UNIT-IV (CO4)** |  |  | |
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| **Q.7** | **(a)** | Differentiate Bipartite graph and flow network with its application area. | **(6)** | **Comparing** | |
|  |  |  |  |  | |
|  | **(b)** | Create a document that mention the use cases of Graph Databases with proper chart. | **(6)** | **Evaluating** | |
|  |  |  |  |  | |
|  |  | **OR** |  |  | |
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| **Q.8** | **(a)** | Explain the following properties of Graphs and nodes:   1. isomorphisms 2. closeness 3. betweenness | **(6)** | **Analyzing** | |
|  |  |  |  |  | |
|  | **(b)** | If you are working in a Edutech company as Curriculum Associate, and your clients require a one-page document about use cases of column database. | **(6)** | **Applying** | |
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|  |  | **UNIT V (CO5)** |  |  | |
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| **Q.9** | **(a)** | Write down the use cases of search engine. | **(6)** | **Remembering** | |
|  |  |  |  |  | |
|  | **(b)** | Explain what is Web crawler and indexing in search engine | **(6)** | **Understanding** | |
|  |  |  |  |  | |
|  |  | **OR** |  |  | |
|  |  |  |  |  | |
| **Q.10** | **(a)** | Explain the following terms with respect to search engine:   * 1. Search grammar   2. Pagination   3. Snippeting | **(6)** | **Applying** | |
|  |  |  |  |  | |
|  | **(b)** | Elucidate Elastic Search and ELK stack | **(6)** | **Remembering** | |