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| Pokhara University | | | |
|  | Year: 2023 | |
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|  | | Pass Marks: 45 | |
| Course: Cloud Computing | | Time: 3 Hrs | |
| Attempts all the questions | | | |

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| 1 | a | Why is cloud computing considered an evolution rather than as an innovation? What are the advantages of utility computing? | 4+3 |
|  | b | Which one is more cost-effective: private cloud or public cloud? How can organizations benefit from a hybrid cloud model illustrated with an example? | 4+4 |
| 2 | a | What is Infrastructure-as-a-Service? Explain the backend architecture of cloud computing. | 3+5 |
|  | b | What are the infrastructural constraints in cloud computing? Why is Service Oriented Architecture considered as the emergence of flexible application architecture? | 4+3 |
| 3 |  | ShopEasy is a popular online retailer known for offering a wide range of products, from electronics to clothing. As the business grew, the monolithic architecture that powered its e-commerce platform faced several challenges. ShopEasy wants to transform its monolithic e-commerce platform into a scalable and agile system using a microservices architecture. Design a microservices architectural journey of ShopEasy to improve flexibility, scalability, and faster development cycles. | 5+10 |
| 4 |  | Why is virtualization considered a major step in the direction of cloud computing? Explain threats of hypervisor used in virtualization. | 5+10 |
| 5 | a | Why is horizontal scaling a more cloud-native approach? Cloud storage devices are subject to failure and disruption due to a variety of causes, including network connectivity issues, controller failures, and general hardware failure. How can the reliability and availability of cloud storage devices survive failure conditions? | 2+6 |
|  | b | Explain different types of cloud security threats. | 7 |
| 6 | a | Explain the key features and advantages of the Hadoop Distributed File System (HDFS) in the context of big data processing. | 5 |
|  | b | The given documents are divided into three blocks of HDFS. Design a Hadoop's MapReduce framework to count the frequency of the word in the total document.  D1: the quick brown fox jumps over the lazy dog. a red apple hangs from the tree.  D2: mountains cast long shadows during sunset. the tree provides shade for the red apple.  D3: the sunsets behind the mountains. the lazy dog barks at the quick brown fox. | 10 |
| 7 |  | Write short notes on (Any two) | 2x5 |
|  | a | Kubernetes |  |
|  | b | Identity and Access Management (IAM) |  |
|  | c | Cloud Cube Model |  |