TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2080 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BEI, BCT	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Enterprise Computing (*CT72507*) (*Elective I*)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Define TP monitors. Explain 3-tiers TP monitor architecture with appropriate diagram. [2+5]
2. Give an overview of shift of computing paradigm. How computing paradigm is preferred in business today? Justify your argument. [4+4]
3. Which approach will you follow as an enterprise architect so that with less effort your application can be created and deployed easily? Give the answer in terms of service oriented architecture thinking of various types of applications like desktop, mobile, and web applications that will be interacting with the same data store. [7]
4. Explain NIST model of cloud computing with its properties, characteristics and benefits. [7]
5. What are IaaS, PaaS, SaaS and the differences among these services? Clearly explain with examples the details of pros and cons of these modes of services from the perspective of solution architect. [8]
6. With proper diagram explain the role of virtualization in cloud computing. [5]
7. A business intends to roll out a gaming app via the cloud. Within a month, it anticipates that the application will be scaled up by a factor of 100 and will have users from all over the world as part of an enterprise architecture. What aspects will be taken into account when designing the system? Draw the block architecture and describe the different components needed for cloud deployment. [3+5]
8. How can we maintain security in cloud? Discuss with appropriate examples. [6]
9. Explain in brief some of the tools offered by cloud vendor for management and monitoring. [7]
10. An enterprise is willing to procure an ERP software but is undecided whether to host the application on premises or in the cloud. As a solution architect, make a detailed comparison of cost for hosting the ERP software on premises and in the cloud for 5 years. Provide an appropriate suggestion to the enterprise. You need list down all the factors you have considered and assumed for convicing the management. [8]
11. Write short notes on: [3×3]
    a) Auto scaling
    b) Container Vs Serverless
    c) Enterprise Analytics

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Examination Control Division
2079 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BEX, BCT	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Enterprise Computing (*Elective I*)(*CT72507*)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt **All** questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Define enterprise computing.Briefly explain about the information systems that are used by function units of an enterprise. [2+6]
2. Give an overview of shift of computing paradigm. How computing paradigm is preferred in business today? Justify your argument. [4+4]
3. What is Service-Oriented Architecture(SOA) and Microservices based Architecture? Are we still using Main Frame architecture ? Justify with examples. [2+2+4]
4. IOE plans to host its MIS in the cloud. As a solution Architect, you need to design a system with appropriate components (servers, databases, load balancing, monitoring and notification system e.tc.). Draw a block diagram by explaining the component that is required while deploying in the cloud. [8]
5. What are IaaS, PaaS , Saas and the differences among these services? Clearly explain with examples the details of pros and cons of these modes of services from the perspective of solution architect. [8]
6. What is Auto Scaling? When do we use it? Explain with an architecture. List down its use cases. [2+2+3]
7. Give an overview of enterprise cloud computing ecosystem. List down its deployment model. [4+3]
8. How can we maintain security in cloud? Discuss with appropriate examples. [6]
9. An enterprise is willing to procure an ERP software but is undecided whether to host the application on premises or in the cloud. As a solution architect, make a detailed comparison of cost for hosting the ERP software on premises and in the cloud for 5 years. Provide an appropiate suggestion to the enterprise. You need list down all the factors you have considered and assumed for convincing the management. [8]
10. Write short notes on: [3×4]
    a) Load balancing
    b) Nepalese Government Enterprise Architecture
    c) Enterprise Analytics

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TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2079 Baishakh

Exam.	Back		
Level	BE	Full Marks	80
Programme	BEX, BCT	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Enterprise Computing *(Elective I)(CT 72507)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt <u>All</u> questions.*
- ✓ *The figures in the margin indicate <u>Full Marks</u>.*
- ✓ *Assume suitable data if necessary.*

1. What is Enterprise Computing? Briefly explain about the information systems that are used by functional units of an enterprise. [8]
2. The paradigm for computing has drastically changed over the years. Discuss what has happened compared to the past and give retrospective for future of computing. [8]
3. What are the important components of Enterprise Architecture? Is there any guidelines for enterprise Architecture set by Nepalese Government? Explain. [4+4]
4. What are IaaS, PaaS, SaaS and the differences among these services? Clearly explain with examples the details of pros and cons of these modes of services from the perspective of solution architect. [8]
5. Customers across virtually every industry and of every size, including start-ups, enterprises and public sector organizations are running every imaginable use case on cloud infrastructure. Sometimes, it is required to deploy an application workloads across the globe in a single click, or to build and deploy specific applications closer to your end-users with single-digit millisecond latency. Discuss about the global cloud infrastructure required with an example. [8]
6. "Virtualization is the key to cloud computing", justify this statement with proper arguments. [4]
7. A company plans to deploy a gaming application in the cloud. It is expected that the application will scale by a factor 100 within a month and there will be users around the globe. As a solution Architect, what are the factors that will be considered while designing the system? Draw a block diagram by explaining the component that is required while deploying in the cloud. [8]
8. Why do we need content delivery network (CDN)? Explain in detail its working architecture. What are the steps for deploying an application with CDN in the cloud? Explain with a generic block diagram. [2+2+4]
9. An enterprise is willing to procure an ERP software but is undecided whether to host the application on premises or in the cloud. As a solution architect, make a detailed comparison of cost for hosting the ERP software on premises and in the cloud for 5 years. Provide an appropriate suggestion to the enterprise. Your need list down all the factors you have considered and assumed for convincing the management. [8]
10. Write short notes on: [3×4]
    a) AWS vs Azure vs GCP
    b) Enterprise Analytics
    c) Load balancing

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TRIBHUVAN UNIVERSITY
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Examination Control Division
2078 Bhadra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BEX, BCT	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: -Enterprise Computing *(Elective I)(CT 72507)*

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate Full Marks.*
- ✓ *Assume suitable data if necessary.*

1. Discuss about the past, present and future architecture for Enterprise Computing. [8]

2. Is it possible to solve the current problem of distributed computing through Grid and Cluster Computing? Justify your explaination with appropriate diagrams and explanations. [8]

3. What is Service-Oriented Architecture(SOA)? How does it work? Why Microservices based Architecture are needed? What are it's characteristics? [4+4]

4. What is Cloud? What are it's characteristics? Discuss about the NIST Cloud Computing Reference Architecture. Compare and highlight the benefits of types of Cloud Deployment. [1+2+4+3]

5. Why Global Cloud Infrastructure is required? Discuss about it for AWS, Azure and GCP by focusing the application domain. Also, discuss about the pillars of the Well-Architected Framework. [2+3+3]

6. What is Serverless Computing? When do we use it? List down its use cases. [2+3]

7. What are the different types of storage services available in the cloud? Explain each storage type with it's use case. [2+3]

8. An enterprise plans to host its MIS in the cloud. [5+3]

a) Make an estimation of Monthly/Yearly cost if the following On Demand services with utilization 20hours/day are used from the cloud service provider.

SN	Service	Charge Unit	On-Demand cost NPR
(i)	Virtual Server (2 vCPUs,16 GiB Memory and Up to 10 Gigabit)	Hourly	14
(ii)	30 GB SSD Block Storage	Monthly	14
(iii)	PostGre SQL server instances installed on virtual server 2 vCPUs and 16 GiB Memory	Hourly	65
(iv)	500GB Storage for Database	Monthly	30

b) If the pricing model of the virtual server is changed to a full year service plan with commitment of NPR 67000 and no payment upfront, will the hourly cost change for the server? Justify your statement with calculations.

9. A company wants to develop a dynamic website and deploy it in the cloud. As a solution Architect, you need to design a system with proper DNS handling, load balancing and monitoring of the system. The system will deliver notification in case of abnormal situation. Purpose an architecture for this system by highlighting the important components for its deployment. [8]

10. Write short notes on: [3×4]

a) Searching Enterprise Data

b) Future of Enterprise Computing

c) Identity and Access Management

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