

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2082 Chaitra

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

Subject: - Enterprise Application Design and Development (Elective III)
(CT 78504)

- ✓ 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. Explain the key trends that are shaping today software development landscape with some example. [5]
2. A document management system can generate documents in PDF, Word, and Excel formats. The client should only request a document type, and the system should return the correct document object without revealing implementation details. Which design pattern would you choose, and why? Provide implementation for above scenario. [2+6]
3. A high traffic website is facing performance issue due to frequent database connection. Suggest a design improvement and its working mechanism with diagram. [7]
4. Explain the concept of database design and describe the major considerations for creating an efficient database. [2+5]
5. Why callable statement with stored procedure is considered better database design practice? Explain with one real world example. [5+5]
6. What is web service? Why micro services is more popular than monolithic architecture in today's application development? Explain with some example. [2+6]
7. What is Java EE? Describe the JSP life cycle. [2+5]
8. What is JPA? List out the difference between message driven beans and session beans. [2+5]
9. Explain EJB architecture with its importance. [6]
10. What is web 3.0? Explain the difference between web 2.0 and web 3.0. [1+5]
11. Write short notes on: [3×3]
 - a) Facade Design Pattern
 - b) Edge Computing
 - c) Block chain

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2081 Chaitra

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

Subject: - Enterprise Application Design and Development (*Elective III*)
(CT 78504)

- ✓ 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. Explain the key trends that are shaping today software development landscape with relavent example. [5]
2. As a solution architect, how would you design a logistics system that supports dynamic creation of transportation modes (road, sea, air) without exposing their classes and allows easy addition of new modes (e.g., rail) in the future? Which design pattern would you choose, and why? Provide implementation for above scenario. [2+6]
3. What is inversion of control? Explain the different techniques how dependency injection can be done. [1+6]
4. What is database design? Explain the key point database designer should focus on while designing the database. [2+5]
5. Describe the mechanism of data connection pooling. Explain prepared and Callable statements with some examples. [5+5]
6. What is web service? Why REST web service is more popular than SOAP in today's application development? Explain with some example. [2+6]
7. What is Java EE? Describe the JSP life cycle. [2+5]
8. What is JPA? Explain different types of Enterprise Java Beans. [2+5]
9. Explain EJB architecture with its importance. [6]
10. What impact does decentralization in Web 3.0 have on data ownership and privacy? [6]
11. Short notes on: [3×3]
 - a) Facade Design Pattern
 - b) Monolithic vs Multitier Application
 - c) Podcasting

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Bhadra

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

Subject: - Enterprise Application Design & Development (*Elective III*)(CT 78504)

- ✓ 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. How is Enterprise Application Integration different from legacy middleware system? Explain benefits of N-tier architecture in software development. [5+5]
2. Why design pattern is important in application development? Explain the abstract factory design pattern with suitable example. [2+8]
3. What is inversion of Control? Explain the different techniques how dependency injection can be done. [2+8]
4. Explain JDBC architecture. Describe the mechanism of data connection pooling. [5+5]
5. Explain SOA architecture. Why Restful web service is more popular than SOAP based web service in the current context of software development. [5+5]
6. What is servlet? Explain how JSP page is processed by application server. [5+5]
7. Explain web 2.0 with its advantages. Describe collective intelligence along with real world implementation. [5+5]
8. Short notes on: (Any Two) [5+5]
 - a) Semantic Web
 - b) EJB Architecture
 - c) Singleton Pattern

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INSTITUTE OF ENGINEERING
Examination Control Division
2075 Bhadra

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

Subject: - Enterprise Application Design and Development (*Elective III*) (CT78504)

- ✓ 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. What are the current Enterprise Applications trends and Challenges? Define MVC Architecture with suitable example (10)
2. What are design patterns? Why do we need design patterns? Explain with examples about creational patterns and Behavioral patterns? (10)
3. What is Connection pooling and how it works? Explain the benefits of connection pooling with suitable example. (10)
4. Explain SOA concepts and design principles on the basis of current SOA adoption scenario. (10)
5. What are Java Servlets and why we use them? Explain major phases of JSP life cycle. (10)
6. What are the main components of EJBs. Explain the session and message driven EJBs. (10)
7. What is AJAX? Explain the AJAX frameworks with supporting example. (10)
8. Write Short Notes On: (Any Two) (5*2)
 - a. Structural Pattern
 - b. RIAD
 - c. Oracle vs DB2

Examination Control Division
2073 Magh

Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - Enterprise Application Design and Development (*Elective III*)(CT78504)

- ✓ 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. What are the characteristics that distinguish an enterprise application? Briefly discuss some challenges in such application development. [3+2]
2. What is application architecture? Briefly describe the MVC architecture. [2+3]
3. Explain what Inversion of Control is along with an example. Explain the Factory design pattern with suitable examples. [4+6]
4. Explain the significance of database connection pooling in enterprise applications. What are the advantages of having a data layer in application architecture? [4+3]
5. How can XML be useful in web-based applications? Explain the use of DTD in XML documents. [2+3]
6. Describe the structure of SOAP messages. Compare between RESTful and SOAP based web services. [4+3]
7. Describe what is Java EE and its significance for enterprise application development. Describe the Java EE platform architecture. [4+4]
8. Describe the working of a Servlet in java web application. Describe the significance of web application frameworks such as JSF. [4+4]
9. What are the benefits of using Enterprise Java Beans? Briefly describe the different types of session beans. [3+4]
10. Describe with an example how persistent objects can be created using JPA and annotations? What is Object-Relational Mapping? [3+2]
11. What is Web 2.0? Describe the main features that characterize Web 2.0 applications. [2+4]
12. What is AJAX and its significance in Web 2.0? Describe some general features provided by AJAX frameworks in rich web application development. [3+4]
