



(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR FOURTH SEMESTER ONE EXAMINATIONS**

**FOR THE DEGREE OF
BACHELORS OF SCIENCE
(INFORMATION TECHNOLOGY)**

COURSE CODE : BIT 417

COURSE TITLE : DISTRIBUTED SYSTEMS

DATE: 10/02/2021

TIME: 11.00.A.M - 1.00 P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO

Question 1 (30 Marks)

- (a) Explain the following terms
- (i) Distributed system (1 Mark)
 - (ii) Transaction Durability (1 Mark)
 - (iii) Interface (1 Mark)
- (b) Explain six ways in which a designing a distributed application differs from a non distributed application. (6 Marks)
- (c) Explain the following services that a good operating systems need to provide in order to support a server program.
- (i) Task preemption (1 Mark)
 - (ii) Task priority (1 Mark)
 - (iii) Ubiquitous communications (1 Mark)
 - (iv) Binary large objects (BLOBS) (1 Mark)
 - (v) Global directory services (1 Mark)
 - (vi) Authentication services (1 Mark)
 - (vii) Internet services (1 Mark)
- (d) Describe client/server architecture and give two of its limitations (6 Marks)
- (e) Discuss 5 Major factors an organization needs to consider in order to choose between using a Portable programming language or standard data exchange language to implement its distributed system. (5 Marks)
- (f) Explain the following service oriented architecture standards.
- (i) SOAP (1 Mark)

Question 2 (20 Marks)

- (a) Explain two advantages for a Distributed data base system to support reading and writing data in XML (2 Marks)
- (b) Explain the following factors considered in design of distributed databases
- (i) Autonomy (2 Marks)
 - (ii) Distribution (1 Mark)
 - (iii) Heterogeneity. (2 Marks)
- (c) Describe a Network operating system and give two advantages and two disadvantages of using it to implement distributed systems. (5 Marks)
- (d) (i) Describe peer to peer architectures and discuss two of their limitations (6 Marks)
- (ii) Name two types of applications implemented using Peer to Peer architectures and give a reason why it's a good way to implement them (2 Marks)

Question 3 (20 Marks)

- (a) Discuss three issues considered in designing a distributed File system and how they have been implemented in Suns Network File System (5 Marks)
- (b) Explain the following traits of distributed object systems and whether they are supported by DCOM and CORBA
- (i) Interfaces (1.5 Marks)
 - (ii) Proxies , skeletons and stubs (1.5 Marks)
 - (iii) Marshalling and unmarshaling (1.5 Marks)

(c) Write an ADO.NET server transaction Program that deletes a employee record in supermarket SQL server, sales database, empdetails table, Userid=zxkmn, password=mhvd. Customerid=5555. (Customerid is primarykey) (9 Marks)

Question 4

(a) Describe Common Model multiple programming languages approach to building Distributed systems. Give two advantages and one disadvantages of using this approach. (7 Marks)

(b) Discuss five advantages and two disadvantages of using Distributed object architecture over Web based application architectures (7 Marks)

(c) Explain the following traits of distributed object systems and whether they are supported by DCOM and CORBA

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|--------------------------|-------------|
| (i) Data types | (1.5 Marks) |
| (ii) Object creation | (1.5 Marks) |
| (iii) Object destruction | (1.5 Marks) |
| (iv) Object invocation | (1.5 Marks) |

Question 5 (20 Marks)

(a) Explain five advantages of using Transaction processing monitors over programming language RPC to develop distributed systems (5 Marks)

(b) Explain four kinds of locks supported by SQL Server. (4 Marks)

(c) Describe ADO.NET interface and discuss why its appropriate to be used as

(d) Discuss four issues considered in developing Directory interfacing protocols such as LDAP. (6 Marks)