



FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA  
SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY  
DEPARTMENT OF INFORMATION & MEDIA TECHNOLOGY

FIRST SEMESTER 2015/2016 EXAMINATION

**COURSE CODE:** CIT 314  
**COURSE TITLE:** DATABASE SYSTEMS AND CONCEPTS  
**CREDIT UNITS:** 2  
**TIME ALLOWED:** 2 HOURS  
**COURSE LECTURER:** I. O. ALABI  
**NUMBER OF QUESTIONS:** 5  
**NUMBER OF PAGES:** 3 (INCLUDING THIS PAGE)

**INSTRUCTIONS**

- Answer all questions
- Do **not** use red pen
- Please use a clear handwriting
- This exam is closed book, closed notes, closed laptop and closed cell phone
- Please use non-programmable calculators only



1. a. Explain how a DBMS implements atomicity and durability properties in ensuring database integrity. (10 marks)  
b. What are the disadvantages of : i. serial transactions processing and ii. Concurrent transactions processing. (2 marks)  
c. What are the merits of concurrent transactions processing. (3 marks)
2. a. Explain the concept of *Conflict serializability*. (5 marks)  
b. How can the conflict serializability be averted when different schedules are running? (3 marks)  
c. Explain the concept of Cascading rollback, illustrate with a figure as appropriate. (2 marks)  
d. Write on lock-based protocol and the lock-mode compatibility. (5 marks)
3. a) Briefly explain the following:  
i) Deadlock    ii) Starvation    iii) Concurrent transactions  
iv) A transaction (8 marks)  
b) List the ACID properties of database transactions and briefly explain them. (7 marks)
4. What is a lock on a transaction meant for? (1 mark)  
a. Explain Shared lock and Exclusive lock. (2 marks)  
b. Briefly explain with a table to illustrate the compatibility of the two types of locks in 3a) above. (2 marks)  
c) Illustrate the Transaction states with a diagram and brief notes. (2 marks)
5. a) Define decision support system and data warehousing. (2 marks)  
b) Explain Centralized and distributed database system. (2 marks)  
c) Databases can store variety of information, explain the types of data that the following databases are likely to store:



- i) Spatial database
- ii) Multimedia database
- iii) Mobile database (3 marks)