

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA Integrated - SEMESTER-III • EXAMINATION – WINTER • 2014

Subject Code: 4430604**Date: 05-12-2014****Subject Name: Database Management Systems****Time: 02:30 pm - 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Define Transaction in DBMS. Explain properties of transaction. **07**
 (b) Explain 2-phase locking protocol with suitable example. **07**
- Q.2** (a) What is precedence graph? Explain its use in detail giving example. **07**
 (b) Explain deadlock prevention schemes in detail. **07**
- OR**
- (b) Explain Conflict Serializability and View Serializability with example. **07**
- Q.3** (a) What do you mean by Query optimization? Explain expression tree and equivalent expressions with example. **07**
 (b) Explain materialized view and types of view maintenance. **07**
- OR**
- Q.3** (a) What are checkpoints? Explain database recovery performed using checkpoints. **07**
 (b) Briefly explain different architectural models of parallel databases. **07**
- Q.4** (a) Explain characteristics of DSS and list down its components. **07**
 (b) Derive the following equivalences by a sequence of transformations using equivalence rules . **07**
- i) $\sigma_{\theta_1 \wedge \theta_2 \wedge \theta_3}(E) = \sigma_{\theta_1}(\sigma_{\theta_2}(\sigma_{\theta_3}(E)))$
 ii) $\sigma_{\theta_1 \wedge \theta_2}(E_1 \bowtie_{\theta_3} E_2) = \sigma_{\theta_1}(E_1 \bowtie_{\theta_3} (\sigma_{\theta_2}(E_2)))$, where θ_2 involves attributes from E_2 .
- OR**
- Q.4** (a) Explain Recoverable schedule and Cascadeless schedule giving example. **07**
 (b) Differentiate between recovery using Deferred update and Immediate update. **07**
- Q.5** (a) What is deadlock? Explain deadlock detection and recovery from deadlock with example. **07**
 (b) Explain Phantom Phenomenon with example. **07**
- OR**
- Q.5** (a) What are different types of failures in DBMS. Explain briefly. **07**
 (b) Explain Shadow Paging Scheme with its advantages and disadvantages. **07**
