Seat No.:	Enrolment No.

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. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** Define Transaction in DBMS. Explain properties of transaction. 07 (a) **(b)** Explain 2-phase locking protocol with suitable example. 07 What is precedence graph? Explain its use in detail giving example. **07 Q.2** (a) Explain deadlock prevention schemes in detail. **(b)** 07 Explain Conflict Serializability and View Serializability with example. **07 (b)** What do you mean by Query optimization? Explain expression tree and Q.3 (a) **07** equivalent expressions with example. Explain materialized view and types of view maintenance. **07 (b)** What are checkpoints? Explain database recovery performed using checkpoints. **Q.3** (a) 07 Briefly explain different architectural models of parallel databases. 07 **(b)** Explain characteristics of DSS and list down its components. 07 **Q.4** (a) Derive the following equivalences by a sequence of transformations using **07 (b)** equivalence rules. i) $\sigma_{\theta_1 \wedge \theta_2 \wedge \theta_3}(E) = \sigma_{\theta_1}(\sigma_{\theta_2}(\sigma_{\theta_3}(E)))$ ii) $\sigma_{\theta_1 \land \theta_2}(E_1 \bowtie_{\theta_3} E_2) = \sigma_{\theta_1}(E_1 \bowtie_{\theta_3}(\sigma_{\theta_2}(E_2)))$, where θ_2 involves attributes from E₂ OR Explain Recoverable schedule and Cascadeless schedule giving example. **Q.4** (a) **07** Differentiate between recovery using Deferred update and Immediate update. 07 **(b)** What is deadlock? Explain deadlock detection and recovery from deadlock with **07 Q.5** (a) example. Explain Phantom Phenomenon with example. **07 (b)** OR What are different types of failures in DBMS. Explain briefly. **07 Q.5** (a) Explain Shadow Paging Scheme with its advantages and disadvantages. **07 (b)**
