DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER V [IT]
SUBJECT: (IT502) DATABASE MANAGEMENT SYSTEM

Examination	**:Third Sessional**	**Seat No.**	**: _____**
Date	**: 13/10/2014**	**Day**	**: Monday**
Time	**: 11:15 to 12:30**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed. **[12]**

(a) A DBMS uses a transaction _____ to keep track of all transactions that update the database **[1]**
(a) Log (b) Table (c) Block (d) Statement

(b) Wait-for graph is used for **[1]**
(A) Detecting view serializability. (B) Detecting conflict serializability.
(C) deadlock prevention (D) deadlock detection

(c) The process of managing simultaneous operations on the database without having them interfere with one another is **[1]**
(A) Serializability (B) Recoverability (C) Concurrency control(D) Transaction management

(d) Which of the following protocols ensures conflict serializability and safety from deadlocks? **[1]**
(A) Two-phase locking protocol (B) Time-stamp ordering protocol
(C) Graph based protocol (D) Both (a) and (b) above

(e) The drawback of shadow paging technique are **[1]**
(A) Commit overhead (B) Data fragmentation
(C) Garbage collection (D) All of these

(f) Which of the following does refer to the size of the data item chosen as the unit of protection by a concurrency control program? **[1]**
(A) Granularity (B) Lock (C) Starvation (D) Timestamp

(g) If transaction T_i gets an explicit lock on the file F_c in exclusive mode, then it has an _____ on all the records belonging to that file. **[1]**
(A) Explicit lock in exclusive mode (B) Implicit lock in shared mode
(C) Explicit locks in shared mode. (D) Implicit lock in exclusive mode.

(h) The schemes Wait-die and wound-wait are used for? **[1]**
(A) Deadlock prevention (B) Deadlock detection
(C) Deadlock recovery (D) Deadlock creation

(i) Which of the following is a stored procedure that Oracle automatically fires under appropriate conditions matches? **[1]**
(A) Assertion (B) Constraint (C) Function (D) Recursive function (e) Trigger.

(j) State True or False with justification: **[3]**
(i) Every cascade less schedule is recoverable schedule. T
(ii) Validation based protocol is optimistic concurrency control scheme. T
(iii) Shadow paging scheme is log based recovery technique. F

Q.2 **Attempt *any two* from the following.** **[12]**

(a) What are deferred modification and immediate modification technique for recovery? How recovery does take place in case of failures in these techniques? **[6]**

(b) Explain Multiple Granularity protocol. **[6]**

(c) Consider following **Schedule-1** with several data items and transaction's timestamps 1,2,3,4 and 5 respectively. Determine whether this schedule is valid under timestamp ordering protocol or not. **[6]**

T_1	T_2	T_3	T_4	T_5
				read (X)
	read (Y)			
read (Y)				
		write (Y)		
		write (Z)		
				read (Z)
	read (Z)			
	abort			
read (X)				
			read (W)	
		write (W)		
		abort		
				write (Y)
				write (Z)

Schedule-1

Q.3 (a) Consider the following two schedules **S2** and **S3**. Which of this is conflict serializable schedule? If so, give its serial order(s) and also draw the precedence graph to prove it. **[6]**

S2: R1(X); R3(X); W1(X); R2(X); W3(X).
S3:R3(X); R2(X); W3(X); R1(X); W1(X).

(b) Explain distributed database systems architecture and advantages in detail. **[6]**

OR

Q.3 (a) Explain the two-phase commit protocol with how it handling failures of distributed database system. **[6]**

(b) Compare wait-die deadlock prevention scheme with wait-wound scheme. Explain clearly how it prevents the deadlock with example. **[6]**