(1)

56102

Semester III

(2 ½ Hours) [Total Marks: 75]

N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q. 1	**Attempt All (Each of 5Marks)**	(15)

(a)	Multiple Choice Questions
	1. Triggers ---------- enabled or disabled.
	A)can be B)cannot be
	C) Ought to be D)Always
	2. Dbms_output is a ----------
	A) Procedure B)Package
	C)Function D)None of the above
	3. CREATE OR REPLACE FUNCTION totalCustomers
	total number(2) := 0;
	BEGIN
	SELECT max(age) into m_age FROM customers;
	RETURN total;
	END;
	A) It does not have the Return clause in function declaration
	B) The Return type statement is wrong
	C) Function definition should not use IS keyword
	D) Nothing Wrong
	4. The difference between rollback and commit is ----------
	A) commit saves transaction, rollback undoes it
	B) commit undoes the transaction, and rollback saves it
	C) commit loads transaction and rollback saves it
	D) none of the above
	5. PL/SQL is a procedural language that has following advantages –
	A) Integration with database
	B) Better performance
	C) Support for Transaction Processing
	D) All of the mentioned above	

(b)	Fill in the blanks (exit when, drop view, nextval , %type, completed.exit) 1. In Sequence, the next value is seen by ----------nextval---------- 2. A transaction that completes its execution successfully, it is said to be ----------completed------- 3. To drop a view we use -----drop view---------- statement 4. To map the columns of the table with the memory variables declared in PL/SQL block ------%type------is used.	

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	5. To terminate the loop..end loop statement ---exit when--statement is used	

(c)	Answer in 1 – 2 sentences
	1. Write a syntax to declare procedure.
	Declare procedure proc1 (var name in /inout/out) as
	Begin
	Processing statements;
	End;
	2. Give an example where : **old** is used.
	In trigger ,at the time of using DMLstatement like update or delete :old is used.
	3. State the SQL statements used to lock the table exclusively.
	Lock table <table name> in exclusive mode;
	4. How to declare and assign the variables in PL/SQL?
	Ord_no number; name varcharI(10),join_date date , order_no number(3):=100
	5. Write any 2 advantages of PL/SQL over SQL.
	Allows conditions like if , case and iterative statements like while and for which are useful over SQL.	

Q. 2	**Attempt the following (Any THREE)**	**(15)**
(a)	Generate the trigger to generate the primary key values for order_id in the orders(ord_id, ord_date) table and display the values in the table. Use of correct trigger stmt – 1 mark, sequence stmt- 1 mark, use of sequence in Trigger PL/SQL- 1 mark, actual code – 1 mark	
(b)	Explain the hashed file organization. – 3 marks ❖ Good for equality selections. ❖ Index is a collection of *buckets*. ▪ Bucket = *primary* page plus zero or more *overflow* pages. ▪ Buckets contain data entries. ❖ *Hashing function* **h**: **h**(*r*) = bucket in which (data entry for) record *r* belongs. **h** looks at the *search key* fields of *r*. ▪ *No need for "index entries" in this scheme.* Concept of hashing – 2 marks	
(c)	What is sequence? How to create, alter and drop a sequence. Sequence definition – 1 mark, create /alter/drop – 3 marks, whole query- 1 mark	
(d)	Employees of the testing department in the Perpetual Systems does testing of the software and result is taken as test-id, test-name, date_of_testing, test_result. Execute the procedure to insert the values in the table "test_specifications". Correct definition of procedure – 2 mark, block – 3 marks	
(e)	Define index. Write the commands for creating, altering and dropping an index. index definition – 1 mark, create /alter/drop – 3 marks, whole query- 1 mark	
(f)	Write a short note on using DML statements used in trigger using before/after clause by giving an example. Use of DML statement- 1 mark, Trugger – 2 marks, actual trigger code- 2 marks	

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Q. 3	**Attempt the following (Any THREE)**	**(15)**
(a)	Explain the role of Null values in PL/SQL block. What is NULL value- 1 mark, role of NULL values -2 marks, the stmt with NULL – 2 marks	
(b)	Write a pl/sql block to store the details of flat in flat_details(flat type, no_of_rooms). Accept the no_of rooms from the table. If the no_of_rooms > 5 then store flat_type as BIG, if no_of_rooms > 3 and less than 5 then store flat_type as SPACIOUS. If no_of_rooms >1 and less than or equal to 2 then flat type is STUDIO. Store the flat type by Case structure Correct case structure – 1 mark, PL/SQL code- 4 mark	
(c)	Write on the role of exit when statement in loop … end loop with an example Loop syntax – 2 mark and use of exit when statement – 3 marks	
(d)	State how to write, call and execute the function from a PL/SQL block along with an example. Function syntax- 2 marks, write/call/execute function – 3 marks	
(e)	Write a PL/SQL block to calculate the simple interest when the values of Principal amount, rate and duration is accepted from the user. PL/SQL block – 5 marks	
(f)	Write down how Case structure in PL/SQL is different from if…else statement. Case structure – 2 marks, if …else stmt – 2 marks, difference -1 mark	
Q. 4	**Attempt the following (Any THREE)**	**(15)**
(a)	What is ACID? What does each property say with respect to the execution of transaction? ACID – properties explanation 2 marks, explanation – 3 marks	
(b)	What is lock? Explain locking commands in context with SQL along with its types. Lock definition 1 mark, types and explanation – 4 marks	
(c)	Define log. What are the contents of log record? Define log 1 mark, The log is known as trail or journal. It's a history of actions executed by DBMS. **The log** is a file of records **stored in a stable storage**, which is assumed **to survive crashes – 1 mark** Every **log record** is given a **unique id** called the **log sequence no.(LSN).** As with any record id, we can fetch a log record with one disk access given the LSN Further , **LSNs are** given nos. **monotonically increasing order**, this's required for ARIES recovery algo If the log is a sequential file, in principle, growing indefinitely , the LSN can simply be the address of the first byte of the log record Various techq.used to identify portion of the log which are 'too old' to be needed again to bound the amount of stable storage used for log For recovery procedure, every page in the db contains **LSN of the most recent log record** , this LSN is called the **pageLSN** Every log record has fields: prevLSN, transID(ID of transaction generating a log record) and type. – 4 mark	
(d)	Explain two phase commit protocol. – 5 marks • 2PL defines how transactions acquire and relinquish(release) locks.	

	• Two phase locking guarantees serializability,but it doesn't provide deadlocks. The two phases are:- – A growing phase – A shrinking phase • Two transactions can not have a conflicting locks • No unlock operation can precede a lock operation in the same transaction • No data are affected until all locks are obtained- that is,until the transaction is in its locked point	
(e)	Explain Aries Algorithm Aries Definition -2 mark, phases – 3 marks • ARIES is a recovery algo designed to work with a steal, no-force approach **used(no-force approach** means that some of these changes may not have been written to disk at the time of subsequent crash), when recovery mgr. is invoked after a crash, restart & proceeds in 3 phases:- – **Analysis** :indentifies dirty pages in the buffer pool – **Redo**: repeats all actions, starting from an appropriate point in the log & restores the db state to what it was at the time of crash – **Undo**: undoes the actions of transactions that didn't commit , so that db reflects only the actions of committed transactions	
(f)	Write a short note on Write Ahead Log Protocol. • **The Write-Ahead Logging Protocol:** – Must force the log record for an update before the corresponding data page gets to disk. – Must write all log records before commit. • **#1 guarantees Atomicity** • **#2 guarantees Durability.**	
Q. 5	**Attempt the following (Any THREE)**	**(15)**
(a)	Write a short note on PL/SQL Data Types Number, char, varchar, date, Boolean are the data types. – 1 mark Their explanation – 4 mark with an example	
(b)	Write a PL/SQL to satisfy following conditions, refer employee_tbl (emp_id, emp_name, emp_salary, job). 1. If job is clerk then increase the salary by Rs. 2000. 2. If job is manager then increase the salary by Rs. 10000. Otherwise, if job is other than above two categories, then block should show an error message 'No change in salary'. Correct Conditions- 2 mark, Code – 3 marks	
(c)	Write the commands for the following – Create a table products(prodid, pname, quantity, price, type). 1. Insert 2 records into the same table. 2. Save the contents. 3. Delete the records which is recently inserted. 4. Rollback the transaction. 5. Save the changes done till this point by the name as T1. 5 stmt – 5 marks	
(d)	Explain TimeStamp Based Protocol.	

	The time stamping approach to scheduling concurrent transactions assigns a global,unique time stamp to each transaction Time stamp value produces an explicit order in which transactions are submitted to DBMS. The stamps must have two properties: **uniqueness & monotonicity** Uniqueness ensures that no equal time stamp values can exist Monotonicity ensures that the time stamp values always increase(Obvious!) The DBMS executes conflicting operations in the time stamp order,thereby ensuring serializability of transactions If two transactions conflict,one is stopped,rolled back,rescheduled & assigned a new time stamp value	
(e)	What is the meaning of the error "exact fetch returns more than one row" which occurs when executing PL/SQL block? When we use the rollno, name into mrollno,mname from table1;and we don't give where statement it will select number of records for transferring data from the attributes of the table to the memory variables. If we give proper condition like where rollno=1 as it's a primary key,the error wont occur but if we give where mks > 50,there can be many records having mks >50 then this error would occur.	

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