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WINTER-18 EXAMINATION

Subject Name: Database Management SystemModel AnswerSubject Code:22319

Important Instructions to examiners:

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills.
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions credit may be given by judgement on part of examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on equivalent concept.

Q. No.	Sub Q. N.	Answer	Marking Scheme
1		Attempt any FIVE of the following :	10 M
	a	List disadvantages of typical file processing system.	2 M
	Ans	Disadvantages of file processing system 1. Data redundancy and inconsistency	any 4 disadvantages – 1/2 Mark
		2. Difficulty in accessing data	each disadvantage
		3. Data isolation4. Integrity problems	
		5. Atomicity problems	
	b	Define i)Data Abstraction ii)Data Redundancy	2 M
	Ans	 Data Abstraction : Many end users are not computer trained so it is needed to hide complex data structures from them. 	1 mark Data Abstraction description 1 mark Data
		Hiding complexity of data structures from end user through different levels is known as data abstraction.	Redundancy description
		It has 3 levels :	



	a. Physical level	
	b. logical level	
	c. view level	
	2. Data redundancy :	
	The repetition of information is known as redundancy. This redundancy leads to higher storage and access cost.	
	It may lead to data inconsistency, that is different copies of the same data may have different values.	
c	Define the term:	2 M
	i) Candidate key	
	ii) ii) Primary key	
Ans	Candidate key: In a relation, there may be a primary key or may not, but there may be a key or combination of keys which uniquely identify the record . Such a key is called as Candidate key.	1 mark Candidate key 1 mark Primary Key
	OR	
	A candidate key is a column, or set of columns, in a table that can uniquely identify any database record without referring to any other data.	
	The candidate key can be simple (having only one attribute) or composite as well.	
	For Example, {STUD_NO, COURSE_NO} is a composite candidate key for relation STUDENT_COURSE.	
	Primary key: A key which is selected by the designer to uniquely identify the entity is called as Primary key. A primary key cannot contain duplicate values and it can never contain null values inside it.	
	Example, RollNo attribute is a primary key for Relation Student.	
d	List Four DDL commands with syntax.	2 M
Ans	DDL commands	1/2 mark for
	1. 1.Create	each command and
	Syntax : create table <table_name>(Column_name1 datatype1, column_name2 Datatype2,Column_nameN DatatypeN);</table_name>	½ mark for syntax
	2. Drop	



	Syntax: drop table <table_name>;</table_name>	
	3. Desc	
	Syntax: describe <table_name>;</table_name>	
	OR	
	Desc <table_name></table_name>	
	4. Truncate	
	Syntax : truncate table <table_name>;</table_name>	
	5. Alter	
	Syntax: Alter table <table_name> add Column_name Datatype (size);</table_name>	
e	Define Normalization, list its types.	2 M
Ans	Normalization:	1 mark for Normalization
	Normalization can be defined as process of decomposition/division of database tables to avoid the data redundancy.	definition and 1 mark for
	Types of Normalization:	types
	1. 1NF	
	2. 2NF	
	3. 3NF	
	4. BCNF	
f	Enlist four aggregate functions.	2 M
Ans	SUM()	any 4 functions
	AVG()	runetions
	MAX()	
	MIN()	
	COUNT()	
g	Define Cursor. List the two types of cursor.	2 M



	Ans	 Ans Cursor: The Oracle Engine uses a work area for its internal processing in order to execute an SQL statement. This work area is private to SQL''s operations and is called a Cursor. OR A cursor is a temporary work area created in the system memory when a SQL statement is executed. Types of cursor are: Implicit cursor Explicit cursor 			
2		Attemp	ot any THREE of the following :		12 M
	a	Disting	uish between network model and hier	archical model.	4 M
	Ans	Sr. No. 1. 2. 3. 4. 5. 6.	Hierarchical modelHierarchical model is not more popular than network modelIt does not uses client server architectureOne to many relationship is maintained.Hierarchical model is based on tree like structure with one root.One child or many children have only one parentMain application of hierarchical model is in the mainframe database		any 4 points
	b	Explai	system. n set Operators with example.		4 M
	Ans	Set ope contain represe	rators combine the results of two compo ing set operators are called as compo	onent queries into a single result. Queries ound queries. Set operators in SQL are : Union, Union all, intersection & minus. ee as	1 mark for explanation and 1 mark for example each



Emp	Employee	
Ename	Ename	
a	с	
b	e	
c		
d		

1) Union: The Union of two or more sets contains all elements, which are present in either or both. Union works as or.

E.g. select ename from emp union select ename from employee;

The output considering above data is :

Output

Ename
а
b
c
d
e

2) Union all: The Union of 2 or more sets contains all elements, which are present in both, including duplicates.

E.g. select ename from emp union all select ename from employee;

The output considering above data is:

Output



		Ename		
		a		
		b		
		c		
		c		
		d	3) Intersection: The intersection of two sets includes elements which are present in both. E.g. select ename from emp intersect select ename from	
		e	employee;	
		The o	butput considering above data is:	
		Output		
		Ename		
		c		
		E.g. select e	The minus of two sets includes elements from set1 minus elements of set2. name from emp minus select ename from employee;	
			considering above data is:	
		Ename		
		а		
		b		
		d		
(Explain any	four String functions with example.	4 M
	ns	i) Lower(cha	ar)-	1 mark for explanation
		Returns the i	nput string with all letters in lower case.	and 1 mark for example
		Example: SQ	QL>Select lower ('RAJESH') from dual;	each



Output: rajesh
ii) Upper(char)-
Returns the input string with all letters in upper case.
Example: SQL>Select upper ('rajesh') from dual;
Output: RAJESH
iii) Ltrim(char,set)-
It removes or trims from left of character string
. Example: SQL>Select Ltrim('university','univ') from dual;
Output: ersity
iv) Rtrim(char,set)-
It removes or trims from right of character string.
Example: SQL>Select Rtrim('university','sity') from dual;
Output: univer
v) Length(char)-
It returns length of character string.
Example: SQL> Select length('University') from dual; Output:10
vi) Concat(str1,str2,)-
Returns the string that result from concatenating the arguments.
Example: Select Concat('employee', 'name') from dual;
Output: employeename
vii) Lpad(str, len, padstr)-
Returns the string str, left-padded with the string padstr to a length of len characters. Example: Select lpad(ename,10.'*') from emp where empno=7782;
viii) Rpad(str,len,padstr)-
Returns the string str, right-padded with the string padstr to a length of len characters.
Example: Select rpad(ename,10.'*') from emp where empno=7782;



	viii) Substr(Char,m,n)-	
	It returns a portion of char, beginning at a character m, n character long.	
	Example: Select substr('College',3,4) from dual;	
	Output: lleg	
d	Describe exception handling in brief.	4 M
Ans	Exception Handling: Exception is nothing but an error. Exception can be raise when DBMS encounters errors or it can be raised explicitly.	any relevant points 1 mar
	When the system throws a warning or has an error it can lead to an exception. Such exception needs to be handled and can be defined internally or user defined.	each
	Exception handling is nothing but a code block in memory that will attempt to resolve current error condition.	
	Syntax:	
	DECLARE ;	
	Declaration section	
	executable statement;	
	EXCEPTION	
	WHEN ex_name1 THEN ;	
	Error handling statements/user defined action to be carried out;	
	END;	
	Types of Exception:	
	1) Predefined Exception/system defined exception/named exception: Are always automatically raised whenever related error occurs. The most common errors that can occur during the execution of PL/SQL. Not declared explicitly i.e. cursor already open, invalid cursor, no data found, zero divide and too many rows etc. Programs are handled by system defined Exceptions.	
	2) User defined exception: It must be declare by the user in the declaration part of the block where the exception is used. It is raised explicitly in sequence of statements using:	
	Raise_application_error(Exception_Number, Error_Message);	
	Attempt any THREE of the following :	12 M
a	Describe commit and rollback with syntax and example.	4 M



 		
Ans	Commit:	Description and syntax –
	The COMMIT command saves all transactions to the database since the last COMMIT	1 Mark
	or ROLLBACK command	example 1 Mark for each
	The syntax: SQL> COMMIT;	
	Or	
	COMMIT WORK;	
	Example :	
	SQL>Commit;	
	Rollback:	
	The ROLLBACK command is used to undo transactions that have not already been saved to the database.	
	The ROLLBACK command can only be used to undo transactions since the last COMMIT or ROLLBACK command was issued.	
	The syntax for ROLLBACK is:	
	ROLLBACK TO SAVEPOINT_NAME;	
	OR	
	ROLLBACK;	
	OR	
	ROLLBACK WORK;	
	Example:	
	SQL>ROLLBACK;	
b	Explain joins in SQL with examples.	4 M
Ans	JOIN:	Definition: 2
	A SQL join is an instruction to combine data from two sets of data (i.e. two tables). A JOIN clause is used to combine rows from two or more tables, based on a related column between them. SQL Join types are as follows:	marks, Any 2 types with description: 1 mark each
	1) INNER JOIN or EQUI JOIN:	
	A join which is based on equalities is called equi join. In equi join comparison operator "=" is used to perform a Join.	



Syntax:

SELECT tablename.column1_name,tablename.column1_name

FROM table_name1,table_name2

where table_name1.column_name=table_name2.column_name;

Example:

Select stud_info.stud_name, stud_info.branch_code, branch_details.location

From stud_info, branch_details

Where Stud_info.branch_code=branch_details.branch_code;

2) SELF JOIN:

The SQL SELF JOIN is used to join a table to itself, as if the table were two tables, temporarily renaming at least one table in the SQL statement.

Syntax:

SELECT a.column_name, b.column_name

FROM table1 a, table1 b

WHERE a.common_filed = b.common_field;

Example:

Select x.stud_name, y.stud_name

from stud_info x, stud_info y

Where x.leader= y.stud_id;

3) LEFT OUTER JOIN:

A left outer join retains all of the rows of the "left" table, regardless of whether there is a row that matches on the "right" table.

Syntax:

Select column1name,column2name

from table1name any_alias1 ,table2name any_alias2

on any_alias1.columnname(+) = any_alias2.columnname;

OR



(ISO/IEC - 27001 - 2013 Certified)
Select column1name,column2name
from table1name left outer join table2name
on table1name.columnname= table2name.columnname;
Example:
select last_name, department_name
from employees e, departments d
on e.department_id(+) = d.department_id;
OR
select last_name, department_name
from employees left outer join departments
on employees.department_id = departments.department_id;
4) RIGHT OUTER JOIN:
A right outer join retains all of the rows of the "right" table, regardless of whether there is a row that matches on the "left" table.
Syntax:
Select column1name, column2name
from table1name any_alias1, table2name any_alias2
on any_alias1.columnname =any_alias2.columnname (+);
OR
Select column1name, column2name
from table1name any_alias1 right outer join table2 name any_alias2
on any_alias1.columnname =any_alias2.columnname;
Example:
Select last_name,department_name from employees e, departments d on e.department_id = d.department_id(+);
OB



	(150/1EC - 2/001 - 2015 Certified)	
	Select last_name, department_name	
	from employees e right outer join departments d	
	on e.department_id = d.department_id;	
	5) NON EQUI JOIN:	
	Non equi joins is used to return result from two or more tables where exact join is not possible.	
	Syntax:	
	Select aliasname.column1name, aliasname.column2name from tablename alias where <condition range="" using="">;</condition>	
	For example:	
	In emp table and salgrade table. The salgrade table contains grade and their low salary and high salary. Suppose you want to find the grade of employees based on their salaries then you can use NON EQUI join.	
	Select e.empno, e.ename, e.sal, s.grade	
	from emp e, salgrade s	
	where e.sal between s.lowsal and s.hisal;	
c	Explain function in PL/SQL with example.	4 M
Ans	Function: Function is a logically grouped set of SQL and Pl/SQL statements that perform a specific task. A function is same as a procedure except that it returns a value. A function is created using the CREATE FUNCTION statement.	Description: 2 marks, Example : 2 marks
	Syntax:	
	CREATE [OR REPLACE] FUNCTION function_name [(parameter_name [IN OUT IN OUT] type [,])] RETURN return_datatype {IS AS} BEGIN < function_body > END [function_name];	



Where,

•	function-name specifies the name of the function.	
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• [OR REPLACE] option allows the modification of an existing function.

	 The optional parameter list contains name, mode and types of the parameters. IN represents the value that will be passed from outside and OUT represents the parameter that will be used to return a value outside of the procedure. The function must contain a return statement. The <i>RETURN</i> clause specifies the data type you are going to return from the function. <i>function-body</i> contains the executable part. The AS keyword is used instead of the IS keyword for creating a standalone function. Example: CREATE OR REPLACE FUNCTION Success_cnt RETURN number IS cnt number(7) := 0; BEGIN SELECT count(*) into cnt FROM candidate where result='Pass'; RETURN cnt; END; 	
d	Explain database security with its requirements in detail.	4 M
Ans	Database security Database security refers to the collective measures used to protect and secure a database or database management software from illegal use and malicious threats and attacks.	Definition 1 Mark, 3 mark for detail description
	Requirements of Database Security:	
	1. For prevention of data theft such as bank account numbers, credit card information, passwords, work related documents or sheets, etc.	
	2. 2. To make data remain safe and confidential.	
	3. To provide confidentiality which ensures that only those individuals should ever	



4

	(ISO/IEC - 2/001 - 2013 Certified)	
	be able to view data they are not entitled to.	
	4. To provide integrity which ensures that only authorized individuals should ever be able change or modify information.	
	5. To provide availability which ensure that the data or system itself is available for use when authorized user wants it.	
	6. To provide authentication which deals with the desire to ensure that an authorized individual.	
	7. To provide non-repudiation which deals with the ability to verify that message has been sent and received by an authorized user.	
	OR	
	1. Confidentiality: The principle of confidentiality specifies that only sender and intended recipients should be able to access the contents of a message. Confidentiality gets compromised if an unauthorized person is able to access the contents of a message	
	2. Integrity: when the contents of the message are changed after the sender sends it, but before it reaches the intended recipient, we say that the integrity of the message is lost.	
	3. Authentication: Authentication helps to establish proof of identities. The Authentication process ensures that the origin of a message is correctly identified.	
	4. Availability: The goal of availability s to ensure that the data, or the system itself, is available for use when the authorized user wants it.	
	Attempt any THREE of the following :	12 M
a	Explain the four roles of database administrator.	4 M
Ans		1 Mark for each role
	2. Storage structure and access method definition The DBA creates appropriate storage structures and access methods by writing a set of definitions which is translated by data storage and DDL compiler.	
	3. Schema and physical organization modification DBA writes set of definitions to modify the database schema or description of physical storage organization.	



	the users acc data, while rights. Integ	you go up in the hier rity constraints spec	l. Ordinary users migrarchy to the adminis	ght have highly strator, you will constraints are	y restricted access to ll get more access written by DBA and)
	5. Routine I given below		of the routine main	tenance activ	ities of a DBA is	
	(i) Taking b	ackup of database p	eriodically			
	(ii) Ensurin	g enough disk space	is available all the t	ime.		
	(iii) Monito	pring jobs running or	the database.			
	(iv) Ensure users.	that performance is	not degraded by som	ne expensive t	ask submitted by som	e
		—	cation: Integrity con h is accessed by data		itten by DBA and the while updating the	у
b	State and E	Explain 1 NF and 2	NF with example.			4 M
Ans	First Norm	al Form (1NF):				For 1NF - 2
	A relation F are atomic.	R is said to be in firs	t normal form (1NF)	if the domain	of all attributes of R	Marks, For 2NF -2 Marks
	OR					
		n the first normal for o,sname,location,pro		epeating eleme	ents groups. Example:	
	SNO	SNAME	LOCATION	PNO	QTY	
	S1	Abc	Mumbai	P1	200	
	S2	Pqr	Pune	P2	300	
	\$3	Lmn	Delhi	P1	400	
	The above real 2NF.	elation is in 1NF as	all the domains are h	naving atomic	value. But it is not in	
	Second Nor	rmal Form (2NF):				



			7001 - 2013 Certifieu)		
	Example:				_
	so the table		vo tables as Supplier(n SNO and QTY on (SNO, PNO (SNO,SNAME,LOCATION) and econd normal form.	
	Supplier				
	SNO	SNAME	LOCATION		
	S 1	Abc	Mumbai	_	
	S2	Pqr	Pune	_	
	S 3	Lmn	Delhi		
		I			
	Supplier_Pr	roduct			
	SNO	PNO	QTY		
	S1	P1	200		
	S2	P2	300		
	S3	P1	400		
c	Draw the b	lock structure of PL	/SQL. List advanta	ges of PL/SQL.	4 M
Ans	Ň	ptional) Jse for declaring varia	ables		For block structure - 2 Marks, For advantages -2 Marks
	Begin (Ma	ndatory)			
	U	Jse for writing execut	able code;		
	Exception	(Optional)			
	U	Jse to write exception	s to be catch during i	run time.	
	End; (Man	datory)			
	1	To terminate PL-SQL	block/ code.		



	Advantages of PL/SQL:	
	1. PL/SQL is portable and high transaction processing language.	
	2. PL/SQL is in fact procedural language but it also supports object oriented programming.	
	3. It allows user to write as well as access the functions and procedures from outside the programs.	
	4. It has got built in libraries of packages.	
d	Write step by step syntax to create, open and close cursor in PL/SQL.	4 M
 Ans	A cursor holds the rows (one or more) returned by a SQL statement.	2 marks,
	Declaring: This term is used to declare a cursor so that memory initialization will take place.	Opening: 1 mark, Closing cursor: 1
	A cursor is declared by defining the SQL statement that returns a result set.	mark
	Example:	
	Declare CURSOR Winter_18 IS SELECT roll_no, std_name, percentage FROM student;	
	Opening: A Cursor is opened and populates data by executing the SQL statement defined by the cursor.	
	Example:	
	Open Winter_18;	
	Closing a Cursor: This forces cursor for releasing the allocated memory assigned/ occupied by cursor.	
	Example:	
	CLOSE Winter_18;	
e	Explain Transaction ACID properties.	4 M
Ans	ACID properties of transaction	For each
	1. Atomicity: When one transaction takes place, many operations occur under one transaction. Atomicity means either all operations will take place property and reflect in the database or none of them will be reflected.	property - 1 Mark
	2. Consistency: Consistency keeps the database consistent. Execution of a transaction	



		needs to take place in isolation. It helps in reducing complications of executing multiple transactions at a time and preserves the consistency of the database.	
		 3. Isolation: It is necessary to maintain isolation for the transactions. This means one transaction should not be aware of another transaction getting executed. Also their intermediate result should be kept hidden. 4. Durability: When a transaction gets completed successfully, it is important that the changes made by the transaction should be preserved in database in spite of system failures. 	
5		Attempt any TWO of the following :	12 M
	a	Draw an E-R diagram of library management system considering issue and return, fine calculation facility, also show primary key, weak entity and strong entity.	6 M
	Ans	Publid Price No_copies Borrower id mame emailid BK_nm Book Borrowed Borrower Issue dt Bk Book Borrowed Borrower Issue dt publishes Return_dt Return_dt Return_dt Publ_name Fine Fine_ant Issue dt Barrower id Borrower Barrower Issue dt	Correct entities: 2M, correct symbols: 2M, Correct relationships: 2M
	b	Consider the following database Employee(emp_id,emp_name,emp_city,emp_addr,emp_dept,join_date)	6 M
		i) Display the emp_id of employee who live in city 'Pune' or 'Nagpur'.	
		ii) Change the employee name 'Ayush' to 'Ayan'.	
		iii) Display the total number of employee whose dept is 50.	
	Ans	i) Display the emp_id of employee who live in city 'Pune' or 'Nagpur' select emp_id	Each query : 2M
		from Employee	



		where emp_city='Pune' or emp_city='Nagpur'	
		ii) Change the employee name 'Ayush' to 'Ayan'	
		update Employee	
		set emp_name='Ayan'	
		where emp_name='Ayush'	
		iii) Display the total number of employee whose dept is 50	
		Select count(*)	
		from Employee	
		where emp_dept=50;	
	c	Consider the following schema Depositor (ACC_no, Name, PAN, Balance). Create a	6 M
		view on Depositor having attributes(ACC_No,PAN) where balance is greater than	
		100000	
	Ans	create view v1	Correct logic
		as	3M, Correct syntax :3M
			Syntax .Sivi
		select ACC_No,PAN	
		from Depositor	
		where balance > 100000;	
6		Attempt any TWO of the following :	12 M
	a	Create a sequence	6 M
		i) Sequence name is Seq_1, Start with 1, increment by 1, minimum value 1,	
		maximum value 20.	
		ii) Use a seq_1 to insert the values into table Student(ID Number(10), Name char (20));	
		iii) Change the Seq_1 max value 20 to 50.	
		iv) Drop the sequence.	
	Ans	i) create sequence Seq_1 start with 1 increment by 1 minvalue 1 maxvalue	Query 1: 2M,
		20;	Query 2: 2M, Query 3 : 1M,
		ii) insert into student values(Seq_1.nextval,'ABC');	Query 4 : 1M



	iv) Drop sequence Seq_1;	
b	Write a PL/SQL program which accepts the customer_ID from the user. If the enters an invalid ID then the exception invalid_id is raised using exception handling.	6 M
Ans	DECLARE	Correct lo 3M, Corr
	c_id numeric(10); invalid_id_Exception Exception;	syntax : 3
	BEGIN	
	c_id:=&c_id;	
	$if(c_id<0)$ then	
	raise invalid_id_Exception;	
	end if;	
	EXCEPTION	
	WHEN invalid_id_Exception THEN	
	dbms_output.put_line('Invalid customer id');	
	END;	
c	i) create user 'Rahul'	6 M
	ii) grant create, select, insert, update, delete, drop privilege to 'Rahul'	
	iii) Remove the select privilege from user 'Rahul'	
Ans	(i) create user Rahul identified by rahul1234;	each que
	(ii)	2M
	 assuming table Employee for granting permissions to user 'Rahul' for select, insert, update and delete privilege) 	
	Grant select, insert, update, delete on employee to Rahul;	
	 for create and drop privilege which are system privileges not specific to any object such as table 	
	Grant connect, resource, DBA to Rahul;	
	iii) (assuming table Employee for revoking permissions to user 'Rahul')	