

# Winter – 19 EXAMINATION

## Subject Name: Database Management Model Answer

Subject Code: 22416

### **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.	Sub	Answer	Marking
No.	Q.		Scheme
	N.		
1.		Attempt any Five of the following:	12
	а	Define terms: i)Attribute ii) Domain	2M
	Ans	• Domain: All permissible values of attributes are called as a	Domain 1M;
		domain.	Attribute 1 M
		• Attribute: is a property or characteristics of an entity set.	
	b	State the use of 'Like' Operator.	2M
	Ans	The LIKE operator is used in a WHERE clause to search for a specified	For Like
		pattern in a column.	Explanation
			1M For two
		There are two operator often used in conjunction with the LIKE	operator of
		operator:	like1 M
		• %:The percent sign represents zero, one, or multiple characters	
		• _: The underscore represents a single character.	
	С	Write syntax to create view.	2M
	Ans	Create view <view name=""> as select <query> OR</query></view>	Correct syntax
			2 M
		CREATE VIEW name ASSELECT column1, column2FROM	
		table_nameWHERE [condition];	
	d	List the types of Cursor.	2M



A		T :
Ans	Cursor: A cursor is a temporary work area created in the system	Listed both the
	memory when a SQL statement is executed.	cursor 2 M
	Types of Cursor:	
	1.Implicit Cursor	
	2.Explicit Cursor	
е	Enlist different types of database users.	2M
Ans	Database users are the one who really use and take the benefits of	1/2 M of each
	database. There will be different types of users depending on their need	user of
	and way of accessing the database.	database
	1. Application Programmers	
	2. Sophisticated Users	
	3. Specialized Users	
	4. Native Users/ Naïve Users	
f	State the properties of Transaction.	2M
Ans	The ACID properties of transaction.	<sup>1</sup> / <sub>2</sub> M of each
		property of
	1. Atomicity.	database
	2. Consistency.	
	3. Isolation.	
 -	4. Durability	284
g	State the use of sequence.	<b>2M</b> 1 M for
Ans	A sequence refers to a database object that is capable of generating	
	unique and sequential integer values.	definition and 1
	Syntax:	M for syntax
	Create sequence <seq_name> [increment by num][start with num]</seq_name>	OR
	[maxvaluenum] [minvaluenum] [cycle/no cycle] [cache/no cache]	2 M for the
	OR	correct use of
		sequence
	• Sequence is a set of integers 1, 2, 3 that are generated and	
	supported by some database systems to produce unique values	OR
	on demand.	
	• A sequence is a user defined schema bound object that generates a sequence of numeric values.	Any 2 use 2 M
		OR



		<ul> <li>Sequences are frequently used in many databases because many applications require each row in a table to contain a unique value and sequences provides an easy way to generate them.</li> <li>The sequence of numeric values is generated in an ascending or descending order at defined intervals and can be configured to restart when max_value exceeds.</li> </ul>	<sup>1</sup> / <sub>2</sub> M for each points	
		Sequence:		
		<ul> <li>It is database object that generate/produce integer values in sequential order.</li> <li>It automatically generates primary key and unique key values.</li> <li>It may be ascending or descending order</li> <li>It can be used for multiple tables.</li> <li>Sequence numbers are stored and generated independently of tables</li> </ul>		
2.		Attempt any Three of the following:	12M	
	а	Describe the use of primary key and unique key constraints with example?	4M	
	Ans	There are two Entity constraints: 1.Primary Key constraint	Primary key constraint 2 M, Unique key	
		2. Unique Constraint	constraint 2 M	
		<ul> <li>1. Primary Key constraint: It is use to avoid redundant/duplicate value entry within the row of specified column in table. It restricts null values too.</li> <li>Syntax: CREATE TABLE TABLE_NAME (COLUMN_NAME DATA_TYPE, COLUMN_NAME DATA_TYPE CONSTRAINT)</li> </ul>		
		CONSTRAINT_NAME PRIMARY KEY);		
		<b>Example:</b> SQL> CREATE TABLE EMP (ID NUMBER (5)CONSTRAINT ID_PK PRIMARY KEY, NAME VARCHAR2 (10), SAL NUMBER (10));		
		<b>2. Unique Constraint:</b> The UNIQUE constraint uniquely identifies each record in a database table. The UNIQUE and PRIMARY KEY constraints both provide a guarantee for uniqueness for a column or set of columns.		



	DATA_T CONSTR	YPE, C AINT_N CREAT UNIQUI	COLUM NAME U FE TAB E ,	N_NAJ JNIQU SLE PE	ME E); RSO	DAT DAT	P_ID N	PE CON	N_NAME STRAINT STRAINT ), CITY	
b	Write any	y two ty	pes of jo	oin wit	h exa	ample	of eac	h?		4M
Ans	There are r IN FU LE	nainly fo NER JOI JLL JOIN EFT JOIN GHT JOI	ur types N I						They are:	Listing1 M And explaining any two with example 3 M
	EmpID	EmpFn	ame E	CmpLna	me	Age	Email ID	Phone No	Address	
	Project Ta	-		Client	ID	Da	•••••	Ducients	tortData	
	Project ID	Em	рШ	Client	ID		oject ame	Projects	tartDate	
	Client Tab	ole:								
	Client	Client		Age	Cli	ent	Phone	Address	EmpID	
	ID	Fame	Lame			nail D	No			
	matching operation	values i between ich have .EmpLn nployee	in both the En matchin Employ ame, Pro	tables. nployee ng valu yee.Em ojects.F	So, e tab es in pID Proje	if yo le and both ctID,	u perfo d the Pa the tab En Projects	orm an IN rojects tab oles will b nployee.E: s.ProjectN		



c	Create Sequence seq-1 with starting value 1 and maximum value 20 with an increment of 1. Consider schema Customer (custno, custname, telephone) and use seq-1 for inserting a row in customer table.	4M
	RIGHT JOIN: ON Employee.EmpID = Projects.EmpID;	
	FROM Employee	
	SELECTEmployee.EmpFname,Employee.EmpLname,Projects.ProjectID, Projects.ProjectName	
	For e.g.,	
	<b>RIGHT JOIN:</b> The RIGHT JOIN or the RIGHT OUTER JOIN returns all the records from the right table and also those records which satisfy a condition from the left table. Also, for the records having no matching values in the left table, the output or the result-set will contain the NULL values.	
	ON Employee.EmpID = Projects.EmpID ;	
	LEFT JOIN	
	FROM Employee	
	SELECTEmployee.EmpFname, Projects.ProjectID, Projects.ProjectNameEmployee.EmpLname,	
	For e.g.	
	<b>LEFT JOIN:</b> The LEFT JOIN or the LEFT OUTER JOIN returns all the records from the left table and also those records which satisfy a condition from the right table. Also, for the records having no matching values in the right table, the output or the result-set will contain the NULL values.	
	ON Employee.EmpID = Projects.EmpID;	
	FULL JOIN Projects	
	FROM Employee	
	SELECT Employee.EmpFname, Employee.EmpLname, Projects.ProjectID	
	<b>FULL JOIN:</b> Full Join or the Full Outer Join returns all those records which either have a match in the left (Table1) or the right (Table2) table. For e.g.,	



Ans	Sequence:			Creating
	<ul> <li>It is database object that a sequential order.</li> <li>It automatically generates provide the sequence of the sequen</li></ul>	rimary key and unique ke ending order ables.	y values.	sequence2 M Inserting in a sequence 2 M
	tables Syntax:			
	Create sequence <seq_name></seq_name>	Create Sequence seq-1		
	_	Start with 1		
	Start with [initial value]	Increment by 1		
	Increment by [value]	Minvalue 1		
	Minvalue [minimum value]	Maxvalue 20;		
	Maxvalue [maximum value]			
	[cycle/no cycle]			
	[{cache value / No cache}]			
	[{order / No order}];			
	For inserting the value using sequ	ience		
	INSERT INTO Customer VA 'George',1234567890);	LUES (SEQ-1.NEXT	VAL, '1',	
d	Consider following schema produ manufacturer, qty-in-stock). Writ i) Find total number of product m ii) Display list of products with his top.	te SQL queries for the f anufactured by compar ghest rated product com	ollowing 1y "ABC" iing at the	4M
Ans	Find total number of product ma	nufactured by company	"ABC"	Each correct queries 2 M



		Select count(prodid) from product Where manufacturer="ABC";	
		<b>Display list of products with highest rated product coming at the</b> <b>top</b> SELECT TOP 10 prodid, Product Name, rate	
		FROM Product ORDER BY rate DESC;	
3.		Attempt any Three of the following:	12M
	а	Write a PL/SQL code to find sum of numbers from 1 to 20.	<b>4M</b>
	Ans	declare i number(10); ans number(10);	Correct syntax 2M, Correct logic 2M
		begin ans:=0;	Any other logic can be considered
		i:=1;	
		while i<=20 loop	
		ans:=ans+i;	
		i:=i+1;	
		end loop;	
		dbms_output.put_line('Sum of 1 to 20 numbers is:'  ans);	
		end;	
	b	Describe system and object privileges and also describe use of Grant and Revoke commands with suitable example.	<b>4</b> M
	Ans	System Privileges: System privileges are privileges given to users to allow them to perform certain functions that deal with managing the database and the server.	System privileges1M
		e.g: Create user, Create table, Drop table etc.	Object Privileges 1M
		Object Privileges:	Grant command use 1/2M,



	<ul> <li>Object privileges are privileges given to users as rights and restrictions to change contents of database object – where database objects are things like tables, stored procedures, indexes, etc.</li> <li>Ex.Select, inserts, delete, update, execute, references etc.</li> <li>Grant: This command is used to give permission to user to do operations on the other user's object.</li> <li>Syntax: Grant <object privileges=""> on <object name=""> to <ul> <li>username&gt;[with grant option];</li> <li>Example: Grant select, update on emp to user1;</li> <li>Revoke: This command is used to withdraw the privilege that has been granted to a user.</li> </ul> Syntax: Revoke <object privileges=""> on <object name=""> from</object></object></object></object></li></ul>	example 1/2 M Revoke command use 1/2M, example 1/2 M
	<username>; Example: Revoke select, update on emp from user1;</username>	
С	Describe concept of subqueries with example.	<b>4</b> M
Ans	<ul> <li>Subquery is a select statement that is embedded in a clause of another SELECT statement i.e. nesting of queries or query within query.</li> <li>Types of subqueries <ol> <li>Single row subqueries</li> <li>Multiple row subqueries</li> </ol> </li> <li>Single row subqueries: A single row subquery is one that returns one row from inner SELECT statement. This type of subquery uses single row operators</li> </ul>	Subquery 1M Each type syntax or example 1M
	row operators =, >, >=, <, <=, <> Syntax:	
	SELECT column_name1 column_name n	
	FROM <table_name></table_name>	
	WHERE column1 operator (SELECT column from <table_name> where condition);</table_name>	
	Example :	
	Display the employee details whose job title is the same as that of employee 1005.	
	Select empno,ename,job,salary,deptno	



	Where job	=(select job from emp where empno=1005);
are c	alled multip	<b>bqueries:</b> Subqueries that return more than one row le-row subqueries. Multiple row operators are used arry, with a multiple row subquery.
	Operator	Meaning
	IN	Equal to any member in the list.
	ANY	Compare value to each value returned by the subquery.
	ALL	Compare value to every value returned by the subquery.
Synta	ax:	
SELE	ECT column_	_name1 column_name n
FRO	M <table_na< th=""><td>me&gt;</td></table_na<>	me>
	CRE column e condition);	1 operator (SELECT column from <table_name></table_name>
	-	es who earn the same salary as minimum salary for
Selec	t empno,ena	me,job,salary,deptno
From	emp	
Wher	e salary IN (	select min(salary) from emp group by deptno);
Queri	<b>iple column</b> ies that retur ple column s	n the values from more than one column are called
Synta	ax:	
SELE	ECT column_	_name1, column_name n
FRO	M <table_name< th=""><td>me&gt;</td></table_name<>	me>



		(SELECT column name, column namefrom	
		<table_name> Where <condition> );</condition></table_name>	
		<b>Example:</b> Display the name, department number, salary and commission of any employee whose salary and commission matches both the commission and salary of any employee in department 10	
		Query: Select empno, deptno, salary, comm	
		From emp	
		Where (salary,comm) IN (select salary,comm from emp where deptno=10);	
	d	Write syntax and example of create and drop synonym.	<b>4</b> M
	Ans	Syntax:	Create
			synonym
		CREATE [OR REPLACE] [PUBLIC] SYNONYM [schema.] synonym	syntax 1M,
		name	example 1M
		FOR [schema.] object_name;	Drop synonym
		OR	syntax 1M,
		create synonym name for object_name	Example 1M
		Example:	
		Create synonym new_employee for employee	
		Syntax to drop synonym:	
		Drop synonym <synonym name="">;</synonym>	
		Example:	
		Drop synonym employee;	
4.		Attempt any Three of the following:	12M
	а	Write steps to create execute and delete stored procedure.	4M
	Ans	Step 1: Stored Procedure creation: A stored procedure has header, a	Stored
		declaration section, an executable section and optional exception-	procedure
		handling section.	creation 2M
		Syntax:-	



	CREATEORREPLACEPROCEDURE <procedure_name>(<argument>{IN   OUT   IN OUT}OUT }<procedure_name>(<argument>{IN   OUT   IN OUT}OUT }<procedure< pre=""><procedure< pre=""><procedure< pre=""><pre>Variable declarations;</pre>Constant declarations;BEGIN<pre><pre><pre><pre><pre><pre><pre><pre< th=""><th>Execute stored procedure 1M Delete procedure 1M</th></pre<></pre></pre></pre></pre></pre></pre></pre></procedure<></procedure<></procedure<></argument></procedure_name></argument></procedure_name>	Execute stored procedure 1M Delete procedure 1M
	END;	
	Step 2:	
	Executing Stored Procedure:	
	Use EXCE command with help of any application program	
	Ex:	
	EXEC use_test	
	Invoke this procedure from PL/SQL code block	
	DECLARE	
	BEGIN	
	use_test	
	END;	
	<pre>Step 3 : delete stored procedure Syntax : drop procedure <procedure_name>; Ex: drop procedure use_test;</procedure_name></pre>	
b	Describe simple and composite index.	4M



Ans	<ol> <li>Simple index (Single column): An index created on single column of a table is called a Simple Index.</li> <li>Syntax: Create index index_name on <tablename><column name="">;</column></tablename></li> <li>E.g.: Create index on employee (empno);</li> <li>Composite (concatenated): Indexes that contain two or more columns from the same table which are useful for enforcing uniquely identify a row.</li> </ol>	For each type description 1M, Syntax or example 1M
	<pre>Syntax: Create index index_name on <tablename><column_name1, Column_name2&gt;; E.g.: Create index on employee (ename, empno);</column_name1, </tablename></pre>	
C	Consider the following schemas Student(rollno, name, dt_of_birth,telephone) Marks (rollno, sub1_marks, sub2_marks, per) Write SQL queries for the following. i) Display student's rollno, name, and marks of both subjects for all students. ii)Delete all those students records who secured less than 35% iii)Display all the students whose name start with 'A' iv)Update telephone number of student with rollno 101 as 9800010111	4M
Ans	<ul> <li>i) Select Student.rollno, Student.name, marks.sub1_marks, marks.sub2_marks from Student, marks where Student.rollno=marks. Rollno;</li> <li>ii)Delete from Student where rollno=(Select rollno from marks where per&lt;35);</li> <li>iii) Select name from Student where name like 'A%';</li> <li>(OR)</li> <li>Select * from Student where name like 'A%';</li> <li>iv) Update Student set telephone=9800010111 where rollno=101;</li> </ul>	Each correct Query 1M



d	Describe types and causes of failure in database environment.	4M
Ans	Types and causes of Failure in database environment:	Any 4 types
		and cause 1M
	1. Hardware Failure/System crash	each
	There is a hardware malfunction that causes the loss of the content	
	of volatile storage, and brings transaction processing to a halt.	
	The content of non-volatile storage remains intact, and is not	
	corrupted or changed. 2. Software Failure	
	The database software or the operating system may be corrupted or	
	failed to work correctly, that may causes the loss of the content of volatile storage, and results into database failure.	
	3. Media Failure	
	A disk block loses its content as a result of either a head crash or	
	failure during a data-transfer operation.	
	4. Network Failure	
	A problem with network interface card or network connection can	
	cause network failure.	
	5. Transaction Failure	
	i) Logical error: the transaction can no longer continue with its normal	
	execution because of some internal condition, such as wrong input	
	values, data not found, data overflow or resource limit exceeded.	
	ii) System error: A system entered in state like deadlock	
	6.Application software Error:	
	-The problem with software accessing the data from database.	
	-This may cause database failure as data cannot be updated	
	using such application to it.	
	-Logical error in program cause one or more transaction failure.	
	7. Physical disaster	
	The problem caused due to flood, fire, earthquake etc.	
е	Write a PL/SQL code to raise zero_divide exception, in case of	4M
	division of a number by another.	
Ans	DECLARE	Correct syntax
	A number:=20;	2M,
	B number:=0;	~
	C number;	Correct
		logic2M
	dbms_output.put_line('First Num : '  A);	A .1 1 .
	dbms_output.put_line('Second Num : '  B);	Any other logic
	C := A / B;Raise Exception	can be
	dbms_output.put_line(' Result '    C);	considered.
	Result will not be displayed	



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		EXCEPTION WHEN ZERO_DIVIDE THEN dbms_output.put_line(' Trying to Divide by zero :: Error '); END;	
5.		Attempt any Two of the following:	12M
	а	Write SQL statements for following	6M
		<ul> <li>i) Create table student with rollno, name, d-o-b, percentage, assign rollno as primary key.</li> <li>ii) Add new column email in student table.</li> <li>iii) Delete table 'student' with its structure and data.</li> </ul>	
	Ans	i) Create table student with rollno, name, d-o-b, percentage, assign rollno as primary key.	Each query 2M
		<b>Ans :</b> Create table student( rollno number(5) primary key, name varchar2(20), d-o-b date, percentage number(6,2)) ;	
		ii) Add new column email in student table.	
		<b>Ans :</b> Alter table student add email varchar2(30);	
		iii) Delete table 'student' with its structure and data.	
		Ans : Drop table student;	
	b	<ul> <li>a) Consider following schema: employee{empid,empname,designation,salary,deptno} dept { deptno,deptname,location} Write SQL queries for following :</li> <li>i)Find maximum salary for deptno=10; ii Increase salary of all employee by 5% iii)Get the names of all 'Manager' iv) Display deptnames located at 'Pune' and 'Nagpur'.</li> </ul>	6M
	Ans	i)Find maximum salary for deptno=10; Ans:Select max(salary) from employee where deptno=10;	Query i) 1M
		ii) Increase salary of all employee by 5%	Query ii) 2M
		<b>Ans:</b> Update employee set salary=salary+(salary*0.05);	
			Query iii) 1M



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		iii) Get the names of all 'Manager'.	
		Ans: Select empname from employee where designation="Manager";	
		iv) Display deptnames located at 'Pune' and 'Nagpur'.	Query iv) 2M
		<b>Ans:</b> Select deptname from dept where location='Pune' or location='Nagpur';	
	С	Write a PL/SQL code to create a function name square_no to calculate square of number and also have another PL/SQL code to call this function.	6M
	Ans	PL/SQL code for function to calculate square of a number:	
		create or replace function square_no(n in number)	
		return number is sqrno number;	
		begin	PL/SQL code
		$sqrno := n^*n;$	for defining
		return(sqrno);	function : 3M
		end;	
		PL/SQL code to call above function :	
		declare	
		n1 number;	
		sno number;	PL/SQL code
		begin	for calling
		n1 := &n1	above function
		sno := square_no(n1);	: 3M
		dbms output.put line("Number="  n1);	
		dbms_output.put_line("Yunneer =;  sno);	
		end;	
6.		Attempt any Two of the following:	12M
	а	Consider schema 'employee' created by 'user1'	6M
		Write SQL queries for following :	
		i) Grant 'select' and 'insert' permissions to user2.	
		ii) Assign all privileges for the user user3.	
		iii) Remove 'select' permission from user2 for table 'employee'.	
		iv) Grant 'update' permission to user2 and user3	
		v) Remove all permission from user3.	



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	vi) Assign 'resource' permission to user2.	
Ans	i) Grant 'select' and 'insert' permissions to user2.	Each Query
	Ans : grant select, insert on employee to user2;	1M
	ii) Assign all privileges for the user user3.	
	Ans : grant all on employee to user3;	
	iii) Remove 'select' permission from user2 for table 'employee'.	
	Ans : revoke select on employee from user2;	
	iv) Grant 'update' permission to user2 and user3	
	Ans : grant update on employee to user2, user3;	
	v) Remove all permission from user3.	
	Ans : revoke all on employee from user3;	
	vi) Assign 'resource' permission to user2.	
	Ans : grant resource to user2;	
b	Create a trigger which invokes on updation of record on emp table.	6M
Ans	create trigger trigger_update	Note: any
	on emp	example
	after update	which can
	as	execute trigger before
	begin	or after
	Select * from employee;	updation can
	end;	be considered.
	end;	<b>Correct Logic</b>
		3M, Correct syntax 3M
		Syntax 51vi
С	Consider following schema:	<b>6M</b>
	Person {personid,name,address,city,telephone}	



	<ul> <li>i) Create sequence seq-pid with start value 100 and maximum value 120 and increment by 1.</li> <li>Use seq-pid to insert personid into table person.</li> <li>ii) Create view view-person containing details of persons from city "Mumbai" and "Pune"</li> <li>iii) Create synonym syn-person on table person owned by user 'Scott' delete synonym syn-person.</li> </ul>	
Ans	<ul> <li>i) Create sequence seq-pid with start value 100 and maximum value 120 and increment by 1. Use seq-pid to insert personid into table person.</li> <li>Ans: Create sequence seq_pid start with 100 increments by 1 maxvalue 120.</li> <li>Insert into person (personid) values (seq_pid.nextval);</li> <li>ii)Create view view-person containing details of persons from city "Mumbai" and "Pune"</li> <li>Ans: Create view person as select * from person where city='Mumbai' or city='Pune';</li> <li>Or Create view view_peson as select * from persons where city in ('Mumbai', 'Pune');</li> <li>iii) Create synonym syn-person on table person owned by user 'Scott' delete synonym syn-person.</li> <li>Ans: create synonym syn_person;</li> </ul>	Each query 2M