



**Benodigdhede vir hierdie vraestel:**

Multikeusekaarte: ☐

Nie-programmeerbare sakrekenaar: ☒

Grafiekpapier: ☐

Draagbare rekenaar: ☐

Oopboek eksamen: ☐

EKSAMEN:	<b>SEMESTERTOETS 1</b>	KWALIFIKASIE:	<b>B.Ing. R/E</b>
EXAM:	<b>SEMESTER TEST 1</b>	QUALIFICATION:	
MODULEKODE:	<b>REII414</b>	DUUR:	<b>90 minute</b>
MODULE CODE:		DURATION:	<b>90 minutes</b>
MODULEBESKRYWING:	<b>Databasisse en webprog.</b>	MAKS:	<b>60 punte</b>
MODULE DESCRIPTION:	<b>Databases and web programming</b>	MAX:	<b>60 marks</b>
EKSAMINATOR:	<b>AJ Alberts</b>	DATUM:	<b>23-03-2017</b>
EXAMINER:		DATE:	
		TYD:	<b>09:00</b>
MODERATOR:	<b>Prof WC Venter</b>	TIME:	

**Vraag 1 / Question 1**

Beantwoord die volgende vrae:

*Answer the following questions:*

- (a) Wat is die verskil tussen data en inligting?  
*What is the difference between data and information?* (2)  
**Data: rou hoop feite**  
**Inligting: Verwerkte data voorgestel op 'n manier wat op n hoër vlak sin maak**
- (b) Verduidelik hoe u 'n regterlas sou uitvoer indien die databasisstelsel slegs linkerlasse kon uitvoer.  
*Explain how you would perform a right join if the database system could only execute left joins.* (2)  
**Ruil die posisie van die twee tabelle wat gejoin word om.**
- (c) Teken in Kraaivoet EVD-formaat hoe u twee entiteite A en B met 'n baie-tot-baie (M:N) verwantskap tot mekaar in 'n relasionele databasisstelsel sou realiseer.  
*Draw in Crow's Foot ERD format how you would realise two entities with a many-to-many (M:N) relation to each other in a relational database system.* (3)  
**Skep brugentiteit AB waarmee beide A en B 'n een-tot-baie verwantskap het.**
- (d) Lys ses wenslike eienskappe van 'n primêre sleutel.  
*List six desirable properties of a primary key.* (6)  
**Unique, Nonintelligent, No change over time, Preferably single attribute, Preferably numeric, Security compliant**
- (e) Verduidelik hoe 'n natuurlike samevoeging van twee tabelle werk in terme van die cartesiese produk van die tabelle.  
*Explain how a natural join of two tables work in terms of the cartesian product of the tables.* (3)  
**Cartesiese produk is groot tabel en bevat al die moontlike kombinasies, natuurlike join filter almal uit behalwe ekwivalensievoorwaarde in WHERE klousule**

- (f) Hoe verskil 'n tabel in die derde normaalvorm van 'n tabel in eerste normaalvorm?  
*How does a table in the third normal form differ from a table in first normal form?* (2)  
**no partial dependencies, no transitive dependencies**

Totaal vir Vraag 1/ *Total for Question 1:* **18**

## Vraag 2 / Question 2

Gebruik die volgende besigheidsreëls om 'n Kraaivoet EVD te skep:

- Baie werknemers werk in 'n departement.
- 'n Werknemer werk in slegs een departement.
- 'n Afdeling bedryf baie departemente.
- 'n Departement word deur slegs een afdeling bedryf.
- 'n Werknemer kan aan baie projekte toegeken wees.
- Baie werknemers kan aan 'n projek toegeken wees.
- Een werknemer bestuur 'n departement.
- Een werknemer bestuur 'n afdeling.

*Use the following business rules to create a Crow's Foot ERD:*

- *A department employs many employees.*
- *Each employee is employed by only one department.*
- *A division operates many departments.*
- *Each department is operated by only one division.*
- *An employee may be assigned to many projects.*
- *Many employees can be assigned to a project.*
- *One employee manages a department.*
- *One employee runs a division.*

**DEPARTMENT : EMPLOYEE - 1 : M (DEPT\_CODE) (works in)**

**DEPARTMENT : EMPLOYEE - 1 : 1 (EMP\_NUM) (manages)**

**DIVISION : EMPLOYEE - 1 : 1 (EMP\_NUM) (manages)**

**DIVISION : DEPARTMENT - 1 : M**

**EMPLOYEE : PROJASSIGN - 1 : M**

**PROJECT : PROJASSIGN - 1 : M**

Totaal vir Vraag 2/ *Total for Question 2:* **12**

## Vraag 3 / Question 3

Beskou die tabelle CUSTOMER, INVOICE, LINE en PRODUCT en antwoord die vrae wat volg:

*Consider the tables CUSTOMER, INVOICE, LINE and PRODUCT and answer the questions that follow:*

CUSTOMER				
CUS_CODE	CUS_LNAME	CUS_FNAME	CUS_PHONE	CUS_BALANCE
10010	Ramas	Alfred	844-2573	0
10011	Dunne	Leona	894-1238	212.54
10012	Smith	Kathy	894-2285	345.86
10013	Olowski	Paul	894-2180	0
10014	Orlando	Myron	222-1672	0
10015	O'Brian	Amy	442-3381	32.00
10016	Brown	James	297-1228	0
10017	Williams	George	290-2556	0
10018	Farriss	Anne	382-7185	216.55
10019	Smith	Olette	297-3809	0

- (a) Skryf 'n SQL stelling wat die LINE tabel sal skep.  
*Write an SQL statement that will create the LINE table.* (5)  
**create table LINE( INV\_NUMBER int, LINE\_NUMBER int, P\_CODE char(8),  
 LINE\_UNITS int, LINE\_PRICE double, LINE\_TOTAL double primary key(INV\_NUMBER,  
 LINE\_NUMBER)**

### INVOICE

INV_NUMBER	CUS_CODE	INV_DATE	INV_SUBTOTAL	INV_TAX	INV_TOTAL
1001	10014	1/16/2017	24.9	1.99	26.89
1002	10011	1/16/2017	9.98	0.8	10.78
1003	10012	1/16/2017	153.85	12.31	166.16
1004	10011	1/17/2017	34.97	2.8	37.77
1005	10018	1/17/2017	70.44	5.64	76.08
1006	10018	1/17/2017	400.83	32.07	432.90
1007	10015	1/17/2017	34.97	2.8	37.77
1008	10011	1/17/2017	399.15	31.93	431.08

### LINE

INV_NUMBER	LINE_NUMBER	P_CODE	LINE_UNITS	LINE_PRICE	LINE_TOTAL
1001	1	13-Q2/P2	1	14.99	14.99
1001	2	23109-HB	1	9.95	9.95
1002	1	54778-2T	2	4.99	9.98
1003	1	2238/QPD	1	38.95	38.95
1003	2	1546-QQ2	1	39.95	39.95
1003	3	13-Q2/P2	5	14.99	74.95
1004	1	54778-2T	3	4.99	14.97
1004	2	23109-HB	2	9.95	19.9
1005	1	PVC23DRT	12	5.87	70.44
1006	1	SM-18277	3	6.99	20.97
1006	2	2232/QTY	1	109.92	109.92
1006	3	23109-HB	1	9.95	9.95
1006	4	89-WRE-Q	1	259.99	259.99
1007	1	13-Q2/P2	2	14.99	29.98
1007	2	54778-2T	1	4.99	4.99
1008	1	PVC23DRT	5	5.87	29.35
1008	2	WR3/TT3	3	119.95	359.85
1008	3	23109-HB	1	9.95	9.95

### PRODUCT

P_CODE	P_DESCRIPTOR	P_PRICE	P_DISCOUNT	P_QOH
11QER/31	Power painter, 15 psi., 3-nozzle	109.99	0.00	34
13-Q2/P2	7.25-in. pwr. saw blade	14.99	0.05	3
14-Q1/L3	9.00-in. pwr. saw blade	17.49	0.00	19
1546-QQ2	Hrd. cloth, 1/4-in., 2x50	39.95	0.00	102
1558-QW1	Hrd. cloth, 1/2-in., 3x50	43.99	0.00	332
2232/QTY	B&D jigsaw, 12-in. blade	109.92	0.05	21
2232/QWE	B&D jigsaw, 8-in. blade	99.87	0.05	33
2238/QPD	B&D cordless drill, 1/2-in.	38.95	0.05	2
23109-HB	Claw hammer	9.95	0.10	12
23114-AA	Sledge hammer, 12 lb.	14.4	0.05	4
54778-2T	Rat-tail file, 1/8-in. fine	4.99	0.00	54
89-WRE-Q	Hicut chain saw, 16 in.	259.99	0.05	25
PVC23DRT	PVC pipe, 3.5-in., 8-ft	5.87	0.00	72
SM-18277	1.25-in. metal screw, 25	6.99	0.00	30
SW-23116	2.5-in. wd. screw, 50	8.45	0.00	39
WR3/TT3	Steel matting, 4'x8'x1/6, .5" mesh	119.95	0.16	5

- (b) Skryf 'n SQL stelling wat die produkte met die vyf grootste totale voorraadwaardes sal lys.

*Write an SQL statement that will list the products with the five largest total stock values.* (5)

**select P\_CODE, P\_DESC, sum(P\_PRICE \* P\_QOH) TOTAL from PROD-**

**UCT order by TOTAL desc limit 5**

- (c) Skryf 'n SQL stelling wat die klant wat die meeste individuele items gekoop het sal lys.  
*Write an SQL statement that will list the customer who purchased the most individual items.* **select CUS\_LNAME, CUS\_FNAME, sum(LINE\_UNITS) u from INVOICE i, LINE l, CUSTOMER c where i.INV\_NUMBER = l.INV\_NUMBER and i.CUS\_CODE = c.CUS\_CODE group by c.CUS\_CODE order by u desc limit 1** (7)

- (d) Skryf 'n SQL stelling wat sal bepaal watter geregistreerde klante nog nooit iets gekoop het nie.  
*Write an SQL statement that will determine which registered customers have not purchased anything yet.* **select \* from CUSTOMER where CUS\_CODE not in (select distinct CUS\_CODE from INVOICE);** (6)

- (e) Wat sal die afvoer van die volgende SQL stelling wees? Gee u antwoord in tabelformaat.  
*What will the output of the following SQL statement be? Give your answer in table format.*

```
1 select distinct CUS.FNAME, CUS.LNAME, INVOICE.INV_NUMBER, sum(LINE.TOTAL -
   LINE_UNITS * P.PRICE * (1-P.DISCOUNT)) as DISCOUNT
2 from PRODUCT, LINE, INVOICE, CUSTOMER
3 where INVOICE.CUS_CODE = CUSTOMER.CUS_CODE and INVOICE.INV_NUMBER = LINE.
   INV_NUMBER and PRODUCT.P_CODE = LINE.P_CODE
4 group by INV_NUMBER
5 having DISCOUNT > 15
```

(8)

**Opskrifte: 2, Name: 2, INV\_NUMBERS: 2, DISCOUNT: 2**

**ANTWOORD**

CUS_FNAME	CUS_LNAME	INV_NUMBER	DISCOUNT
Anne	Farriss	1006	19.49
Leona	Dunne	1008	58.57

Totaal vir Vraag 3/ *Total for Question 3*: **31**

**TOTAAL / TOTAL : 61**

**MAKS / MAX : 60**