UNIVERSITY EXAMINATIONS

UNIVERSITEITSEKSAMENS

UNISA university of south africa

COS1521 (495723) May/June 2013
RCO1521 (488718)

COMPUTER SYSTEMS: FUNDAMENTAL CONCEPTS

Duration 2 Hours

100 Marks

EXAMINERS
FIRST MR S SSEMUGABI
SECOND MRS D BECKER

Closed book examination

This paper consists of 30 pages and the instructions for the completion of a mark-reading sheet

Please complete the attendance register on the back page, tear it off and hand it to the invigilator

Instructions:

1 All the questions in this paper are **multiple-choice**
2 There are 80 questions in total Your total mark out of 80 will be converted to a final exam mark out of 100
3 Answer all the questions There is also space for rough work
4 Using a pencil, answer all the questions on the mark-reading sheet
5 Remember to fill in the **unique number** (see top of page) on the mark-reading sheet
6 You are not allowed to use a calculator

EVERYTHING OF THE BEST!

[TURN OVER]

This paper consists of 80 multiple-choice questions.
Each question is worth 1 mark.
Your total out of 80 will be converted to give a final exam mark out of 100.

Mark only one alternative per question with a pencil on the mark-reading sheet.
(Remember to fill in the unique number.)

Section A: Computer background, number systems, data storage, operations on data and logic (27 marks)

QUESTION 1
According to the von Neumann model, which subsystem of a computer serves as a manager of other subsystems?

1 ALU
2 Input/output
3 Control unit
4 Memory

QUESTION 2
Historians divide computer software and hardware into generations In which generation are we currently in?

1 Sixth
2 Third
3 Fifth
4 Fourth

QUESTION 3
Convert $(10101)_2$ to a decimal number

1 $(5)_{10}$
2 $(21)_{10}$
3 $(17)_{10}$
4 $(33)_{10}$

QUESTION 4
Convert $(B3\ 2)_{16}$ to an octal number

1 $(57\ 2)_8$
2 $(57\ 4)_8$
3 $(563\ 2)_8$
4 $(263\ 1)_8$

QUESTION 5

Which one of the following number representations is NOT correct?

1. $(111\ 1)_{10}$
2. $(12\ 01)_2$
3. $(BAD)_{16}$
4. $(417)_8$

QUESTION 6

What is the 2's complement representation of -14 using 5 bits?

1. $(11110)_2$
2. $(10100)_2$
3. $(11001)_2$
4. $(10010)_2$

Rough work

QUESTION 7

Which one of the following statements regarding sign-and-magnitude representation is NOT TRUE?

1 There are two 0s in sign-and-magnitude representation positive zero and negative zero
2 Sign-and-magnitude representation is often used to quantise an analog signal
3 Sign-and-magnitude numbers are subjected to positive and negative overflow
4 Sign-and-magnitude representation is commonly used to store integers

QUESTION 8

Samples are taken if all the values of an audio signal cannot be recorded The number of samples needed to retrieve a replica of the original image depends on _____

1 quantisization
2 encoding
3 the bit depth
4 the maximum number of changes in the analog signal

QUESTION 9

Which one of the following statements regarding the storing of audio or images is NOT TRUE?

1 Vector graphics is suitable for storing the fine details of photographic images
2 Audio storing can involve sampling, quantization and encoding
3. Currently, in 2013, the dominant standard for storing audio is MP3
4 Raster graphics is used when an analog image such as a photograph must be stored

QUESTION 10

If the input is 1010011, and the mask 0011111 is used to unset the input, what is the resulting output?

1 0000000
2 1111111
3 0010011
4 0000011

QUESTION 11

Calculate $(11011)_2 + (1001)_2$

1 $(100100)_2$
2 $(100010)_2$
3 $(111000)_2$
4 $(101100)_2$

Rough work

Apply Boolean algebra rules to determine the simplest forms of the given Boolean functions in the following THREE questions.

QUESTION 12

What is the simplest form of the Boolean function $(xx' + y)'$?

1 y'
2 0
3 $(x + x')y'$
4 1

QUESTION 13

What is the simplest form of the Boolean function $x + xy'z' + xy'z'$?

1 $y'z'$
2 $xy'z'$
3 x
4 $x + xy'z'$

QUESTION 14

What is the simplest form of the Boolean function $(x'y)' + y$?

1 $x + y$
2 $xy' + y$
3 1
4 y

Rough work

Rough work

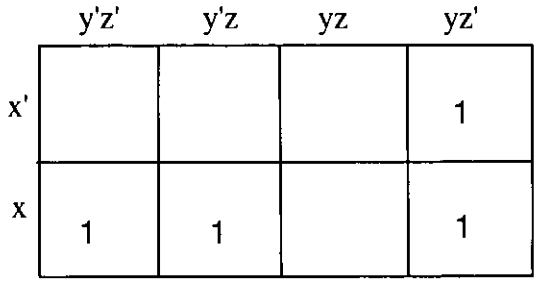
QUESTION 15

Consider the following Boolean function

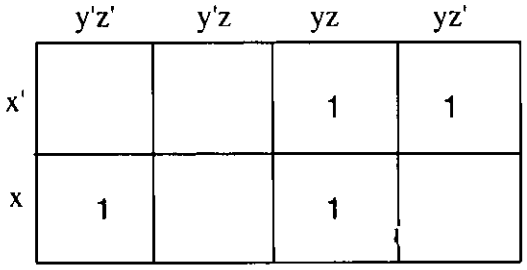
$$F(x,y,z) = m_2 + m_4 + m_5 + m_6$$

Which one of the following four Karnaugh diagrams represents the given function?

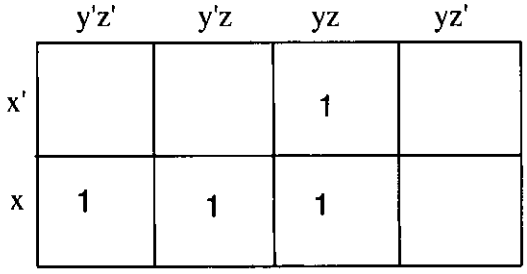
1



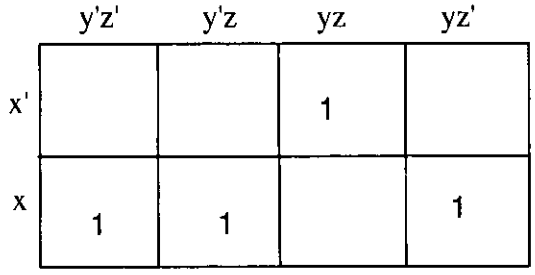
2



3



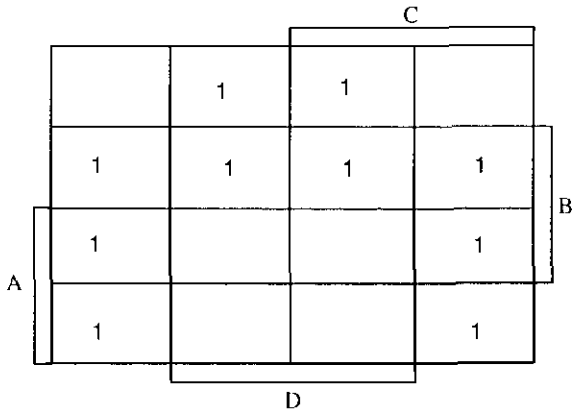
4



Rough work

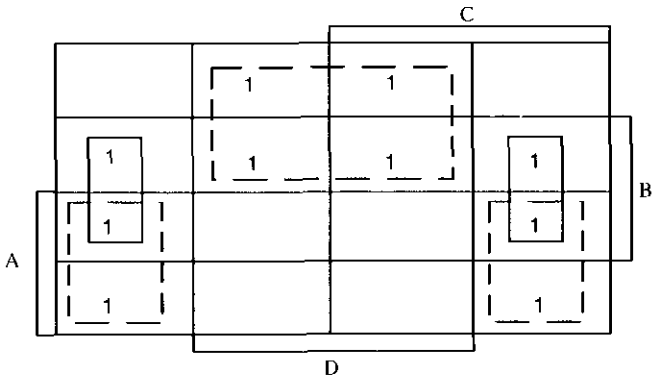
QUESTION 16

Consider the following Karnaugh map

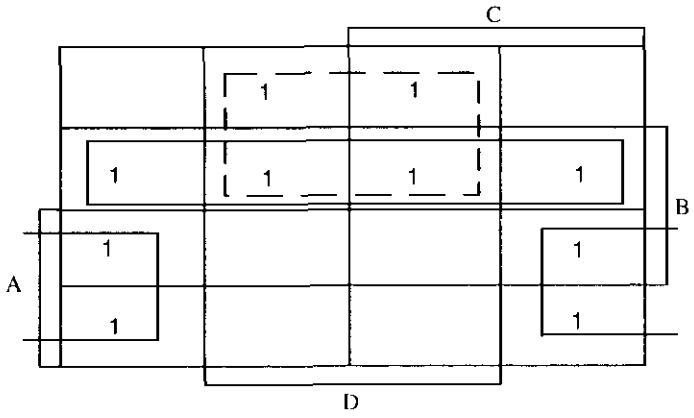


Which one of the following four Karnaugh maps reflects the correct forming of groups?

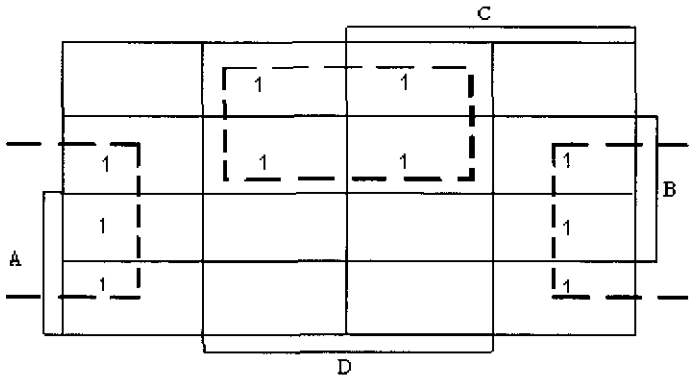
1



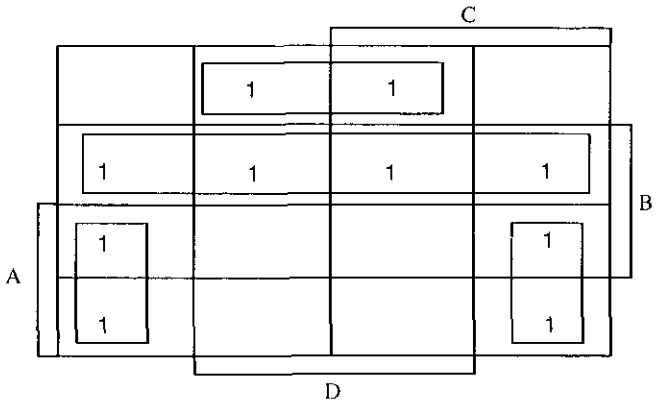
2



3

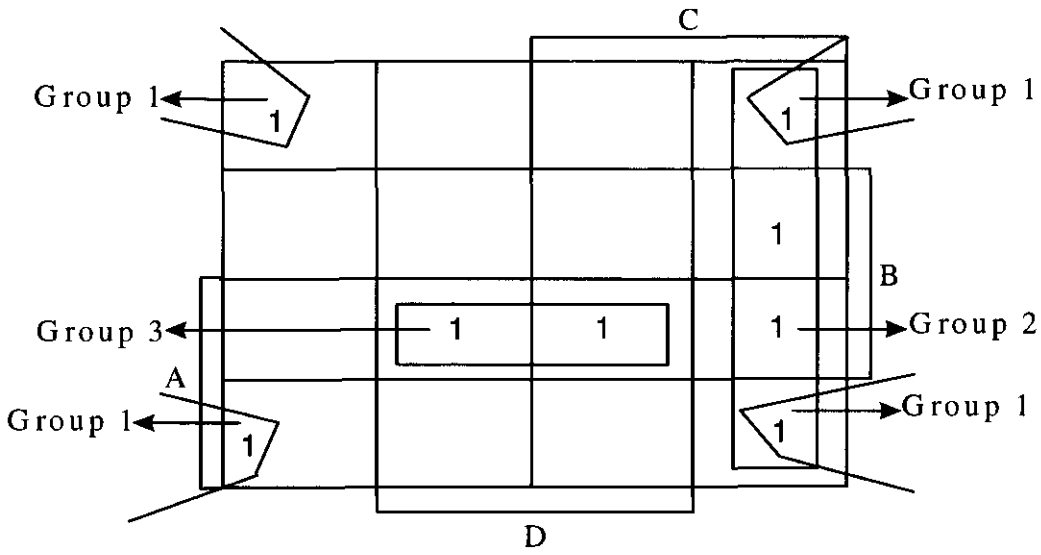


4



Rough work

The next THREE questions refer to the Karnaugh map beneath:



QUESTION 17

Which term represents Group 1?

1 A′B′CD′
2 D′
3 A′
4 B′D′

QUESTION 18

Which term represents Group 2?

1 DC′
2 C′
3 D′
4 CD′

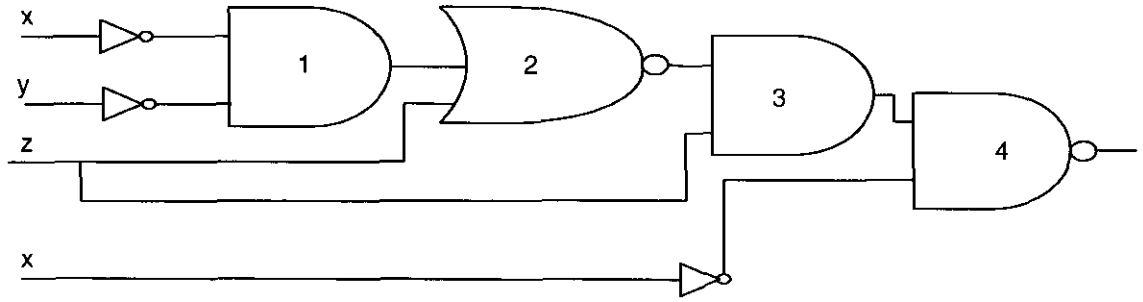
QUESTION 19

Which term represents Group 3?

1 ABD
2 AB
3 D
4 ACD

Rough work

The next FOUR questions refer to the following combinational logic circuit:



QUESTION 20
What is the output of Gate 1?

1 $(x + y)'$
2 $x'y'$
3 $x' + y'$
4 $(xy)'$

QUESTION 21
What is the output of Gate 2?

1 $[(x + y)' z]'$
2 $(xy)' + z'$
3 $(x'y' + z)'$
4 $[(x' + y') z]'$

QUESTION 22
What is the output of Gate 3?

1 $[(x' + y') z]' + z$
2 $[(xy)' + z'] z$
3 $(x'y' + z)' z$
4 $[(x + y)' z]' + z$

QUESTION 23
What is the output of Gate 4?

1 $[(x'y' + z)' z]' x'$
2 $[(x'y' + z)' z x']'$
3 $[[(x' + y') z]' + z + x']'$
4 $[(x + y)' z]' + z + x'$

Rough work

Consider the following scenario:

Three people are looking for trees in the country side They see the following trees

Person A *willows* & fever trees, **Person B** willows & stinkwoods, **Person C** milkberry trees & zebrawoods

When a person sees two kinds of tree (as mentioned above), the output is 1 For example, if A = 1, B = 1 and C = 0, Person A sees willows and fever trees, and Person B sees willows and stinkwoods, so the group of three persons spots only 3 different kinds of tree

A Boolean function F(A,B,C) outputs a 1 if a group of three persons spots more than 3 different kinds of tree

Different combination inputs for A, B and C are given in the tables in the following FOUR questions. Which alternative shows the correct outputs for F in EACH of the following FOUR questions?

QUESTION 24

			Alternative 1	Alternative 2	Alternative 3	Alternative 4
A	**B**	**C**	**F**	**F**	**F**	**F**
0	0	0	0	1	0	1
0	0	1	0	1	1	0

QUESTION 25

			Alternative 1	Alternative 2	Alternative 3	Alternative 4
A	**B**	**C**	**F**	**F**	**F**	**F**
0	1	0	0	1	0	1
0	1	1	0	1	1	0

QUESTION 26

			Alternative 1	Alternative 2	Alternative 3	Alternative 4
A	**B**	**C**	**F**	**F**	**F**	**F**
1	0	0	0	1	0	1
1	0	1	0	1	1	0

QUESTION 27

			Alternative 1	Alternative 2	Alternative 3	Alternative 4
A	**B**	**C**	**F**	**F**	**F**	**F**
1	1	0	0	1	0	1
1	1	1	0	1	1	0

Rough work

Section B: Computer systems, organisation and networks (18 marks)

QUESTION 28

The ALU performs three types of operation on data. Under which type of operation do the NOT, AND, OR and XOR operations fall?

1 Logic
2 Only shift
3 Only arithmetic
4 Shift and arithmetic

QUESTION 29

What is the third step in the procedure when the CPU needs to access a word in main memory?

1 The CPU checks the cache
2 The CPU checks the registers
3 The CPU accesses the registers and copies the word
4 The CPU accesses the cache and copies the word

QUESTION 30

According to F & M, in which categories do storage devices fall?

1 Only volatile and magnetic
2 Only optical and volatile
3 Only magnetic and optical
4 Magnetic, optical and volatile

QUESTION 31

A computer uses memory-mapped I/O addressing. The address bus uses 6 lines (6 bits). If memory is made up of 80 words, how many four-register controllers can be accessed by the computer?

1 4
2 8
3 16
4 60

QUESTION 32

In the fetch stage of the machine cycle used by the CPU, _____

1 instructions are decoded by the control unit
2 the contents of two input registers are added
3 the address of the instruction to be copied is held in the program counter register
4 the task order is sent to a component in the CPU

QUESTION 33

Which one of the following statements describes a property of RISC computer architecture?

1 A small set of instructions do a minimum number of simple operations
2 A complex instruction is transformed into a set of simple operations and then executed by the CPU
3 It is easier than other designs because there is a single instruction for both simple and complex tasks
4 Micromemory holds the set of operations for each complex instruction in the instruction set

QUESTION 34

There are four basic network topologies Which network topology has the following advantage and disadvantage?

Advantage Each connection can carry its own data load

Disadvantage A large amount of cabling and number of input/output ports required

1 Mesh
2 Star
3 Bus
4 Ring

QUESTION 35

Which of the following is a form of a complex network operated by a service provider?

1 A backbone
2 A LAN
3 A hub
4 A workstation

QUESTION 36

According to F & M, how many layers does the TCP/IP protocol suite have?

1 3
2 4
3 5
4 6

QUESTION 37

Transport layer protocols have been designed for the TCP/IP protocol suite Which one of the following statements regarding the user datagram protocol (UDP) is NOT TRUE?

1 It is also known as a connection protocol
2 It is one of the three transport layer protocol
3 It simple and fast
4 It does not provide a logical connection between packets belonging to a single message

QUESTION 38

There are several layers in a TCP/IP protocol suite What is the physical layer responsible for?

1 Provision of services to the users
2 Node-to-node delivery of frames
3 The movements of individual bits from one node to the next
4 The logical delivery of a message between client and server processes

QUESTION 39

Documents on the WWW can be grouped into categories Which type of document is created by a web server whenever a browser requests a document?

1 Static
2 Dynamic
3 Active
4 Hanging

QUESTION 40

Which one of the following statements regarding the evolution of computer operating systems and hardware is NOT TRUE?

1 Batch operating systems were designed in the 1950s to control mainframe computers
2 In the 1950s computers used punched cards for input
3 Multiprogramming and time-sharing required the operating system to do scheduling
4 Parallel operating systems required one CPU on one computer when they were first used

QUESTION 41

An operating system (OS) can be programmed in such way that its higher layers can be changed without affecting its lower layers This property refers to the _____ of the OS

1 extensibility
2 reliability
3 compatibility
4 portability

QUESTION 42

In multiprogramming, more than one program is in memory at the same time Which one of the following is NOT a memory management technique during multiprogramming?

1 Demand partitioning
2 Demand segmentation
3 Partitioning
4 Demand paging

QUESTION 43

In paging, the memory is divided into equally-sized sections called _____

1 segments
2 threads
3 frames
4 pages

QUESTION 44

Modern operating systems use three different terms that refer to a set of instructions program, job and process Which of the following states are applicable to a *process*?

1 Ready, running and terminate
2 Waiting, running and terminate
3 Hold, ready and running
4 Ready, waiting and running

QUESTION 45

The operating system synchronises different processes with different resources but a deadlock can occur There are four necessary conditions for a deadlock to occur Which of the following is the correct description of the 'NO PREEMPTION' condition?

1 The operating system cannot temporarily relocate a resource
2 Only one process can hold a resource
3 A process holds a resource even though it cannot use it until other resources are available
4 All processes and resources involved form a loop

Section C: Computer algorithms, programming and software development

(18 marks)

QUESTION 46

A list contains the following elements

7 10 17 19 35 40 48 69 76 81 83 98 110

At the beginning, first = 1, mid = 7 and last = 13 What are the values of first, mid and last respectively after two more iterations of the binary search algorithm if the goal is 35?

1 1, 3, 6
2 1, 7, 13
3 4, 5, 6
4 7, 10, 13

QUESTION 47

Suppose a list contains the following elements

30 34 44 21 63 15 89

What is the order of the elements in the list after three passes if selection sort is used?

1 15 21 44 34 63 30 89
2 15 30 21 34 44 63 89
3 15 21 30 34 63 44 89
4 15 21 30 34 44 63 89

QUESTION 48

Certain constructs are needed for a structured program. Which of the following is a construct that tests a condition?

1 Selection
2 Diversion
3 Sequence
4 Repetition

QUESTION 49

Which one of the following statements regarding search algorithms is TRUE?

1 A sequential search is usually used for big lists
2 A sequential search is generally very slow
3 A binary search requires the list to be unsorted
4 A binary search starts at the beginning of the list

QUESTION 50

An English-language-like representation of a step-by-step solution that expresses a logical solution to a particular problem of interest is best described as _____

1 a process
2 an algorithm
3 a program code
4 a pseudocode

QUESTION 51
Which one of the following is NOT TRUE about subalgorithms?

1 They are more difficult to understand than the main algorithm
2 They are subunits of main algorithms
3 They are can be called many times by the main algorithm
4 They can be broken down into other subalgorithms

QUESTION 52
The only language understood by computer hardware is _____ language

1 scientific
2 natural
3 machine
4 mnemonic

QUESTION 53
The two methods used in computer translation are _____

1 decoding and interpretation
2 interpretation and encoding
3 compilation and encoding
4 compilation and interpretation

QUESTION 54
The two methods that are used for translating a program to machine language both follow the same translation process What is the FIRST step in the process?

1 Syntax analysis
2 Semantic analysis
3 Code generation
4 Lexical analysis

QUESTION 55
In which two forms can a final program in Java be?

1 An application or an applet
2 A function or a procedure
3 A procedure or an applet
4 An application or a function

QUESTION 56

What name is given to procedures in the object-oriented paradigm?

1 Algorithms
2 Actors
3 Subroutines
4 Methods

QUESTION 57

Which programming language paradigm is based on deduction?

1 Functional
2 Procedural
3 Declarative
4 Object-oriented

QUESTION 58

The waterfall model is one of the most common models for the development process of the software lifecycle Which of the following would you consider to be the THIRD stage of the model?

1 Design
2 Implementation
3 Analysis
4 Testing

QUESTION 59

A number of diagrams can be used during the analysis phase of object-oriented analysis process in software development Which of the following will NOT be used during this phase?

1 State diagram
2 Class diagram
3 State chart
4 Use case diagram

QUESTION 60

What name refers to the process of breaking down a whole task into smaller tasks during the design phase of the software life cycle?

1 Modularity
2 Polymorphism
3 Subpackaging
4 Encapsulation

QUESTION 61
Which one of the following statements regarding modules in a software system is NOT TRUE?

1 Loosely coupled modules are more likely to be reused
2 Cohesion between modules must be minimised
3 Cohesion is a measure of how closely the modules are related
4 Coupling is a measure of how tightly two modules are bound to each other

QUESTION 62
Maintainability is one of the measures for software quality Maintainability includes_____

1 reusability, interoperability and portability
2 changeability, usability and correctability
3 changeability, flexibility and testability
4 reliability, timeliness and flexibility

QUESTION 63
Documentation is needed for proper and efficient usage and maintenance of software System documentation_____

1 defines the software itself
2 describes the installation and the servicing of the software
3 can be a very powerful marketing tool
4 shows how to use the software step by step

Section D: Computer data and file structure, and databases (17 marks)

QUESTION 64
Which of the given options is described by the following two statements?

- It represents a set of data items that share a specific relationship
- It uses a collection of related variables that can be accessed individually or as a whole

1 Data structure
2 Method
3 Program
4 Object

QUESTION 65
Which of the following best describes what an array is?

1 A collection of fields that are all related to one object
2 A sequenced collection of elements, normally of the same data type
3 A collection of elements called fields
4 A collection of elements called records

QUESTION 66
Which of the following operations CANNOT be defined on array structures?

1 Deletion
2 Retrieval
3 Transversal
4 Append

QUESTION 67
Given a node to insert into a linked list, if the predecessor node has a null pointer, then you are adding to _____

1 the beginning of the list or empty list
2 body of the list or end of the list
3 an empty list or end of the list
4 the beginning of the list or end of the list

QUESTION 68
What is the first step in traversing a linked list?

1 Checking for the last node
2 Creating a walking pointer to the first node
3 Allocating a pointer to a node
4 Setting up a loop

QUESTION 69
Which one of the following statements regarding linked lists is NOT TRUE?

1 A linked list is a suitable structure if a large number of insertions and deletions are needed
2 A linked list can grow infinitely and shrink to an empty list
3 The name of a linked list is the name of the head pointer that points to the first node of the list
4 A linked list is inefficient for storing data that needs a lot of insertions

QUESTION 70
Which one of the following statements regarding sequential files is NOT TRUE?

1 To access a file sequentially, a sequential file structure can be used
2 There are only three files associated with an update program the old and new master files, and the transaction file
3 All the files need to be sorted on the same key to make the updating process efficient
4 A loop is used to read and process records one by one

QUESTION 71
A hashed file is a random access file in which a _____ maps a key to an address

1 function
2 transaction
3 relation
4 connection

QUESTION 72
When a collision occurs, the address produced by a hashing algorithm, is called the _____ address

1 home
2 synonym
3 linked
4 prime

QUESTION 73
Which one of the following collision resolution mechanisms uses a node that can accommodate more than one record?

1 Open addressing
2 Division remainder hashing
3 Bucket hashing
4 Linked list resolution

QUESTION 74
Which one of the following statements regarding directories is NOT TRUE?

1 A directory performs the same function as a folder in a filing cabinet
2 In most operating systems a directory is represented as a special type of file that holds information about other files
3 Directories are provided by most operating systems for organising files
4 In most operating systems directories are organised like a tree abstract data type in which each directory has a parent directory

QUESTION 75
Which level of a database defines the logical view of the data?

1 architectural
2 internal
3 conceptual
4 external

QUESTION 76
Which one of the following is a database model that has become obsolete?

1 Object-oriented
2 Distributed
3 Relational
4 Network

QUESTION 77
What name is given to a record of relation (table)?

1 Attribute
2 Tuple
3 Field
4 Cardinality

QUESTION 78
Which query language is often used in relational databases?

1 ANSI
2 SQL
3 ISO
4 QRD

QUESTION 79
In a fragmented distributed database, _____

1 each site holds an exact replica of another site
2 objects and their relations are defined
3 data are localised
4 any modification to data stored in one site is repeated exactly at every site

QUESTION 80

Which query language is often used in object-oriented databases?

1 HTML
2 Prolog
3 XML
4 Scheme

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EXAMINATION MARK READING SHEET EKSAMEN-MERKLEESBLAD

PART 1 (GENERAL/ALGEMEEN) DEEL 1

STUDY UNIT e g PSY100-X
STUDIE EENHEID bv PSY100 X

1

PAPER NUMBER
VRAESTELNOMMER

2

INITIALS AND SURNAME
VOORLETTERS EN VAN

3

DATE OF EXAMINATION
DATUM VAN EKSAMEN

4

EXAMINATION CENTRE (E G PRETORIA)
EKSAMENSENTRUM (BV PRETORIA)

5

STUDENT NUMBER
STUDENTENOMMER

6

7

UNIQUE PAPER NO
UNIEKE VRAESTEL NR

8

9

For use by examination invigilator

Vir gebruik deur eksamenopsiener

IMPORTANT

1 USE ONLY AN HB PENCIL TO COMPLETE THIS SHEET
2 MARK LIKE THIS
3 CHECK THAT YOUR INITIALS AND SURNAME HAS BEEN FILLED IN CORRECTLY
4 ENTER YOUR STUDENT NUMBER FROM LEFT TO RIGHT
5 CHECK THAT YOUR STUDENT NUMBER HAS BEEN FILLED IN CORRECTLY
6 CHECK THAT THE UNIQUE NUMBER HAS BEEN FILLED IN CORRECTLY
7 CHECK THAT ONLY ONE ANSWER PER QUESTION HAS BEEN MARKED
8 DO NOT FOLD

BELANGRIK

1 GEBRUIK SLEGS N HB POTLOOD OM HIERDIE BLAD TE VOLTOOI
2 MERK AS VOLG
3 KONTROLEER DAT U VOORLETTERS EN VAN REG INGEVUL IS
4 VUL U STUDENTENOMMER VAN LINKS NA REGS IN
5 KONTROLEER DAT U DIE KORREKTE STUDENTENOMMER VERSTREK HET
6 KONTROLEER DAT DIE UNIEKE NOMMER REG INGEVUL IS
7 MAAK SEKER DAT NET EEN ALTERNATIEF PER VRAAG GEMERK IS
8 MOENIE VOU NIE

PART 2 (ANSWERS/ANTWOORDE) DEEL 2

10

1	c1 c2 c3 c4 c5	36	c1 c2 c3 c4 c5	71	c1 c2 c3 c4 c5	106	c1 c2 c3 c4 c5
2	c1 c2 c3 c4 c5	37	c1 c2 c3 c4 c5	72	c1 c2 c3 c4 c5	107	c1 c2 c3 c4 c5
3	c1 c2 c3 c4 c5	38	c1 c2 c3 c4 c5	73	c1 c2 c3 c4 c5	108	c1 c2 c3 c4 c5
4	c1 c2 c3 c4 c5	39	c1 c2 c3 c4 c5	74	c1 c2 c3 c4 c5	109	c1 c2 c3 c4 c5
5	c1 c2 c3 c4 c5	40	c1 c2 c3 c4 c5	75	c1 c2 c3 c4 c5	110	c1 c2 c3 c4 c5
6	c1 c2 c3 c4 c5	41	c1 c2 c3 c4 c5	76	c1 c2 c3 c4 c5	111	c1 c2 c3 c4 c5
7	c1 c2 c3 c4 c5	42	c1 c2 c3 c4 c5	77	c1 c2 c3 c4 c5	112	c1 c2 c3 c4 c5
8	c1 c2 c3 c4 c5	43	c1 c2 c3 c4 c5	78	c1 c2 c3 c4 c5	113	c1 c2 c3 c4 c5
9	c1 c2 c3 c4 c5	44	c1 c2 c3 c4 c5	79	c1 c2 c3 c4 c5	114	c1 c2 c3 c4 c5
10	c1 c2 c3 c4 c5	45	c1 c2 c3 c4 c5	80	c1 c2 c3 c4 c5	115	c1 c2 c3 c4 c5
11	c1 c2 c3 c4 c5	46	c1 c2 c3 c4 c5	81	c1 c2 c3 c4 c5	116	c1 c2 c3 c4 c5
12	c1 c2 c3 c4 c5	47	c1 c2 c3 c4 c5	82	c1 c2 c3 c4 c5	117	c1 c2 c3 c4 c5
13	c1 c2 c3 c4 c5	48	c1 c2 c3 c4 c5	83	c1 c2 c3 c4 c5	118	c1 c2 c3 c4 c5
14	c1 c2 c3 c4 c5	49	c1 c2 c3 c4 c5	84	c1 c2 c3 c4 c5	119	c1 c2 c3 c4 c5
15	c1 c2 c3 c4 c5	50	c1 c2 c3 c4 c5	85	c1 c2 c3 c4 c5	120	c1 c2 c3 c4 c5
16	c1 c2 c3 c4 c5	51	c1 c2 c3 c4 c5	86	c1 c2 c3 c4 c5	121	c1 c2 c3 c4 c5
17	c1 c2 c3 c4 c5	52	c1 c2 c3 c4 c5	87	c1 c2 c3 c4 c5	122	c1 c2 c3 c4 c5
18	c1 c2 c3 c4 c5	53	c1 c2 c3 c4 c5	88	c1 c2 c3 c4 c5	123	c1 c2 c3 c4 c5
19	c1 c2 c3 c4 c5	54	c1 c2 c3 c4 c5	89	c1 c2 c3 c4 c5	124	c1 c2 c3 c4 c5
20	c1 c2 c3 c4 c5	55	c1 c2 c3 c4 c5	90	c1 c2 c3 c4 c5	125	c1 c2 c3 c4 c5
21	c1 c2 c3 c4 c5	56	c1 c2 c3 c4 c5	91	c1 c2 c3 c4 c5	126	c1 c2 c3 c4 c5
22	c1 c2 c3 c4 c5	57	c1 c2 c3 c4 c5	92	c1 c2 c3 c4 c5	127	c1 c2 c3 c4 c5
23	c1 c2 c3 c4 c5	58	c1 c2 c3 c4 c5	93	c1 c2 c3 c4 c5	128	c1 c2 c3 c4 c5
24	c1 c2 c3 c4 c5	59	c1 c2 c3 c4 c5	94	c1 c2 c3 c4 c5	129	c1 c2 c3 c4 c5
25	c1 c2 c3 c4 c5	60	c1 c2 c3 c4 c5	95	c1 c2 c3 c4 c5	130	c1 c2 c3 c4 c5
26	c1 c2 c3 c4 c5	61	c1 c2 c3 c4 c5	96	c1 c2 c3 c4 c5	131	c1 c2 c3 c4 c5
27	c1 c2 c3 c4 c5	62	c1 c2 c3 c4 c5	97	c1 c2 c3 c4 c5	132	c1 c2 c3 c4 c5
28	c1 c2 c3 c4 c5	63	c1 c2 c3 c4 c5	98	c1 c2 c3 c4 c5	133	c1 c2 c3 c4 c5
29	c1 c2 c3 c4 c5	64	c1 c2 c3 c4 c5	99	c1 c2 c3 c4 c5	134	c1 c2 c3 c4 c5
30	c1 c2 c3 c4 c5	65	c1 c2 c3 c4 c5	100	c1 c2 c3 c4 c5	135	c1 c2 c3 c4 c5
31	c1 c2 c3 c4 c5	66	c1 c2 c3 c4 c5	101	c1 c2 c3 c4 c5	136	c1 c2 c3 c4 c5
32	c1 c2 c3 c4 c5	67	c1 c2 c3 c4 c5	102	c1 c2 c3 c4 c5	137	c1 c2 c3 c4 c5
33	c1 c2 c3 c4 c5	68	c1 c2 c3 c4 c5	103	c1 c2 c3 c4 c5	138	c1 c2 c3 c4 c5
34	c1 c2 c3 c4 c5	69	c1 c2 c3 c4 c5	104	c1 c2 c3 c4 c5	139	c1 c2 c3 c4 c5
35	c1 c2 c3 c4 c5	70	c1 c2 c3 c4 c5	105	c1 c2 c3 c4 c5	140	c1 c2 c3 c4 c5