UNIVERSITY EXAMINATIONS

UNIVERSITEITSEKSAMENS

UNISA university of south africa

COS1521 (495887)
COS113W (470604)
RCO1521 (468054)

May/June 2011

COMPUTER SYSTEMS: FUNDAMENTAL CONCEPTS

Duration 2 Hours

100 Marks

EXAMINERS
FIRST MR S SSEMUGABI
SECOND MS D BECKER

This paper consists of 31 pages and the instructions for the completion of a mark-reading sheet

Please complete the attendance register on the back page, tear off and hand 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 Answer all the questions on the mark-reading sheet by using a pencil
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!

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

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

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 memory
4 control unit

QUESTION 2
Historians have since 1950 divided computer software and hardware into generations In which generation are we currently in (now in 2011)?

1 second
2 third
3 fourth
4 fifth

QUESTION 3
Convert $(41)_{10}$ to a hexadecimal number

1 $(29)_{16}$
2 $(92)_{16}$
3 $(2A)_{16}$
4 $(28)_{16}$

QUESTION 4
Convert $(1111\ 1)_2$ to an octal number

1 $(15\ 1)_8$
2 $(15\ 4)_8$
3 $(17\ 4)_8$
4 $(13\ 2)_8$

QUESTION 5

What is the normalised form of $(111\ 1101)_2$?

1 $(1\ 111101)_2 \times (2^{-2})_{10}$
2 $(1\ 111101)_2 \times (2^{2})_{10}$
3 $(1111101)_2 \times (2^{-4})_{10}$
4 $(1111101)_2 \times (2^{4})_{10}$

QUESTION 6

What is the signed-and-magnitude representation of -5 using 4 bits?

1 $(1101)_2$
2 $(1111)_2$
3 $(0101)_2$
4 $(0111)_2$

Rough work

QUESTION 7

A *n*-bit memory location can store a maximum unsigned integer of _____

1 $2^n + 1$
2 $2^n - 1$
3 2^{n+1}
4 2^{n-1}

QUESTION 8

The following statement regarding audio is NOT TRUE

1 Audio is an entity that changes with time
2 An audio signal is an example of digital data
3 All the values of an analog signal cannot be measured and recorded
4 Samples of an analog signal can be quantisized and encoded

QUESTION 9

Images can be stored in a computer by using the raster graphics technique The following statements regarding this technique are TRUE

A Raster graphics is used when we need to store an analog image such as a photograph
B The scanning rate in image processing is called resolution
C The number of bits used to represent a pixel depends on how a pixel's colour is handled by different encoding techniques
D JPEG (Joint Photographic Experts Group) uses the *True-Color* scheme, and GIF (Graphic Interchange Format) uses the indexed colour scheme
E Raster graphics has two disadvantages the file size is big and rescaling is troublesome

Alternatives

1 Only A, B and C
2 Only B, C and E
3 Only A, B, C and E
4 A, B, C, D and E

QUESTION 10

What is the result of $(1001\ 0111)_2$ XOR $(0101\ 0101)_2$?

1 11010111
2 11000010
3 00101000
4 11111111

Rough work

QUESTION 11

Calculate $(1010\ 11)_2 + (101\ 1)_2$

1 $(10001\ 01)_2$
2 $(10000\ 01)_2$
3 $(111101\ 10)_2$
4 $(10001\ 10)_2$

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 $(xy' + 0)'$?

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

QUESTION 13

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

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

QUESTION 14

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

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

Rough work

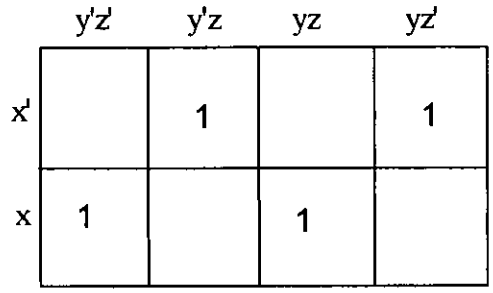
QUESTION 15

Consider the following Boolean function

$$F(x,y,z) = m_1 + m_3 + m_4 + m_6$$

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

1



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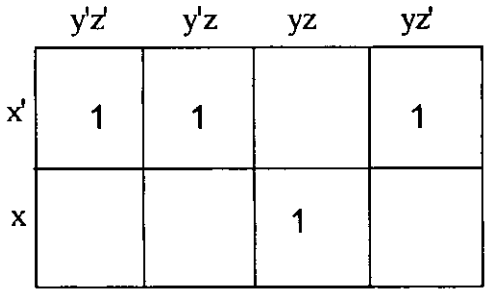

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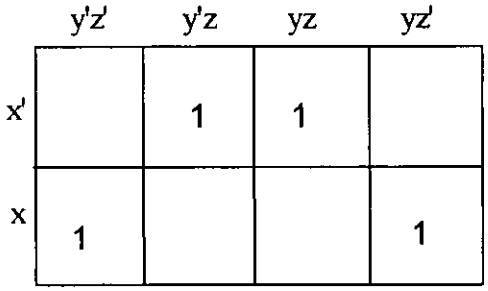

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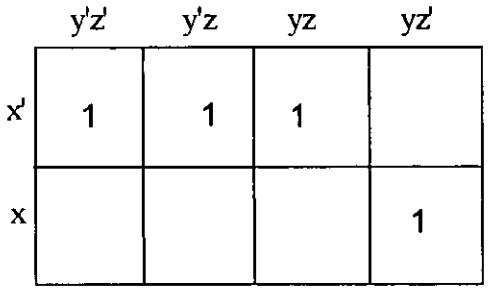
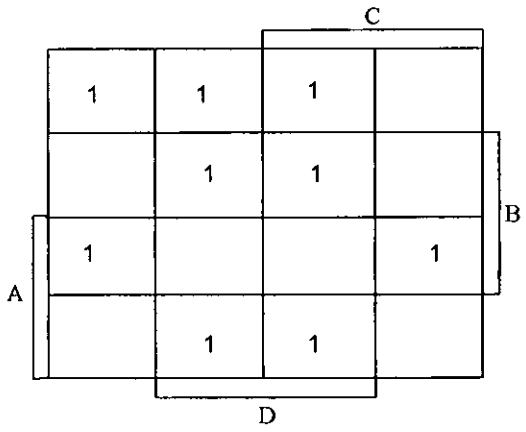


Rough work

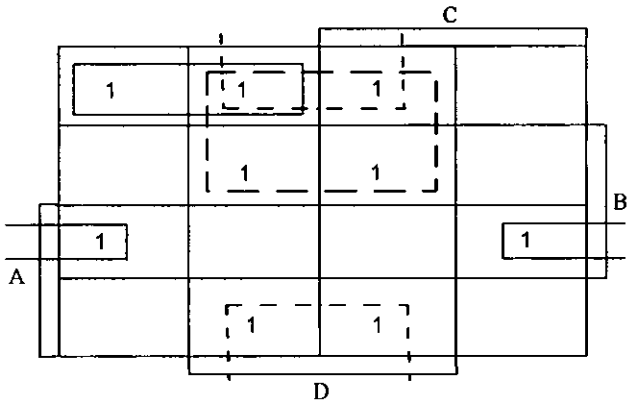
QUESTION 16

Consider the following Karnaugh map



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

1



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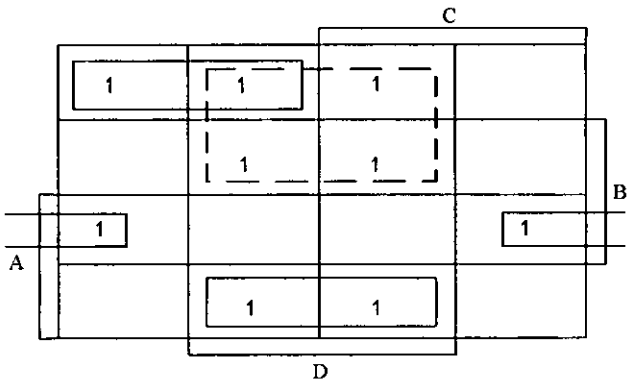

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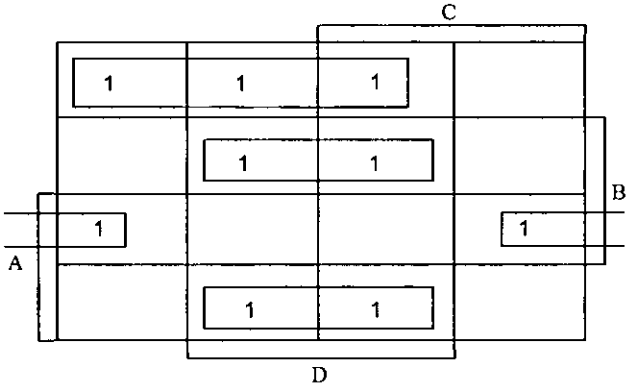

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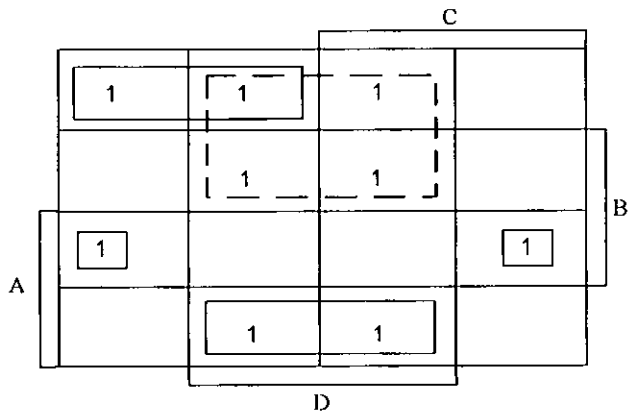
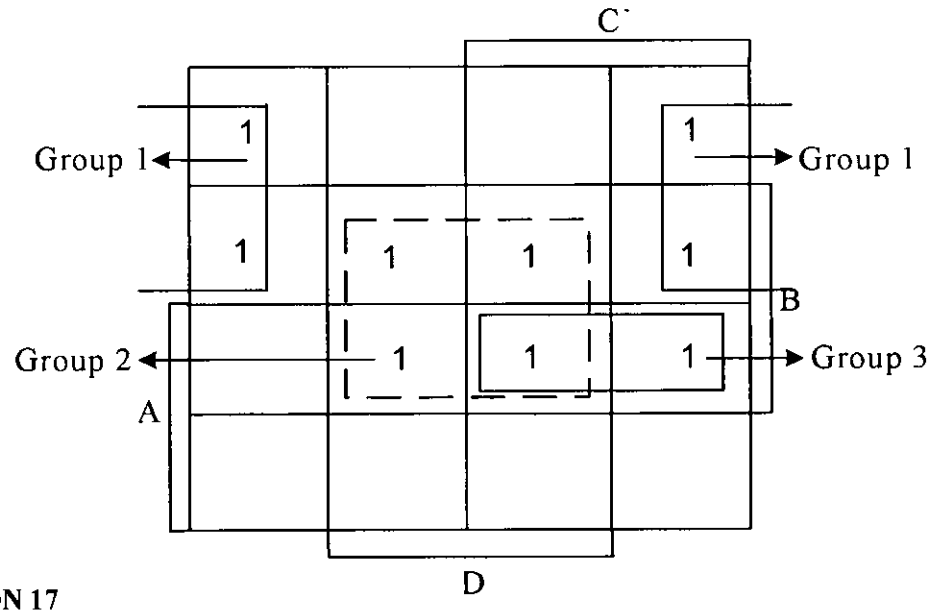


Rough work

The following THREE questions refer to the Karnaugh map below:



QUESTION 17

Which term represents Group 1?

1 D'
2 A'D'
3 A'CD
4 A'

QUESTION 18

Which term represents Group 2?

1 BD
2 CD
3 BA
4 A'D'

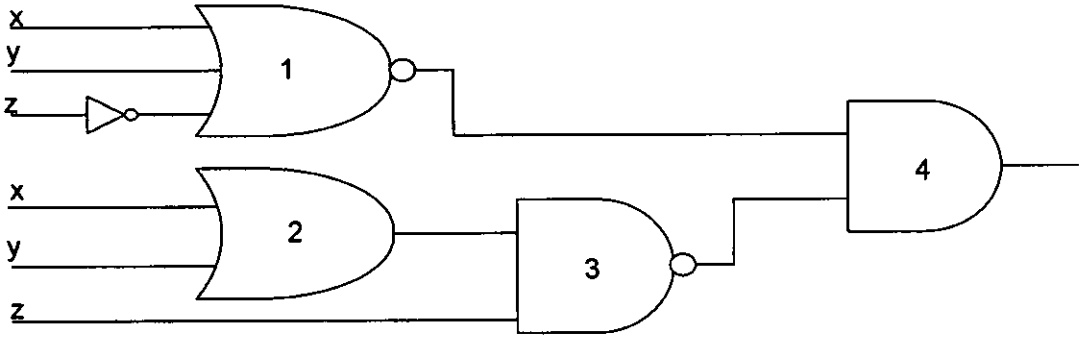
QUESTION 19

Which term represents Group 3?

1 ABD
2 ABC
3 BC
4 ACD

Rough work

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



QUESTION 20
What is the output of Gate 1?

1 (x y z')'
2 (x + y + z')'
3 x + y + z'
4 x + y

QUESTION 21
What is the output of Gate 2?

1 x y
2 x + y
3 (x + y) '
4 x y z

QUESTION 22
What is the output of Gate 3?

1 x + y + z
2 ((x y) z) '
3 ((x + y) + z) '
4 ((x + y) z) '

QUESTION 23
What is the output of Gate 4?

1 (x y z')' + ((x + y) + z)'
2 (x y z')' + ((x + y) z)'
3 (x + y + z')' ((x + y) z)'
4 (x y z')' ((x + y) z)'

Rough work

Consider the following scenario:

A fuction F (A, B, C) accepts a decimal number between 0 and 7 as input and provides an output of 1 if the number is 1 or a prime number

Different combination inputs of binary numbers 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**
1	1	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	1	0	1	0	1
0	1	0	0	1	1	0

QUESTION 26

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

QUESTION 27

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

Rough work

QUESTION 28
In which one of the following subsystems are registers found?

1 Central processing unit (CPU)
2 Arithmetic and logic unit (ALU)
3 Main memory
4 Input / output subsystem

QUESTION 29
A computer has 8 MB (megabytes) of memory How many bits are needed to address a single byte?

1 23 bits
2 46 bits
3 $\log_{23}2^3$ bits
4 $\log_2 3^2$ bits

QUESTION 30
Where is cache memory located?

1 in the CPU
2 in main memory
3 between the CPU and main memory
4 in the control unit

QUESTION 31
Which of the following statements regarding memory is FALSE?

1 Static RAM (SRAM) technology uses traditional flip-flop gates to hold data
2 Dynamic RAM (DRAM) is faster than SRAM
3 RAM is volatile
4 ROM can be accessed randomly

QUESTION 32
Which one of the following is NOT a form of an input/output (I/O) controller?

1 SCSI
2 ALU
3 FireWire
4 USB

QUESTION 33

In the _____ method that is used for synchronising the operation of the CPU with the I/O device, a large block of data can be passed from an I/O devise to memory directly

1 programmed I/O
2 isolated I/O
3 DMA (direct memory access)
4 interrupt-driven I/O

QUESTION 34

In a network, what reliability factor is related to transit time and response time?

1 performance
2 reliability
3 security
4 connectivity

QUESTION 35

What is the most common high-speed LAN (local area network) topology currently in use?

1 Bus
2 Ring
3 Star
4 Mesh

QUESTION 36

A network consists of two or more devices connected through links Dedicated point-to-point links are used in the following topologies

A Ring
B Star
C Mesh
D Bus

Alternatives
1 Only A, B and D
2 Only A, B and C
3 Only B, C and D
4 A, B, C and D

QUESTION 37

A small part of a star LAN with 150 stations is damaged How many stations are affected by this damage?

1 All 150 stations are affected
2 All 150 stations are affected if special provisions are not made
3 Only the stations on the damaged portion of the network are affected
4 No station is affected if special provisions are made

QUESTION 38

What is the MAIN factor that differentiates a wide area network (WAN) from a local area network (LAN)?

1 The topology of the networks
2 The sizes of the geographical areas covered by the networks
3 The number of nodes on the networks
4 The number of computers on the networks

QUESTION 39

There are several layers in a TCP/IP protocol suite The transport layer is responsible for

1 providing service to the user
2 logical delivery of a message between client and server processes
3 the delivery of individual packets from the source host to the destination host
4 the movements of individual bits from one node to the next

QUESTION 40

An operating system is a(n) _____

A program that facilitates the execution of other programs
B interface between the hardware of a computer and the user
C program that facilitates access to hardware resources, but not software resources
D interface between networks

Alternatives

1 Only A and B
2 Only C and D
3 Only A, B and C
4 A, B, C and D

QUESTION 41

An operating system (OS) can be programmed in a modular architecture with several layers such that higher layers can be changed without affecting the lower layers This property refers to the _____ of the OS

1 extensibility
2 reliability
3 compatibility
4 portability

QUESTION 42

During _____, more than one program can be in memory at the same time and executed concurrently

1 monoprogramming
2 batch processing
3 multiprogramming
4 multiprocessing

QUESTION 43

Which of the following techniques belong to the swapping category of memory management?

A demand paging
B partitioning
C demand segmentation
D paging

Alternatives
1 A and B
2 A and C
3 A and D
4 B and C

QUESTION 44

Modern operating systems use three different terms that refer to a set of instructions program, job and process In which of the following possible states can a process be?

A hold
B terminated
C ready
D waiting
E running

Alternatives
1 Only A and B
2 Only C, D and E
3 Only B, C and D
4 A, B, C, D and E

QUESTION 45

A _____ occurs when an operating system does not put resource restrictions on processes

1 starvation
2 deadlock
3 queue
4 delay

QUESTION 46

A list contains the following elements

3 7 8 17 23 42 47 78 99 107 130

At the beginning, first = 1, mid = 6 and last = 11 What are the values of first, mid and last respectively after another (one) iteration of the binary search algorithm if the goal is 78?

1 1, 3, 5
2 6, 8, 10
3 7, 8, 9
4 7, 9, 11

QUESTION 47

Suppose a list contains the following elements

47 98 22 13 93 8

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

1 8 13 22 47 98 93
2 8 13 22 47 93 98
3 8 13 22 98 93 47
4 8 13 22 93 98 47

QUESTION 48

Which of the following are basic algorithms used in computer programs?

A Searching
B Sorting
C Repetition
D Looping

Alternatives

1 Only A and B
2 Only A, B and D
3 Only B, C and D
4 A, B, C and D

QUESTION 49

Which high-level design tool would be most appropriate to use to show relationship between different modules in an algorithm?

1 A flowchart
2 A structure chart
3 Pseudocode
4 A subalgorithm

QUESTION 50

A sort algorithm is often used in computer programs In _____ sort, the list is divided into two lists, sorted and unsorted, that are separated by an imaginary wall

A bubble
B selection
C insertion

Alternatives
1 Only B
2 Only C
3 Only A and B
4 A, B and C

QUESTION 51

Which one of the following statements regarding an algorithm is NOT TRUE?

1 It is a step-by-step method for solving a problem
2 It is dependent on the computer system
3 It accepts input data
4 It creates output data

QUESTION 52

The only language understood by a computer is _____ language

1 machine
2 assembly
3 English
4 mnemonic

QUESTION 53

Compilation_____

1 translates and executes the source code a line at a time
2 is used in the *first approach* to interpretation
3 translates the whole source program into the object module before executing it
4 is a form of interpretation

QUESTION 54

The two methods that are used for translating a program to machine language both follow the same translation process The table below outlines the steps in this process Arrange the steps in the CORRECT sequence

STEPS	ORDER
semantic analysis	I
syntax analysis	II
code generation	III
lexical analysis	IV

1 I, II, III, IV
2 I, II IV, III
3 III, II, I, IV
4 IV, II, I, III

QUESTION 55

Which one of the following programming paradigm is considered to be imperative?

1 Declarative
2 Functional
3 Procedural
4 Object-oriented

QUESTION 56

Which one of the following programming paradigm deals with active objects?

1 Declarative
2 Functional
3 Procedural
4 Object-oriented

QUESTION 57

In the Scheme version of LISP, if S = (14 20 55 77 87 109 200 301), then (car (cdr (cdr (cdr S)))) would give a result of

1 14
2 55
3 77
4 87

QUESTION 58
What is the first stage of the waterfall model in the software development process?

1 Observation
2 Analysis
3 Testing
4 Implementation

QUESTION 59
Which of the following statements regarding the analysis phase of the software life cycle are NOT TRUE?

A A specification document is produced that shows what the software will do without specifying how it will be done
B In this phase it must be known what type of programming language will be used in the implementation phase
C Data flow diagrams, entity-relationship diagrams and state diagrams are modelling tools that can be used in this phase
D A use-case diagram is a modelling tool that can be used in this phase to show how users communicate with the system

Alternatives
1 Only A and B
2 Only C and D
3 Only A, B and C
4 A, B, C and D

QUESTION 60
When considering software quality, maintainability includes

A Changeability
B Flexibility
C Portability
D Testability
E Correctability

Alternatives
1 Only A and D
2 Only A, C and D
3 Only A, B, D and E
4 A. B, C, D and E

QUESTION 61

_____ between modules in a software system must be minimised

1 Cohesion
2 Coupling
3 Modularity
4 Procedures

QUESTION 62

Basis path testing is a method in which each statement in the software is executed _____

1 only one time
2 more than one time
3 one or more times
4 zero or more times

QUESTION 63

Which one of the following statements regarding documentation in the software lifecycle is NOT TRUE?

1 Service documentation defines how the system should be maintained and updated if necessary
2 System documentation defines software
3 Documentation stops when software is tested
4 Technical documentation describes the installation and servicing of a software system

QUESTION 64

Which one of the following is NOT a data structure?

1 Index
2 Array
3 Record
4 Linked list

QUESTION 65

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 only one-dimensional
4 a collection of elements called fields

QUESTION 66

Which of the following operations can be defined on an array?

A Searching
B Insertion
C Retrieval
D Deletion

Alternatives

1 Only A and B
2 Only A, B and D
3 Only A, B and C
4 A, B, C and D

QUESTION 67

Which algorithm must be applied to a linked list before an item is inserted into it?

1 Searching
2 Deletion
3 Transversal
4 Retrieval

QUESTION 68

How many pointers are used when trying to find an element in a linked list?

1 0
2 1
3 2
4 3

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 The same operations defined for an array can be applied to a linked list
3 A linked list can grow infinitely and shrink to an empty list
4 The name of a linked list is the name of the head pointer that points to the last node of the list

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

1 There are four files associated with an update program the old and new master files, transaction file, and error report file
2 The new master file contains changes to be applied to the old master 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 transaction
2 relation
3 function
4 connection

QUESTION 72
Which one of the following is NOT a hashing method for hashed files?

1 Modulo division hashing
2 Direct hashing
3 Indirect hashing
4 Digital extraction hashing

QUESTION 73
_____ uses a node that can accommodate more than one record

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

QUESTION 74
Which type of hashing method guarantees that there are no synonyms and collusions?

1 Modulo division hashing
2 Direct hashing
3 Indirect hashing
4 Digital extraction hashing

QUESTION 75

The _____ level of a database defines the logical view of the data

1 conceptual
2 user
3 internal
4 external

QUESTION 76

In which database model can entities be accessed through several paths?

1 Hierarchical
2 Network
3 Relational
4 Distributed

QUESTION 77

The total number of rows in a relation is called the _____ of the relation

1 cardinality
2 degree
3 size
4 depth

QUESTION 78

_____ is a declarative programming language used on relational databases

1 ANSI
2 SQM
3 SQL
4 ISO

QUESTION 79

Which of the following databases are used in a distributed database model?

A Fragmented
B Replicated
C Repeated

Alternatives

1 Only A and B
2 Only A and C
3 Only B and C
4 A, B and C

QUESTION 80

An object-oriented database tries to keep the advantages of a _____ model and at the same time allows the applications to access structured data

1 relational
2 hierarchical
3 network
4 distributed

UNIVERSITY OF SOUTH AFRICA UNISA university of south africa **UNIVERSITEIT VAN SUID-AFRIKA**

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 | | | | | | |

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c9 c9 c9 c9 c9 c9

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

MARK READING SHEET INSTRUCTIONS

Your mark reading sheet is marked by computer and should therefore be filled in thoroughly and correctly

USE ONLY AN HB PENCIL TO COMPLETE YOUR MARK READING SHEET

PLEASE DO NOT FOLD OR DAMAGE YOUR MARK READING SHEET

Consult the illustration of a mark reading sheet on the reverse of this page and follow the instructions step by step when working on your sheet

Instruction numbers ❶ to ❿ refer to spaces on your mark reading sheet which you should fill in as follows

❶ Write your paper code in these eight squares, for instance

P	S	Y	1	0	0	-	X

❷ The paper number pertains only to first-level courses consisting of two papers

WRITE | 0 | 1 | for the first paper and | 0 | 2 | for the second If only one paper, then leave blank

❸ Fill in your initials and surname

❹ Fill in the date of the examination

❺ Fill in the name of the examination centre

❻ WRITE the digits of your student number HORIZONTALLY (from left to right) Begin by filling in the first digit of your student number in the first square on the left, then fill in the other digits, each one in a separate square

❼ In each vertical column mark the digit that corresponds to the digit in your student number as follows [-]

❽ WRITE your unique paper number HORIZONTALLY

NB Your unique paper number appears at the top of your examination paper and consists only of digits (e g 403326)

❾ In each vertical column mark the digit that corresponds to the digit number in your unique paper number as follows [-]

❿ Question numbers 1 to 140 indicate corresponding question numbers in your examination paper The five spaces with digits 1 to 5 next to each question number indicate an alternative answer to each question The spaces of which the number correspond to the answer you have chosen for each question and should be marked as follows [-]

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