

Questions on networks

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1. A. [2]6 9618/31/ m/j/22 © ucles 2022 3 data can be sent over networks using either circuit switching or packet switching. describe both methods of data transmission. include a different advantage and disadvantage for each method. circuit switching

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advantage

disadvantage

packet switching

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advantage

disadvantage

[8]7 9618/31/ m/j/22 © ucles 2022 [turn over 4 reduced instruction set computers (risc) and complex instruction set computers (cisc) are two types of processor. (a) describe what is meant by risc and cisc processors . risc

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..... cisc

..... [4] (b)

identify two differences between risc and cisc processors. 1

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..... 2

..... [2]8

9618/31/ m/j/22 © ucles 2022 5 part of a program's calculations uses the integer variables j, k,

m, n and p. $j = 3$ $k = 2$ $m = 10$ $n = (j + k)/(j - k)$ $p = m * (m - j * k)$ (a) write the reverse polish notation (rpn) for the expression: $(j + k)/(j - k)$

..... [2] (b) (i)

show the changing contents of the stack as the value for p is calculated from its rpn expression: m m j k * - * [4] (ii) describe the main steps in the evaluation of this rpn expression using a stack.

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..... [4]9 9618/31/

m/j/22 © ucles 2022 [turn over (c) state two other uses of a stack. 1

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..... [2] 6 a

virtual machine is used to emulate a new computer system. describe two benefits and one limitation of using a virtual machine for this purpose. benefit 1

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benefit 2

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limitation

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[6]10 9618/31/ m/j/22 © ucles 2022 7 a program is to be written using object-oriented programming (oop) for a shop that sells knitting yarn. there are three types of yarn: acrylic, wool or mix. the following data are stored for each type. • name • colour • batch code • weight • number of balls of yarn in stock (can be edited) • type of yarn the following statements apply to yarn. • acrylic can be soft or not soft. • wool can be lamb, merino or alpaca. • mix contains a percentage of acrylic. each type of yarn has a method that will display all the information about the yarn. (a) complete this class inheritance diagram to show the properties , methods and inheritance . yarn name: string colour: string batchcode: string weight: integer numberballs: integer type: string constructor() editnumberballs() yarninfo() acrylic wool mix

percentage: integer constructor()
yarninfo() constructor()constructor() [5]11
9618/31/ m/j/22 © ucles 2022 [turn over (b) describe what is meant by the terms properties ,
methods and inheritance . properties

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methods
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inheritance
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..... [6]12
9618/31/ m/j/22 © ucles 2022 8 a message is to be sent securely. software uses a key to
encrypt the message before it is sent. (a) (i) give two reasons for using key cryptography. 1

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..... 2
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..... [2] (ii) give
two methods of key cryptography that can be used. 1

..... 2
..... [2] (b) when
there is a secure exchange of key(s), the message is sent. the use of quantum cryptography
is being considered for the secure exchange. (i) state two possible benefits of using quantum
cryptography. 1

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..... 2
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..... [2] (ii) state
two possible drawbacks of using quantum cryptography. 1

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..... 2
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..... instruction
explanation label opcode operand ldm#n load the number n to acc ldd load the contents of
the given address to acc ldi the address to be used is at the given address load the contents
of this second address to acc add add the contents of the given address to the acc sto store
the contents of the acc at the given address : gives a symbolic address to the memory

location with the contents can be used in place of # denotes a denary number, e.g. #123 (a)
the address 500 contains the value 100 and the address 100 contains the value 20. state the
addressing mode and the contents of acc after each instruction has been executed. ldm #500
addressing mode contents of acc
..... ldd 500 addressing mode
..... contents of acc
..... ldi 500 this is produced for each
series of examinations and is freely available to download at
www.cambridgeinternational.org after the live examination series. cambridge assessment
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