

**MARK SCHEME for the May/June 2009 question paper
for the guidance of teachers**

9691 COMPUTING

9691/03

Paper 3 (Written Paper 3), maximum raw mark 90

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- 1** -File/Storage
 -Save to another folder/create folders for different types of message.
 -Replying
 -Can send a reply with address automatically put in
 -Copying/Forwarding/multiple forwarding
 -Make a copy of the message forward it to another/many person
 (using their address/book)/No need to retype the message
 -(Automatic) deletion
 -Remove message from box (after reading it to free up space)/to make space
 -Blocking
 -If message is unsolicited or unwelcome then arrange for provider to block future messages
 from that address.
 -Mark as Read/Unread
 -To ensure message remains in box/for future reference
 -Mark as important/high priority
 -To ensure message does not get ignored.
 -Sorting/Grouping
 -According to time received/sender/subject/...
 (Up to 2 per type, max 4 types, max 8) [8]
- 2 (a) (i)** -Data and methods are kept together/Data can only be accessed using the methods
 attached to it. [1]
- (ii)** -Computer told facts and rules and then manipulates them to provide answers to
 queries. [1]
- (b) (i)** -Also known as top-down design
 -Split original problem into smaller parts
 -Continue splitting into smaller and smaller parts until...
 -Each part can be considered to be a single process.
 (1 per -, max 2) [2]
- (ii)** -A procedure/small section of code...
 -which returns a specific value
 -The value is returned whenever the function name appears/acting just like a variable
 name.
 (1 per -, max 2) [2]
- (c) Repeat**
 Compare new value with root value
 -If > root value then follow right subtree
 -Else follow left subtree
 -Until no subtree
 -Insert new value as root of new subtree.
 (1 per -, max 4) (Allow symmetric algorithm) [4]

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- (d) (i) -Used to combine already compiled procedures
 -with compiled program...
 -to create an executable file.
 -Deals with external references.

- (ii) -Copies object code into...
 -(primary) memory ready for execution.
 -Deals with addressing anomalies,
 -particularly relocatable addressing
 (1 per -, max 2 per doty, max 4)

[4]

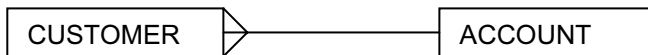
- 3 (a) -Goods offered for sale on electronic communication medium/Internet
 -Buyer orders goods by providing personal information on Internet..
 -including bank account/credit card/other payment details.
 -data transfer must be secure
 -that firm offering goods is genuine
 -that buyer is genuine
 -Goods dispatched to purchaser after payment checked.
 (1 per -, max 3)

[3]

- (b) -Enlarges market...
 -now worldwide rather than just local base.
 -Opens up richer markets where higher prices can be charged.
 -Sells 24/7
 -No need for expensive overheads
 -No need to employ large number of sales staff
 (1 per -, max 4)

[4]

4 (a)

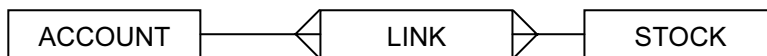


[1]

- (b) (i) Many to many.

[1]

(ii)



Marks:

- Use of Link table with sensible and descriptive name
 -ACCOUNT to LINK is One to Many
 -LINK to STOCK is Many to ONE.
 (1 per -, max 2)

[2]

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- (c) (i) -A unique identifier for a record
-e.g. Customer ID. [2]
- (ii) A field/item, not the primary key, offering an alternative identification for the record (not necessarily unique.)
-e.g. Postal area (to arrange delivery schedules). [2]
- (iii) -A field/item in one table which is a primary key in another table/acts as a link between tables.
-Account number in customer table links records to relevant account in account table. [2]
- (d) -Confidential/Personal data of a sensitive type.
-Will have guaranteed privacy of data to customers.
-Must comply with legislation protecting data.
-Do not want to lose any data or have data maliciously altered/used
Important to maintain data integrity.
-Passwords to get onto system...
-and into different tables...
-in hierarchical fashion...
-giving different access rights/RO or RW...
-and providing different views of the data
-Physical protection by (e.g.) locking system terminals away/iris recognition/fingerprints/....
-Protecting system with firewalls etc.
(1 per -, max 6) [6]
- 5 (a) -Concept of a stored program
-Instructions and data use the same (primary) memory
-Use of a single processor
-Follows a sequential set of instructions.
(1 per -, max 3) [3]
- (b) (i) -201/202 (Sensible value)
-because, once sent to MAR the value in the PC is incremented [2]
- (ii) -The result of a jump instruction which...
-requires that the next instruction is not to be handled in sequence/specifically, that held in 180. [2]
- 6 (a) (i) 11011010
- (ii) 10100110
(1 per dotted) [2]
- (b) (i) -The fractional part of the representation
-Place value of MSB is -1 ...
-remainder of bits are $\frac{1}{2}$, $\frac{1}{4}$...
-Holds the magnitude of the data.
(1 per -, max 2) [2]

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(ii) -Is a two's complement integer which...
 -holds the power of 2...
 -by which the mantissa must be multiplied...
 -to give the original value.
 (1 per -, max 2) [2]

(iii) $0.0101011 * 10^{0101}$
 $= 1010.11$
 $= 8 + 2 + \frac{1}{2} + \frac{1}{4}$
 Alternative:
 $10 = 1010$ and $.75 = .11$
 $10.75 = 00101011 \times 10^{101}$
 ←
 Point moves 5 places
 (1 per line, max 3) [3]

(iv) 01010110 0100
 (1 for mantissa, 1 for exponent) [2]

7 (a) -A series of bars representing time to be taken on...
 -the different tasks which are needed to produce the system...
 -and relative timings of tasks.
 -Shows when different resources are going to be required/when they should be booked.
 -Also shows reliance of one task on the completion of another.
 -Will show how long the whole system should take to complete.
 (1 per -, max 4) [4]

(b) -A series of manuals to explain the software...
 -in printed form and/or on screen.
 -Overview of package/contents page/index/glossary/...
 -Sample inputs/outputs.
 -Explanation of error messages.
 -Installation of software/hardware.
 -Quick reference guide.
 -How to carry out simple maintenance (like reloading a till roll).
 (1 per -, max 6) [6]

8 (a) -Cheaper than waiting until real thing is built
 -May be impossible to alter things after building
 -Safer than testing in real life, e.g. evacuation procedures, using real people.
 -Impossible to carry out some tests, e.g. burning building down, when building complete.
 (1 per -, max 3) [3]

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- (b) (i) -Width of aisles..
 -to be able to assess the number of people who can use the aisle at once.
 -Number of people in store...
 -evacuation times will depend on number of people.
 -Position of exits...
 -relative to groupings of people.
 -Number of exits...
 -should be kept as low as is safe, for security reasons.
 -Position of fire/spread of fire...
 -different positions will dictate flow of people/speed of spread.
 -Positions of different areas in store (e.g. bakery)...
 -some areas will attract crowds of shoppers.
 -Time taken for emergency services to arrive
 -expert help will alleviate the situation
 (1 per -, max 3 variables, max 6) [6]

- (ii) -Large quantities of data ...
 -all interrelating with each other...
 -because some outcomes rely on outcomes of others.
 -Large quantities of processing required
 (1 per -, max 2) [2]

- 9 -Interrupt given a priority
 -Placed in queue with other interrupts to be done...
 -according to priority.
 -When it becomes the highest priority interrupt it is dealt with
 -Contents of special registers are placed on a stack/saved
 -Interrupt (and others) dealt with
 -values read from stack into special registers.
 -Check for interrupt(s) at end of each cycle before fetching next instruction
 -Vectored interrupts
 (1 per -, max 6) [6]