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Group V

Creative, Technical and Vocational

COMPUTER STUDIES

Paper 0421/01

Paper 1

General comments

The standard of work was similar to that in previous years. Very few scripts were seen where candidates had not at least made an attempt at answering the question. Again, many of the weaker candidates scored well in the first few pages where the questions were testing knowledge of basic terms and not an understanding of the topic. However, the terms *serial access, handshaking and formatting* caused problems for a surprising number of candidates.

Questions involving programming and/or algorithms caused a definite problem with several candidates. In particular, **Question 19** which was a standard sorting technique, caused a number of candidates considerable problems.

Comments on specific questions

Question 1

Parts **(b)**, **(c)** and **(d)** were fairly well answered with most candidates gaining one or two marks here. However, a surprising number thought serial access referred to the type of input/output ports at the back of a computer. Part **(a)** was not particularly answered well with the term *data logging* appearing to be alien to many candidates.

Question 2

Most candidates managed to gain one mark here with reference to security aspects (e.g. passwords). Better candidates gave answers such as *data must be used only for stated purpose, data must be accurate, data must be relevant, data must not be kept longer than necessary,* etc.

Question 3

(a) This was fairly well answered with many candidates choosing correct sensors such as *temperature, water level, weight/pressure* etc. Answers such as “thermometer” and “heat sensors” were quite common; neither of which was acceptable since a thermometer isn’t a sensor and heat sensors do not exist.

(b) Not many candidates gained both marks here. There appeared to be very little understanding of the concept of storing values to compare against the data values being received from the sensors. Many candidates referred to ADC and DAC which did not answer the question which asked *how the data collected would be used by the control program*. The question did not ask for how the washing machine itself was controlled.

Question 4

(a) Well answered for at least one mark where passwords were chosen as the way of preventing hacking. Other answers could have included: *use of firewalls, anti-virus software, use of encryption, etc.* Several candidates referred to anti-hacking software (!!) whatever that is.

(b) Many candidates were aware that fingerprinting systems worked because fingerprints were unique to each person. However, a large percentage failed to gain both marks since they did not mention any involvement of a computer system which was a fairly key component to this question.

Question 5

(a) This was well answered with several candidates mentioning painting, assembling/welding car parts or lifting heavy components.

(b) Not many good answers here with several candidates referring to sensors with no mention of what type of sensor or how the sensor was used to prevent the robot bumping into things. Very few referred to the use of tracks or coloured lines to guide the robots around the factory.

(c) Fairly well answered with most giving answers such as *loss of jobs, need for re-training,* and *de-skilling.* Several candidates referred to saving money because robots do not need paying - this did not answer the question.

Question 6

(a) Many candidates gained both marks here by referring to buffers being used to temporarily save the data and also to compensate for the differing speeds of computer components.

(b) The simple answer here was *to store more data/allow larger files to be transferred*. A surprising number missed the point here and just gave general descriptions of buffers.

(c) Very few good answers here with only a small number of candidates aware of the purpose of interrupts i.e. *to stop data being transferred, when the processor discovers errors, e.g. printer out of paper, etc.*

Question 7

Surprisingly badly answered with many candidates writing about how the data was imported from the digital camera and what the data could be used for (e.g. in posters). The question wanted ways in which the digital images could be used *with* graphics software i.e. *changing colours, rotating the image, scaling/resizing the image, changing resolution, cropping, etc.*

Question 8

(a) Generally well answered with most candidates correctly identifying a root directory and a sub-directory.

(b) Several candidates indicated that formatting caused any data on the disk to be lost but did not actually understand what else formatting did e.g. *writes tracks and sectors, sets up root directory, puts index/title on the disk, etc.*

(c) This question was well answered by the stronger candidates who gave responses such as *memory management, multi-programming, error reporting, file management, etc.* The weaker candidates tended to give trivial answers such as “looks after the computer”, “allows user to use the computer”, etc. - none of which were sufficiently specific to gain any marks.

Question 9

(a) Surprisingly badly answered with too many candidates explaining feasibility study, fact finding and evaluation. Acceptable answers included: *decide on hardware and software, design input and output formats, design file structures, produce flowcharts/algorithms, etc.*

(b) Again, not particularly well answered with too many candidates describing phased introduction, parallel running and immediate introduction -these are methods used and not stages. The question required a description of two of the stages which are part of the actual implementation process such as: *writing the program/coding, transfer of files, installing hardware, testing the system, etc.* i.e. what needs to be done at this stage of the process.

(c) This part was reasonably well answered with many candidates gaining one mark for answers such as *how to load/run the system, troubleshooting guide, interpretation of error messages, etc.*

Question 10

(a) In general, this was well answered. The only real problem was that some candidates gave PRICE when the actual field name was PRICE($) which unnecessarily lost them a mark. The most common response was to correctly choose CODE as the field name.

(b) This was fairly well answered with most candidates choosing *range check, length check and presence check.* Some candidates described the validation checks rather than naming them which was perfectly acceptable in this case.

(c) Very well answered with well over half the candidates correctly choosing *M018* as the required output.

(d) Many candidates gained two marks here for correctly giving *(PRICE($)>50)* and the operator *AND* as part of the search conditions. Very few gave a correct search condition for the date which could have been either *(DELIVERY DATE>30/09/02 AND DELIVERY DATE<01/11/02)* or *(DELIVERY DATE between 30/09/02 AND 01/11/02)*.

Question 11

(a) This part was generally well answered. Many candidates lost marks because they did not make it clear that they were producing a computer form - the forms looked as if they could have been filled in manually.

(b) Not very well answered with most candidates wrongly stating that "there was no need to travel/can work from home" (which was already stated in the question!) and "will give immediate feedback" (which was unlikely to happen since the tutor wouldn't respond straight away).

(c) Again, poorly answered. Most candidates who gained a mark referred to the reduction of paperwork. Other acceptable answers included: *no need to set aside rooms for exams, more accurate data entry, automatic marking of papers, etc.* A common error here was to say that the computer would *correct* the papers when, in fact, the computer would simply mark the papers.

Question 12

(a) Surprisingly few correctly shaded the spreadsheet area A2 to B5.

(b) Generally well answered with a variety of acceptable answers given.

(c) Several candidates gained 1 mark here with few managing both marks. The correct cells were: *E3, F3, E6* and *C6.*

Question 13

(a) This part was surprisingly badly answered with less than half the candidates gaining two marks. The question simply required the summation of all the positive numbers (i.e. 13) and all the negative numbers (i.e. -8).

(b) On the whole, this was probably the worst answered question on the Paper with the majority of candidates either missing it out altogether or simply copying out the original algorithm with no worthwhile changes made. All four marks could have been gained for a simple algorithm such as:

```
total = 0
input number
while number <> -300000    (or some equivalent rogue value)
        total = total + number
        input number
endwhile
output total
```

Question 14

(a) Generally fairly well answered with most candidates aware of the function of a modem (i.e. interconverts digital to analogue to allow signals to be sent down telephone lines) and ISP (i.e. allows connection to internet etc.).

(b) Most candidates correctly suggested the use of on-screen forms or questionnaires. It was also fairly common to see the use of e-mails as a way of collecting information from customers.

Question 15

Several candidates gained one or two marks here with very few managing three or four marks. It was very common to see answers suggesting that a "leaf/flower was scanned in and the expert system then recognised the plant" - this was clearly guess work by candidates who did not actually understand how expert systems worked. Acceptable responses included: *computer asks questions, user inputs information, knowledge base searched, use of rules/inference engine, etc.*

Question 16

(a) The most common answers here were “electricity failures” and “viruses” - both of which were acceptable. Most candidates managed to gain one mark here.

(b) Again, the majority of candidates gained one mark here for either “use of UPS” or “use anti-virus software”. Several candidates referred to use of passwords and backing up data - neither of which would guard against a systems failure occurring.

Question 17

(a) This was not very well answered with many candidates giving very vague answers such as “sensors”. Acceptable responses here included: *use of pressure pads, induction loops and push buttons for pedestrians.*

(b) Not as well answered as expected with several candidates talking about monitors, printers and other computer equipment. The most obvious answers that were expected here were: *traffic lights* and *beeping noise/flashing green man.*

(c) Very few candidates gained any marks here. Many simply said that a timing circuit was used to change the lights at regular intervals. This would not be an acceptable way of controlling traffic at a busy junction. The answers expected were: *counting numbers of cars in all directions and changing lights accordingly, testing to see if the pressure pad had registered any vehicles, etc.*

Question 18

Most candidates gained either 1 mark (usually for *customer orders*) or all four marks.

Question 19

Generally badly answered - the question was a simple sort routine using only three input numbers. Very few candidates gained more than one mark usually obtained for a correct input statement). The majority of candidates seemed to have little, if any, concept of *nested if* statements.