

## Principal Assessor Report 2004

**Assessment Panel:**

**Technical Education**

**Qualification area**

**Subject(s) and Level(s)  
Included in this report**

**Revised SG Technological Studies**

### **Statistical information: update**

<b>Number of entries in 2003 (Pre Appeal)</b>	2244
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<b>Number of entries in 2004 (Pre Appeal)</b>	2152
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### **General comments re entry numbers**

It is encouraging to note that the rapid decline in the number of candidates taking the subject has now slowed and that the uptake appears to have stabilised.

## **Statistical Information: Performance of candidates**

### **Distribution of awards**

Overall Grade	Percentage
1	27.8
2	25.5
3	17.6
4	13.5
5	6.2
6	7.2
7	0.9

### **Comments on any significant changes in percentages or distribution of awards**

The percentage of candidates achieving an overall credit pass has increased by 4.3% to 53.3% while the number obtaining an award at grade 1-4 has gone up by 2.9% to 84.4%.

## Grade boundaries for each subject area included in the report

<b>Standard Grade</b>			
<b>Assessable Element –</b>	<b>Knowledge &amp; Understanding</b>		
<b>Grade</b>	<b>Maximum Mark</b>	<b>Minimum Mark for Grade</b>	<b>% Mark</b>
1	45	31	69
2	45	22	49
3	40	26	65
4	40	18	45
5	40	14	35
6	N/A		

  

<b>Standard Grade</b>			
<b>Assessable Element –</b>	<b>Reasoning &amp; Numerical Analysis</b>		
<b>Grade</b>	<b>Maximum Mark</b>	<b>Minimum Mark for Grade</b>	<b>% Mark</b>
1	45	35	78
2	45	27	60
3	40	27	68
4	40	18	45
5	40	16	40
6	N/A		

## Comments on grade boundaries for each subject area

The performance in Knowledge & Understanding continues to be below that for Reasoning & Numerical Analysis.

The number of candidates achieving a credit pass in KU has increased by 2.2% to 47.2% while the percentage achieving a grade 1-4 has risen by 0.4 to 83.3%.

In the RNA element the percentage of credit passes has increased by 3.7% to 53.8% while the number of candidates achieving a grade 1-4 has risen by 1.2% to 84.1%.

The increased success in the subject is in part due to the ability of the candidates but recognition should also be given to the fact that centres are now more experienced and have better prepared their students for the external assessment.

## Comments on candidate performance

### General comments

As indicated overleaf the overall performance of candidates in both elements has improved with an encouraging increase in the percentage achieving a credit award. However, the performance in KU is once again below that of RNA.

The feedback on candidates' performance in the General paper indicated that it was fair, balanced and accessible. The full range of marks was awarded in each question.

In the Credit exam the markers' comments also indicated that this paper was fair, balanced and reflected the subject content. Once again the full range of marks was awarded in each question.

### Areas of external assessment in which candidates performed well

#### General Level

It was noted that candidates performed well in the pneumatics and energy questions.

#### Credit Level

Feedback indicated that candidates performed well in pneumatics (Q4), electronics (Q7) and torque (Q8 (a)).

Across both levels the use of PBASIC has improved although many candidates still make fundamental errors, for example "pin 7 high" rather than "high 7".

### Areas of external assessment in which candidates had difficulty

#### General Level

Q2 (b) (ii) a considerable number of candidates failed to name the sub-system.

Q3 (b) (ii) a significant number of candidates answered "foot operated" for the valve actuator.

Q5 (a) system electronics was poorly answered and a number of candidates missed out the symbol for the logic gate in Q5 (b), perhaps due to the lack of space.

Q9 the wiring of the motors to the microcontroller saw a mixed response from candidates.

#### Credit Level

Q1 (c) motor speed control was consistently poorly answered.

Q2 (a) many candidates confused wave for tidal energy.

Q3 (a) to (c) few candidates identified the control diagram or satisfactorily explained the operation of error detection.

Q5 (a) poor responses to this question on voltage divider theory (although the calculation in the General paper was well answered).

Q7 (c) few candidates fully described the IC "Quad 2-input AND".

Q9 this electrical circuits question proved to be more difficult for candidates than was expected.

## Recommendations

### Feedback to centres

It was evident from the improved results that many more centres are now using the Arrangements document rather than the LTS support materials to advise and prepare candidates for the external assessment.

As outlined above there are a number of areas of weakness that centres may wish to address:

- Systems theory including the explanation of closed loop control featuring error detection.
- Pneumatics - use of correct terminology (as issued with the revised Arrangements) to describe components.
- Completing system electronic block diagrams from a given description.
- Basic calculations associated with electrical circuits.
- Voltage divider theory and calculations
- The correct convention for describing an IC.
- An explanation of how Pulse Width Modulation is used with a microcontroller to set the speed of a motor.
- Reinforcing the use of PBASIC commands in order to avoid simple mistakes such as “pin 4 high” “if pin1=1 then goto main” or using “let dirs =%11000000” to switch on pin 7 and 6.
- Wiring input and output devices to a microcontroller.