



ELECTRICAL WORKERS REGISTRATION BOARD

SUMMARY OF

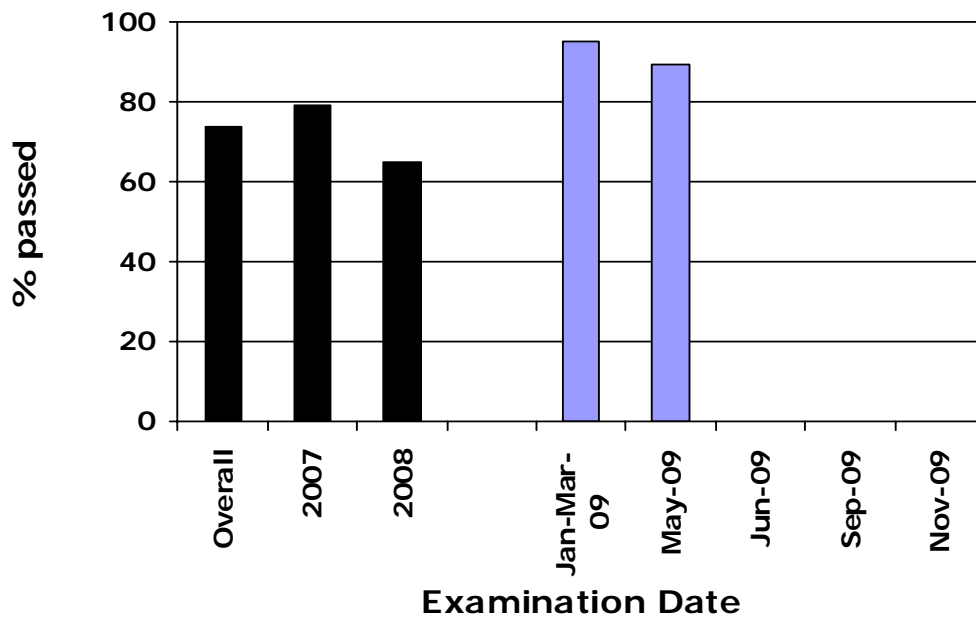
MAY 2009 EXAMINATION ROUND

John Sickels
Registrar
4 December 2009

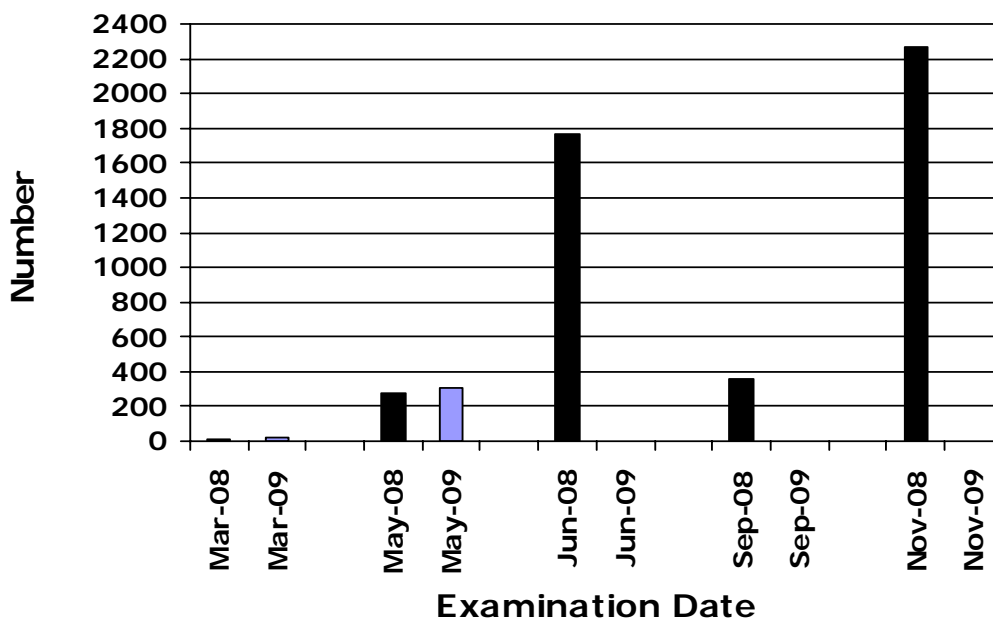
1. Summary of Examinations

	Number candidates	of	Number candidates passed	of who	Percentage passed
ESTA	226		184		81
ESTB	79		75		95
Elec. Regulations	0		0		0
Elec. Theory	0		0		0
Elec. Inspector	0		0		0
TEWC	0		0		0
E Security	1		1		100
May 2009	306		260		85

Pass Rates - All Examinations - 2009



Candidate Number - All Examinations - 2009



Mark Ranges

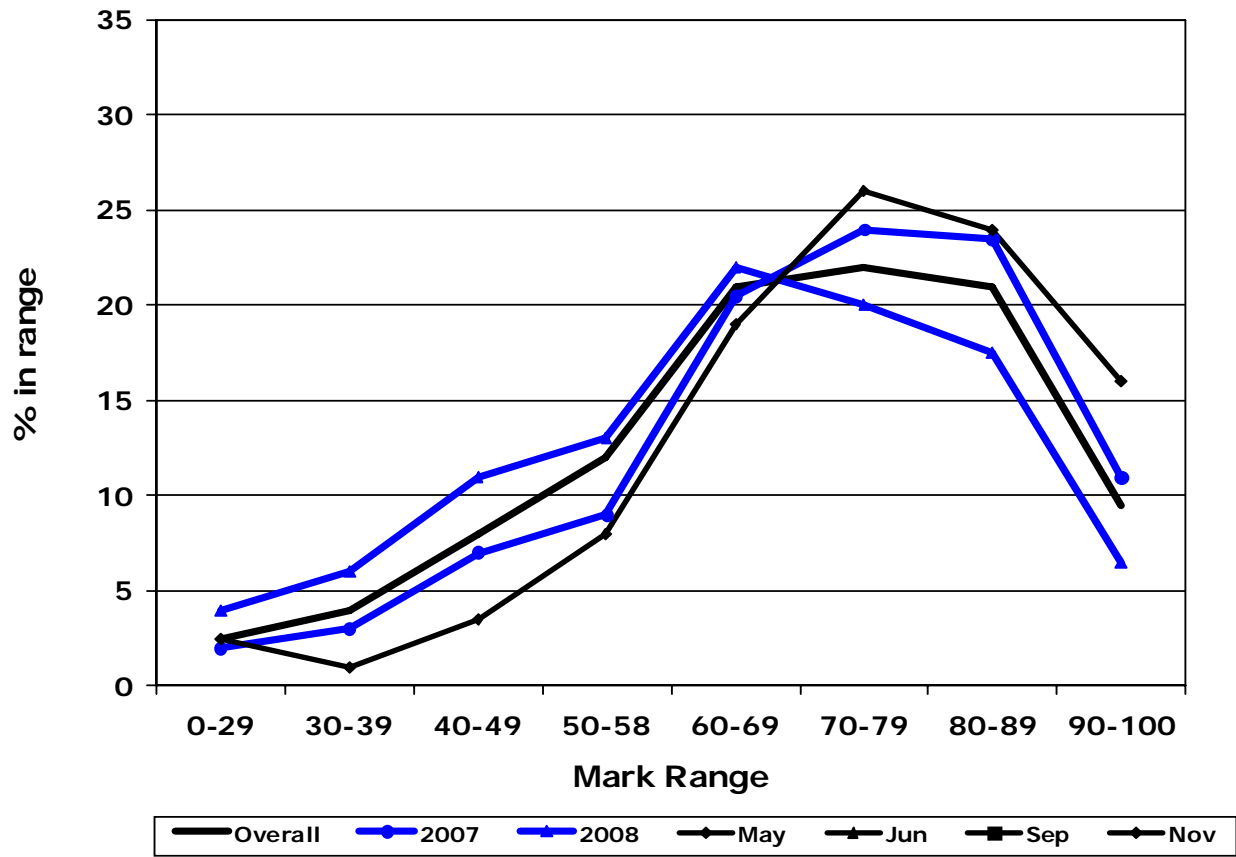
Number of candidates

Range	ESTA	ESTB	ER	ET	EI	TEWC	ES	May 2009	
90 – 100	31	18				0	0	49	candidates
80 – 89	47	24				0	1	72	candidates
70 – 79	62	19				0	0	81	candidates
60 – 69	44	14				0	0	58	candidates
50 – 58	22	3				0	0	25	candidates
40 – 49	10	0				0	0	10	candidates
30 – 39	4	0				0	0	4	candidates
0 – 29	6	1				0	0	7	candidates
	226	79				0	1	306	

% of candidates

Range	ESTA	ESTB	ER	ET	EI	TEWC	ES	May 2009	
90 – 100	14	23				0	0	16	% of candidates
80 – 89	21	30				0	100	24	% of candidates
70 – 79	27	24				0	0	26	% of candidates
60 – 69	19	18				0	0	19	% of candidates
50 – 58	10	4				0	0	8	% of candidates
40 – 49	4.5	0				0	0	3.5	% of candidates
30 – 39	2	0				0	0	1	% of candidates
0 – 29	2.5	1				0	0	2.5	% of candidates

Mark Ranges - All Examinations - 2009



2. General Comments

This examination round went very smoothly. The pass rates were quite high for both the Electrical Service Technician A and Electrical Service Technician B examinations. There was one candidate for the Electronic Security examination and no candidates for the Tradesperson Electrical Work Certificate examination.

3. Moderation

The moderation went well with all moderators having valuable input. For all examination papers, the moderation was carried out via secure email with one teleconference with the moderators of each paper.

4. Marking

The marking went very well with all markers returning marked papers by the required dates. The only point of note was that some candidates in the Electrical Service Technician A examination used a dangerous technique for fault diagnosis.

5. Electrical Service Technician A

The pass rate of 81% was a very good result and the candidate numbers were the highest in any May Electrical Service Technician A examination since statistics were kept from 2004.

Candidates generally performed well in all questions other than questions 2 and 8.

In questions 1, 3 to 6 and 9, between 90% and 94% of candidates were able to gain 5 or more marks. For those same questions, between 60% and 86% of candidates were able to gain 7.5 or more marks.

In questions 6 and 7, 77% of candidates were able to gain 5 or more marks, while 47% and 48% respectively were able to gain 7.5 or more marks

Question 2 related to calculating the current drawn by an electrical blanket on different heat settings. Most candidates had did not seem to know how the blanket elements were configured at different settings.

Question 8 related to fault diagnosis. A number of candidates lost most marks for this question because they used the technique of continually replacing the fuse (and plugging each appliance in, in turn) until the fault was discovered.

An abridged analysis is contained in Appendix 1 of this paper. The full analysis is contained in Attachment 1.

6. Electrical Service Technician B

The pass rate of 95% was an excellent result and is a credit to both candidates and their tutors.

Generally, 90% of candidates were able to gain 5 or more marks for each question and 50% of candidates were able to gain 7.5 or more marks.

An abridged analysis is contained in Appendix 2 of this paper. The full analysis is contained in Attachment 2.

7. Electrician Regulations

There was no Electrician Regulations examination in May 2009.

8. Electrician Theory

There was no Electrician Theory examination in May 2009.

9. Electrical Inspector

There was no Electrical Inspector examination in May 2009.

10. Tradespersons Electrical Work Certificate

There were no candidates for the Tradesperson Electrical Work Certificate examination in May 2009

An abridged analysis is contained in Appendix 6 of this paper

11. Electronic Security Alarm Installer

There was 1 candidate for the Electronic Security Alarm Installer examination who passed with a mark of 81.

An abridged analysis is contained in Appendix 7 of this paper

Appendix 1

1 and 2 May 2009

ESTA 1045, a moderated paper, was used for the examination of 2 May 2009.
ESTA 1046, a composite paper, was used for the examination of 1 May 2009

A1.1 - Overall Candidate Performance

	Number of candidates	Number of candidates who passed	Percentage passed
ESTA 1045	224	182	81
ESTA 1046	2	2	100
May 2009	226	184	81

ESTA 1045

All candidates

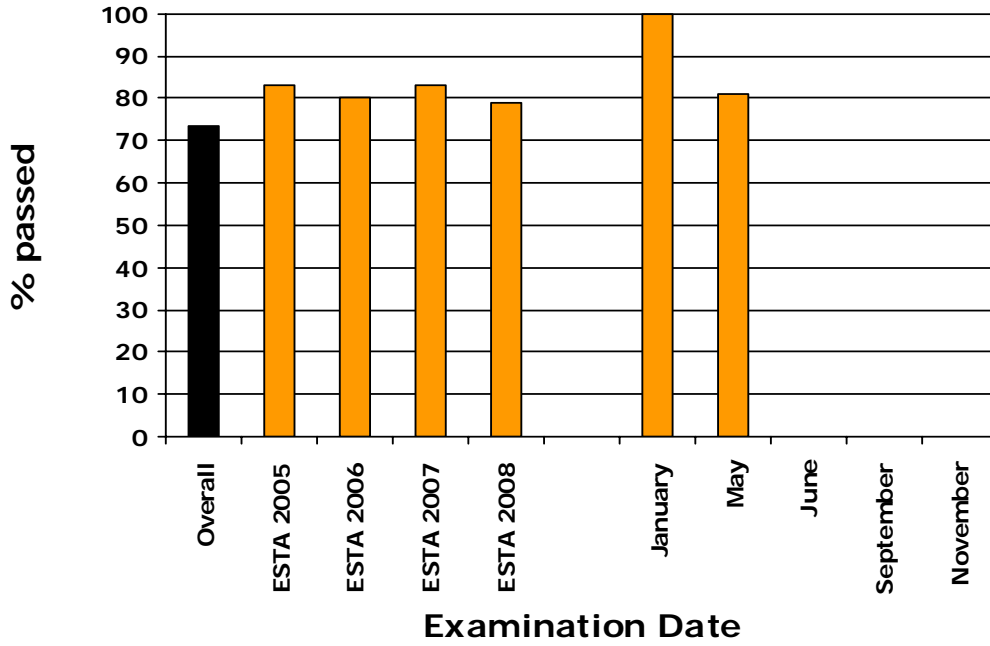
Average pass mark 71.5 %
Median mark 74.5

Those who passed

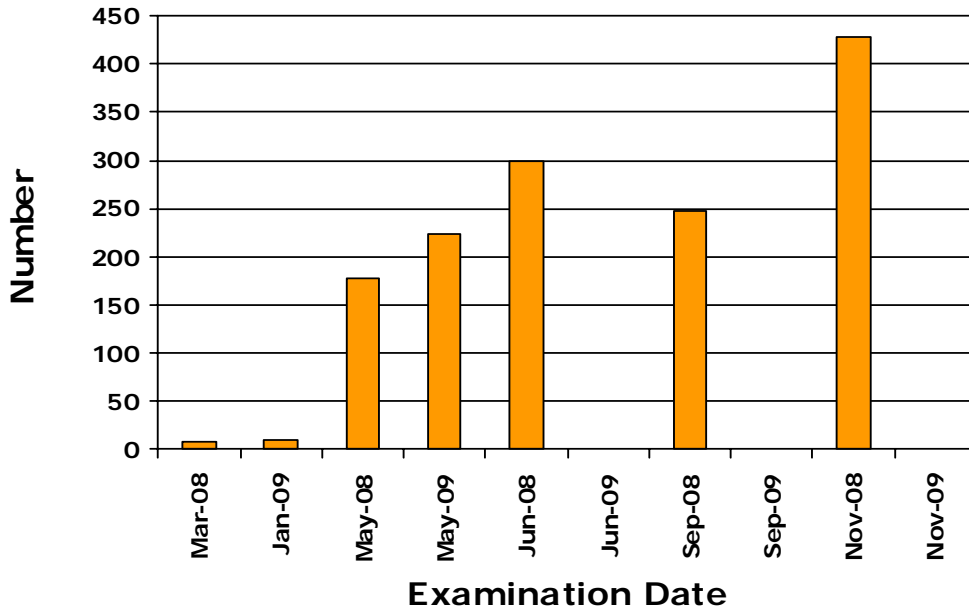
Average pass mark 77
Median mark 77

2 candidates gained 100 marks. 16 candidates gained 95 marks or better

Pass Rates - ESTA Examinations - 2009



Candidate Numbers- ESTA Examinations - 2009



Mark Ranges

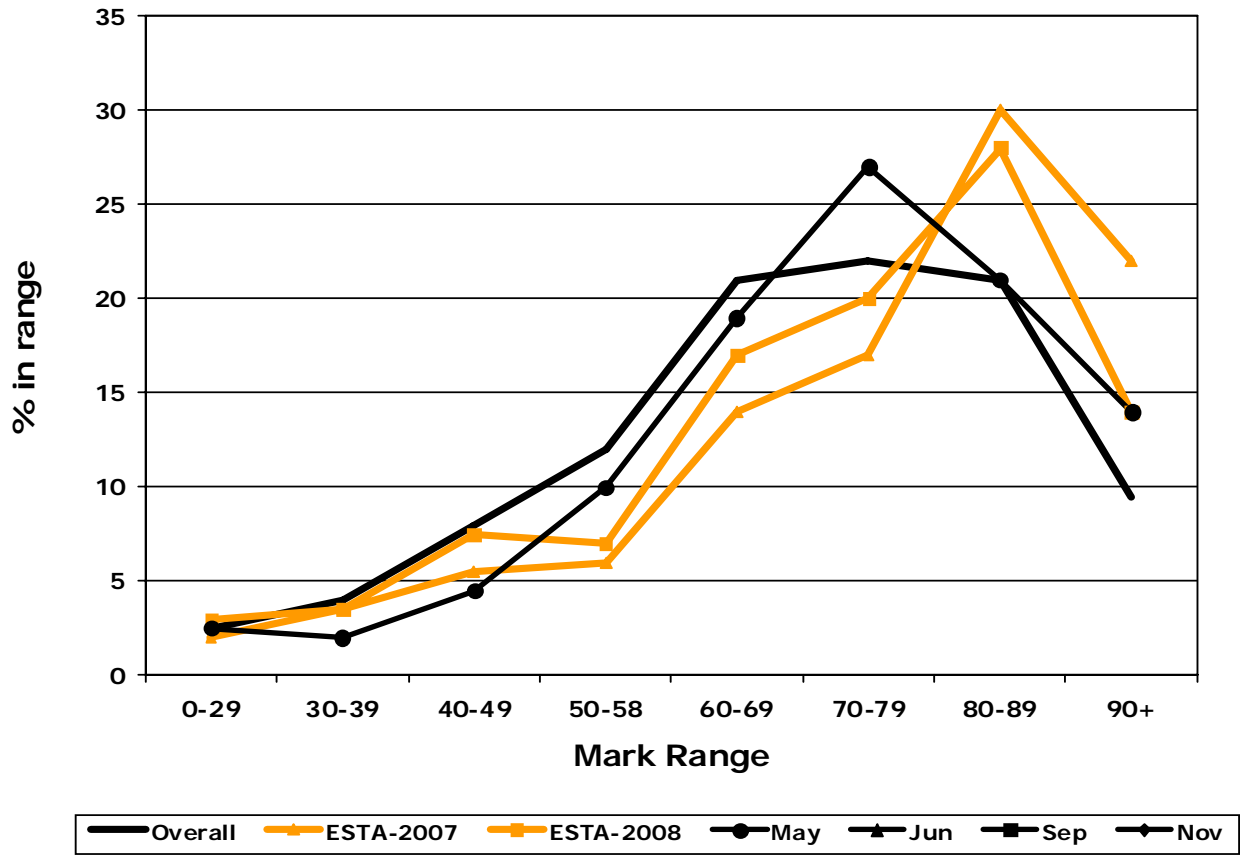
Number of candidates

Range	ESTA 1045	ESTA 1046				May 2009	
90 – 100	31	0				31	candidates
80 – 89	47	0				47	candidates
70 – 79	60	2				62	candidates
60 – 69	44	0				44	candidates
50 – 58	22	0				22	candidates
40 – 49	10	0				10	candidates
30 – 39	4	0				4	candidates
0 – 29	6	0				6	candidates
	224	2				226	

% of candidates

Range	ESTA 1045	ESTA 1046				May 2009	
90 – 100	14	0				14	% of candidates
80 – 89	21	0				21	% of candidates
70 – 79	26.5	100				27	% of candidates
60 – 69	19.5	0				19	% of candidates
50 – 58	10	0				10	% of candidates
40 – 49	4.5	0				4.5	% of candidates
30 – 39	2	0				2	% of candidates
0 – 29	2.5	0				2.5	% of candidates

Mark Ranges - ESTA Examinations - 2009



A1.2 - Overall Marking Analysis

Performance by topic

Candidates who gained between 75% and 100% of the marks (15 to 20 marks for question 1 and 7.5 to 10 marks for any other question) are considered to have a sound knowledge of a topic. The table below shows the percentage of candidates in each range for a topic. It also compares the performance with some similar questions from previous examination papers.

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 1	-	10, 2 mark questions				69	25	6
Q 2	C2.11	<u>a.c.</u> – Measurements V, A, P, pf			Electric blanket – two 55W elements. Calculate current on low, medium and high.	35	10	55
			Sep 2006	2	Calculate current and power for heater at 230V. Calculate current at max. Volt drop, difference in power dissipated at max. volt drop	66.5	14	19.5
			Nov 2006	9	Portable water heater – calculate current and power in low positions and resistance, current and power in high position	63	13	24
			Jun 2007	9	Portable water heater, power on high and medium, current on low, fault on heater.	61	18	21
			Sep 2008	8	Portable water heater – calculate current and power in low positions and resistance, current and power in high position	72.5	7.5	20

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 3	H3d.41	<u>Cables and Cords Specifications</u>			Colour coding and polarity of flexible cords for Class I and Class II appliances. Precautions to prevent cord failure.	86	8	6
			Sep 2004	14	Core & colour coding of cords	86.5	12.5	1
			Nov 2004	13	Core & colour coding of cords, max. PEC resistance	86.5	11	2.5
			Jun 2005	13	Core & colour coding of cords	96	3	1
			Sep 2005	12	Core & colour coding of cords	93.5	3.5	3
			Jun 2006	4	Selection criteria for cord, colour coding, and current ratings	40	50	10
			Nov 2006	7	Colour coding of replacement cords, care of extension leads	66	23	11
			May 2007	3	Colour coding of replacement cords, care of extension leads	90.5	6	3.5
			Jun 2007	7	Cord current ratings, colour coding	37	40	23
			Sep 2007	2	Core & colour coding of cords, vd in cords	75	19	6
			Sep 2007	2	Core & colour coding of cords, cord wound on drum	93	5	2
			Sep 2008	5	Colour coding and polarity of flexible cords, Voltage drop in flexible cords	75	20	5

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 4	H10.66	<u>Fault diagnosis</u>			Vacuum cleaner used when faulty – calculate fault current flowing, effect on operation of fuse. Phase/neutral transpositions.	65	25	10
			Sep 2007	3	Faulty vacuum cleaner. Calculate fault current, whether fuse will blow, power dissipated.	50	34	16
			Sep 2007	3	Faulty heater. Draw circuit diagram, calculate fault current, whether fuse will blow. Phase, neutral transpositions.	56.5	20.5	23
			Nov 2007	4	Faulty heater. Calculate fault current, whether fuse will blow, power dissipated. Phase, neutral transpositions.	62.5	16	21.5
			Sep 2008	7	Fan heater used when faulty – calculate current in PEC, effect on operation of fuse. Phase/neutral transpositions. Why low PEC value contributes to safety	60	22.5	17.5
			Nov 2008	7	Fan heater used when faulty – calculate current in PEC, effect on operation of fuse. Phase/neutral transpositions. Why low PEC value contributes to safety	53	26.5	20.5

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 5	K4.46	<u>Testing and inspection methods</u>			PEC test on Class I appliance – instrument used, how to do test, results. Why ohmmeter not used for IR test. Ammeter connected in parallel with appliance.	59.5	30.5	10
			Jun 2004	16	PEC testing of an appliance	80	13	7
			Sep 2004	18	Meter use for PEC test	37	30	33
			Jun 2005	11	Reason for PEC, polarity and insulation resistance tests	58	26	16
			Jun 2005	18	PEC test, max value, how low value contributes to safety	75	4	21
			Nov 2005	18	PEC and insulation resistance testing of concrete mixer	29	33	38
			May 2006	8	PEC test and insulation resistance test on concrete mixer	62.5	27.5	10
			May 2006	9	Reason for PEC, polarity and insulation resistance tests. Polarity testing	39	33	28
			Nov 2008	4	PEC testing of electrical appliance. Retesting repaired appliance. Flexible cord insulation characteristics	48.5	34	17.5

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 6	K4.46	<u>Testing and inspection methods</u>			IR test of appliance that incorporates semi-conductor devices. Why PEC, IR and polarity tests carried out. Why PEC test before IR test	47	30	23
			Jun 2007	4	IR testing, testing appliance with MOV fitted	52.5	33.5	14
			Nov 2007	9	IR testing and semi-conductors. IR testing appliance. Testing appliance with MOV fitted.	55	26	19
			Mar 2008	2	IR testing and earth leakage testing, IR testing and avoid damage to semi-conductor devices, IR test of concrete mixer	75	25	0
			May 2008	6	IR testing and earth leakage testing, IR testing and avoid damage to semi-conductor devices, IR test of concrete mixer	55	29	16
			Sep 2008	6	IR test of appliance with MOV. Alternative to IR test. IR test of appliance with semi-conductors. IR test of concrete mixer.	69	19	12
			Nov 2008	2	IR testing of appliance with semi-conductors. IR testing of dishwasher. Why ohmmeter not used for IR test. Other IR test instruments.	50	34	16

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 7	A5.5	<u>Theory</u> - Simple circuits			Draw 230V circuit supplying 2 elements controlled by two-position selector switch, Calculate maximum power and minimum current.	48	29	23
			Sep 2007	6	Draw 230V circuit supplying 2 elements in series and 2 in parallel, Calculate ammeter reading, effect if resistance open circuited.	62.5	22	15.5
			Sep 2007	6	Draw 230V circuit supplying 2 elements in series and 2 in parallel, Calculate ammeter reading, power dissipated.	67	14	19
			May 2008	7	Draw 230V circuit supplying 2 elements controlled by two-position selector switch, Calculate current flow and power dissipated with switch in various positions.	85	7	8
			Sept 2008	3	Draw circuit diagram – 2 resistances in series, one in parallel. Calculate total resistance, circuit voltage, total power consumed	65	8	27
			Sept 2008	3	Draw circuit diagram – 2 resistances in series, one in parallel. Calculate power consumed by one resistor, current drawn by series resistors, power if one resistor short-circuited	56	25	19

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 8	H10.66	<u>Fault diagnosis</u>			Appliances plugged in socket out – fuse blows. Describe how to determine if socket outlet overloaded. Describe tests to determine if faulty appliance	35	30	35
			May 2008	5	Appliances plugged in socket out – fuse blows. Describe how to determine if socket outlet overloaded, describe tests to determine if faulty appliance	14	22	64
			Sep 2008	7	Appliances plugged in socket out – fuse blows. Describe how to determine if socket outlet overloaded, describe tests to determine if faulty appliance	50	19	31

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 9	H1c.31	<u>Protection and Control</u> Selection of control and protection equipment			Under-rated and over-rated fuses. Advantages of HRC fuse over rewirable fuses. Why not permitted to bridge HRC fuse with fuse wire. Types of faults on MCBs and HRC fuses	62.5	27	10.5
			Nov 2007	5	What thermal overload detects, HRC fuse characteristics, how RCD operates, define PRCD	57	24	19
			Jun 2008	8	Three advantages of HRC fuses when compared to rewirable fuses. Why HRC fuse is not to be replaced with fuse wire. How RCD operates when there is a fault, PRCDs	59	21	20
			Sep 2008	5	Under-rated and over-rated fuses. Advantages of HRC fuse over rewirable fuses. Why not permitted to bridge HRC fuse with fuse wire. Types of faults on MCBs and HRC fuses	50	25	25
			Nov 2008	8	Under-rated and over-rated fuses. Advantages of HRC fuse over rewirable fuses. Why not permitted to bridge HRC fuse with fuse wire. Types of faults on MCBs and HRC fuses	54.5	27	18.5

A1.3 - ESTA 1045

A1.3.1 - Moderation

There were two moderators for ESTA 1045.

ESTA 1045 was moderated by secure email. A teleconference was held with moderators on 30 March.

A1.3.2 - Marking

There were four markers for ESTA 1045.

Teleconferences were held with the markers on 11 and 18 May.

Version 2 of the answer schedule was sent to markers on 11 May.

Comments

On the whole it was a well devised paper

The examination was generally well done by most candidates

A1.3.3 - Amendments to ESTA 1045

The significant amendments to <u>ESTA 1045</u> arising from the moderation and marking were as follows:			
No.	Question (Moderation)	Answer (Moderation)	Answer (Marking)
1(e)	Preamble amended to make question clearer	-	-
1(f)	Editorial amendment to preamble	-	-
3(a)	-	-	Amended to provide for two distinct solutions for the colour coding
4(a)(i)	Amended to remove reference to short-circuit	Amended accordingly	-
4(a)(ii)	-	Amended in light of changes to (i)	-
4(a)(iii)	-	Amended in light of changes to (i)	-
4(b)(i)	-	-	Additional option added
6(a)	Editorial amendment	-	-
7(a)	Reference to "resistors" changed to "elements"	-	-
8(b)(ii)	-	-	Alternative solution added
8(b)(iii)	-	-	Additional option added

Appendix 2

Electrical Service Technician B Examinations

9 May 2009

ESTB 2036, a moderated paper, was used for the examination of 9 May 2009.

A2.1 - Overall Candidate Performance

	Number candidates	of	Number candidates passed	of who	Percentage passed
ESTB 2036	79		75		95
May 2009	79		75		95

ESTB 2036

All candidates

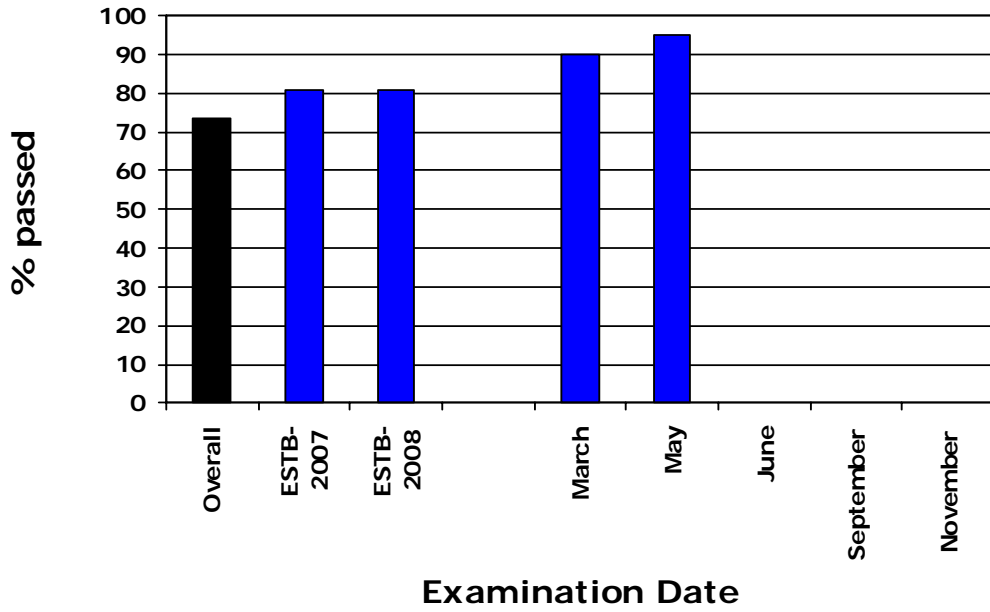
Average pass mark 79 %
Median mark 81

Those who passed

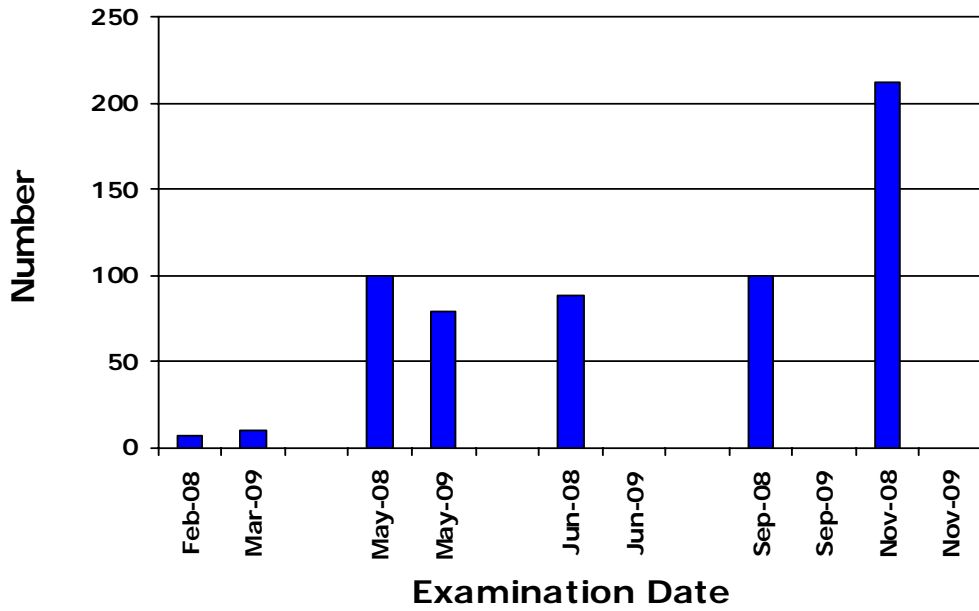
Average pass mark 80.5 %
Median mark 82

7 Candidates gained 95 marks or better.

Pass Rates - ESTB Examinations - 2009



Candidate Numbers - ESTB Examinations - 2009



Mark Ranges

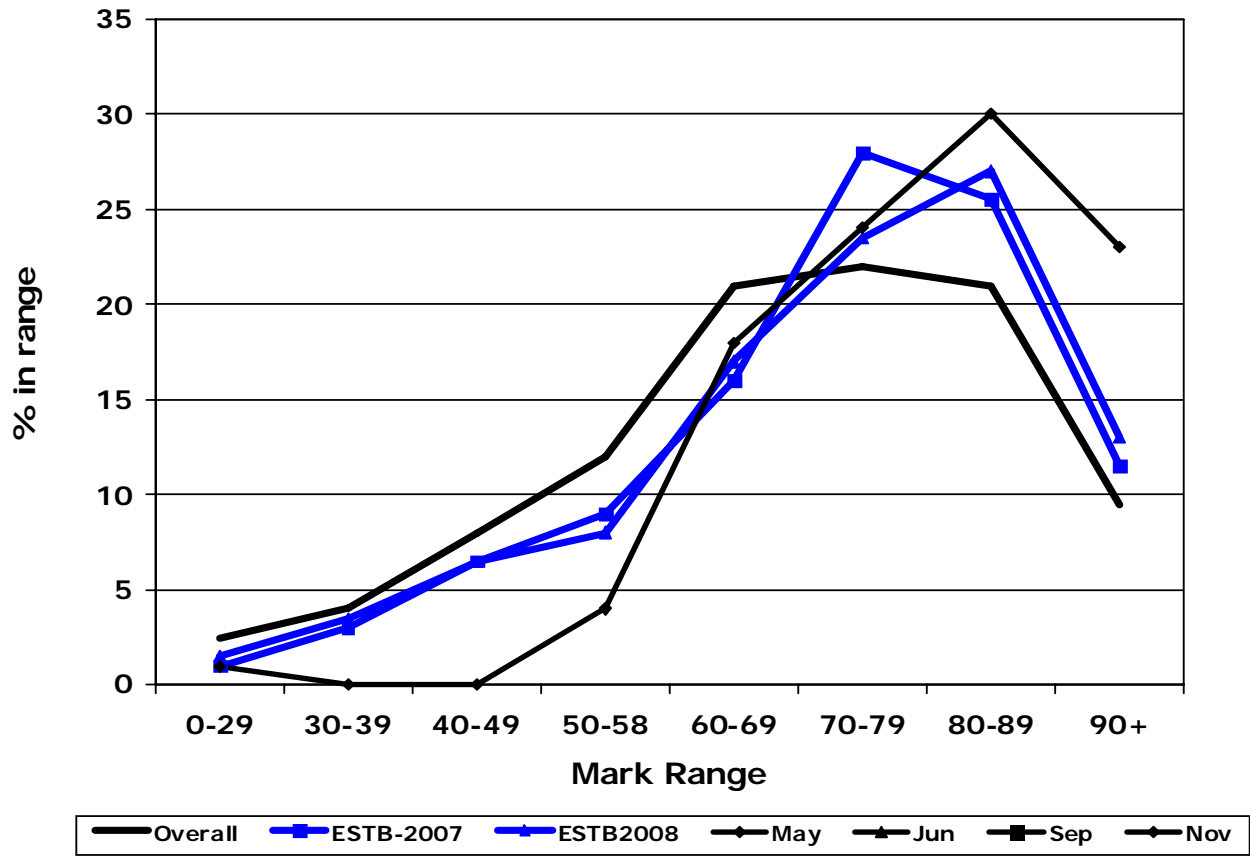
Number of candidates

Range	ESTB 2036			May 2009	
90 – 100	18			18	candidates
80 – 89	24			24	candidates
70 – 79	19			19	candidates
60 – 69	14			14	candidates
50 – 58	3			3	candidates
40 – 49	0			0	candidates
30 – 39	0			0	candidates
0 – 29	1			1	candidates
	79			79	

% of candidates

Range	ESTB 2036			May 2009	
90 – 100	23			23	% of candidates
80 – 89	30			30	% of candidates
70 – 79	24			24	% of candidates
60 – 69	18			18	% of candidates
50 – 58	4			4	% of candidates
40 – 49	0			0	% of candidates
30 – 39	0			0	% of candidates
0 – 29	1			1	% of candidates

Mark Ranges - ESTB Examinations - 2009



A2.2 - Overall Marking Analysis

Performance by topic

Candidates who gained between 75% and 100% of the marks (15 to 20 marks for question 1 and 7.5 to 10 marks for any other question) are considered to have a sound knowledge of a topic. The table below shows the percentage of candidates in each range for a topic. It also compares the performance with some similar questions from previous examination papers.

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 1	-	10, 2 mark questions				69.5	28	2.5
Q 2	E4.18	<u>3ph-Motor/Alternators</u> Fault diagnosis			Three-phase motor – two instrument tests to be carried out to ensure motor is safe to connect	83.5	14	2.5
			May 2008	9	Draw 400V control circuit, motor faults.	59	20	21
			Jun 2008	9	Draw 400V control circuit, motor faults.	58.5	19.5	22
			Sep 2008	2	Diagram of 230V control circuit. How thermal overload and HRC fuse protect motor. Starter fault	55	23	22
			Sep 2008	2	Diagram of 230V control circuit. What faults thermal overload and HRC fuses detect. Motor faults	33	29	38
			Nov 2008	6	Diagram of 230V control circuit. How thermal overload and HRC fuse protect motor.	46	30	24

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 3	D4.22	<u>System theory</u> - MEN systems			Define term “MEN system”. State nominal voltages in MEN system. Why neutral is earthed in MEN system. Why neutral is required and not required in three-phase final subcircuits.	45.5	47	7.5
			May 2008	4	Circumstances in which neutral is required and not required in three phase final subcircuit. Diagram of MEN system arrangement	56	21	23
			Jun 2008	8	Why PEC is needed and must be secure, why neutral conductor is required, and situations where it is not required. Define MEN	45	32	23
			Sep 2008	8	List nominal voltage in MEN system. Define term MEN system. Situations where no neutral required. Frequency and peak voltage	55	28	17
			Sep 2008	8	Diagram of MEN system with single and three phase installations. Why PEC is required. Why neutral required with different heating loads.	62	9.5	28.5
			Nov 2008	3	List nominal voltage in MEN system. Define term MEN system. Situations where no neutral required. Frequency and peak voltage	52.5	27	20.5

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 4	H1b.28	<u>Protection and Control</u> RCD characteristics			Draw circuit diagram of RCD. Operating times of RCDs. How RCD detects fault	52	25	23
			Jun 2007	9	Draw circuit diagram of RCD, operating times of RCDs, how RCD detects fault	55	37	8
			Jun 2007	9	How RCD operates when there is no fault and when there is a fault, why tested, operating times of RCDs	61	26	13
			May 2008	7	Why RCD does not operate even though live, how RCD operates under fault, RCD requirements in NZS 3019, PRCDs	43	41	16
			Jun 2008	2	Main purpose of an RCD, define current rating of fuse, why HRC fuses used as back-up protection, reloading rewireable fuses, under-rated and over-rated fuses	54	37	9
			Jun 2008	7	Why RCD does not operate even though live, how RCD operates under fault, RCD requirements in NZS 3019, PRCDs	50.5	33.5	16

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 5	H10.66	<u>Fault diagnosis</u>			Disconnect existing hot water cylinder. Isolate to ensure it is safe to disconnect. Leaving area safe to leave unattended. Tests to ensure cylinder safe to connect	55.5	42	2.5
			Sep 2007	9	Reconnection of single phase sewing machine, detail instrument checks before connection, ensuring own safety checks after reconnection.	55	35	10
			Sept 2008	3	Reconnection of printing press – safety before connecting testing before connection, main safety checks after connection	52.5	32	15.5

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 6	K2.38	<u>Statutory testing and inspection requirements</u>			Testing to AS/NZS 3760 – two instrument tests on appliance. IR testing of isolating transformer. Polarity testing of single phase appliance	61	31.5	7.5
			Jun 2007	4	Testing to AS/NZS 3760, visual checks	81.5	8	10.5
			Jun 2007	4	Testing to AS/NZS 3760, polarity tests	94	3	3
			Sep 2007	7	Standard to which appliance must be tested, testing requirements and visual checks to Standard	56	38	6
			Sep 2007	7	Standard to which appliance must be tested, three checks and tests to be carried out, testing requirements of Standard, polarity testing	34.5	38	27.5
			Feb 2008	6	Testing to AS/NZS 3760, inspections and tests. Polarity testing	72	28	0
			May 2008	3	Testing to AS/NZS 3000. PEC tests, testing to check integrity of insulation	80	16	4
			Sep 2008	9	AS/NZS 3760 – test on an appliance. IR values for isolating transformer. Polarity testing	69	17	14
			Sep 2008	9	Testing of portable water heater. Visual checks.	43	33	24
			Nov 2008	5	Testing of portable water heater. Visual checks.	68	21.5	10.5

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 7	F1.19	<u>1ph-Motors</u> - Theory			Circuit diagram of universal motor with reverse switch. Technical reasons why universal motors more suitable for some applications. Circuit diagram of cap-start motor, reversing motor.	82	9	9
			Sep 2008	6	Circuit diagram of universal motor with reverse switch. Why universal motors more suitable for some applications. Circuit diagram of cap-start motor, reversing motor.	33	24	43
			Nov 2008	9	Circuit diagram of universal motor with reverse switch. Why universal motors more suitable for some applications. Circuit diagram of cap-start motor, reversing motor.	33	12	55

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 8	E2.16	3ph- Motor/Alternators Selection, starting, protection			Reversing motors. Draw 230V motor control circuit. How thermistor protects motor.	53	42	5
			Sep 2007	8	Draw and label circuit diagram of 230V motor control circuit, protection other than thermal overload, two causes for fault.	50	25	25
			Sep 2007	8	Name numbered parts of 239V motor control circuit, two typical operating voltages, how thermal overload and HRC fuse protects motor, reveal of supply to motor	72	23	5
			Nov 2007	6	Draw and label circuit diagram of 230V motor control circuit, finding motor winding, connecting motor	60.5	25	14.5
			Sep 2008	2	Diagram of 230V control circuit. How thermal overload and HRC fuse protect motor. Starter fault	55	23	22
			Sep 2008	2	Diagram of 230V control circuit. What faults thermal overload and HRC fuses detect. Motor faults	33	29	38
			Nov 2008	6	Diagram of 230V control circuit. How thermal overload and HRC fuse protect motor.	46	30	24

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 9	H1a.27	<u>Protection and Control</u> Protection characteristics			Describe how thermal and electro-magnetic mechanisms of MCB operate. Main purpose of fuse and RCD. Correctly threading fuse wire in rewirable fuse.	74.5	14	11.5
			Sep 2007	4	Main purpose of a fuse and RCD, how does combined MCB operate on overload and short circuit, define current rating of fuse, phase failure relay	34.5	38	27.5
			Feb 2008	5	Current rating of fuses, why fuses blow, characteristics of protection devices, rewirable fuses, operation of thermal type MCB	100	0	0
			May 2008	6	Current rating of fuses, why fuses blow, characteristics of protection devices, rewirable fuses, back-up protection, reloading rewirable fuses	75	16	9
			Nov 2008	7	Current rating of fuses, why fuses blow, characteristics of protection devices, , reloading rewirable fuses, thermal overloads	61	24	15

2.3 - ESTB 2036

A2.3.1 - Moderation

There were two moderators for ESTB 2036.

ESTB 2036 was moderated by secure email. A teleconference was held with moderators on 30 March.

A2.3.2 - Marking

There were two markers for ESTB 2036.

A teleconference was held with the markers on 18 May.

Version 2 of the answer schedule was sent to markers on 18 May.

Comments

The candidates displayed a high standard of knowledge. All candidates have a firm grasp of the vital three steps required to achieve personal safety when isolating a circuit.

A2.3.3 - Amendments to ESTB 2036

The significant amendments to <u>ESTB 2036</u> arising from the moderation and marking were as follows:			
No.	Question (Moderation)	Answer (Moderation)	Answer (Marking)
1(a)(ii)	-	Answer corrected	-
1(b)(i)	Editorial amendment	Additional option added	-
1(b)(ii)	Editorial amendment	Three additional options added	-
1(e)	Rewritten to make intention clearer	-	Additional option added
1(g)	Reference to the circuit being faulty removed	-	-
1(h)	Editorial amendment	Reference to AS/NZS 3000:2007 added	-
7	Replaced with more topical question	Amended accordingly	-
8(a)(i)	-	Editorial amendment	-
8(a)(ii)	Rewritten to make intention clearer	Editorial amendment	-
8(b)	-	Editorial amendment	-
8(c)	Editorial amendment	-	-
9(a)	Rewritten to make intention clearer	-	-
9(b)(ii)	-	Additional option added	-

Appendix 3

Electrician Regulations Examinations

There was no Electrician Regulations examination in May 2009.

Appendix 4

Electrician Theory Examinations

There was no Electrician Theory examination in May 2009.

Appendix 5

Electrical inspector Examinations

There was no Electrical Inspector examination in May 2009.

Appendix 6

Tradesperson Electrical Work Certificate Examinations

9 May 2009

TEWC 151, a moderated paper, was used for the plumbers and gasfitters examination.

- Parts 1 and 2 (questions 1-9) are completed by plumbers.
- Parts 1 and 3 (questions 1-4 and 10-14) are completed by gasfitters.

Plumber/gasfitters complete TEWC 151A which comprised questions 1 to 4, 6, 7, 8, 10 and 14 of TEWC 151.

A6.1 - Moderation

There were two moderators for TEWC 151.

TEWC 151 was moderated by secure email. A moderators teleconference was held on 20 May.

A6.2. - Marking

Comments

No candidate sat this examination.

A6.3 - Amendments to TEWC 151

The significant amendments to TEWC 151 arising from the moderation and marking were as follows:			
No.	Question (Moderation)	Answer (Moderation)	Answer (Marking)
1(a)(ii)	-	Answer inserted	-
1(b)	Rewritten to make intention clearer	Amended accordingly	-
1(g)	-	Marks allocated across answer	-
1(j)	Deleted reference to earth continuity conductor	-	-
3(a)	Reference to AS/NZS 3760 removed	-	-
4	-	Correct answer inserted	-
4(b)	Rewritten to make intention clearer	-	-
5(a)	Preamble – inserted reference to where the disconnection is to take place. Marks increased from 3 to 4	-	-
5(a)(i)	-	Amended to be more accurate	-
5(b)	Change the requirements from 2 to 3 reasons. Marks increased from 2 to 3.	Correct marks allocated	-
6(b)	-	Additional option added	-
7(a)	Editorial amendment	Reference corrected	-
8(c)	Editorial amendment	-	-
11(b)	-	Additional option added	-
12(a)	Editorial amendment	Reference corrected	-
13(c)	Editorial amendment	-	-
14(b)(ii)	Rewritten to make intention clearer	Amended to make more accurate	-

Appendix 7

Electronic Security Examinations

2 May 2009

ES 18, a moderated paper, was used for this examination.

A7.1 - Moderation

There were two moderators for ES 18.

ES 18 was moderated by secure email. A teleconference was held with markers on 19 May.

A7.2. - Marking

There was one marker for ES 18.

Comments

One candidate sat and passed this examination with a mark of 81.

A7.3 - Amendments to ES 18

The significant amendments to ES 18 arising from the moderation and marking were as follows:			
No.	Question (Moderation)	Answer (Moderation)	Answer (Marking)
1(c)	Rewritten to split question into two parts	Amended accordingly	-
1(d)	-	Amended to be more accurate	-
2(a)	Preamble rewritten to make intention clearer.	-	-
2(b)(i)	Rewritten to make intention clearer	-	-
2(b)(ii)	-	Amended to be more accurate	-
3(b)	Editorial amendment	-	-
4(a)	Rewritten to make intention clearer	-	-
5(a)(i)	Editorial amendment	-	-
5(a)(ii)	-	Additional option added	-
7(d)	-	Amended to be more accurate	-
7(e)	Rewritten to split question into two parts	-	-