



ELECTRICAL WORKERS REGISTRATION BOARD

SUMMARY OF

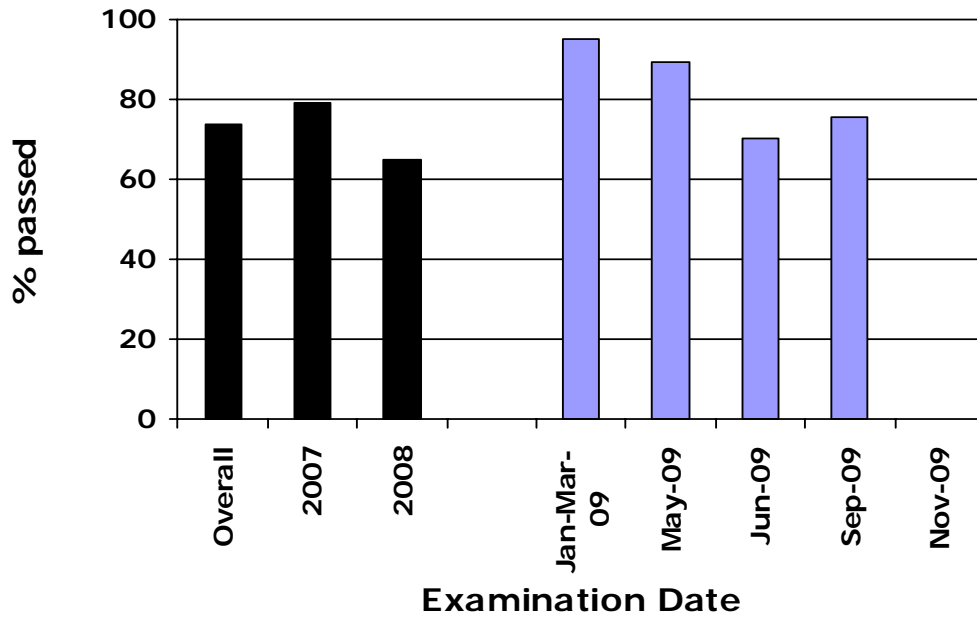
SEPTEMBER 2009 EXAMINATION ROUND

John Sickels
Registrar
3 February 2010

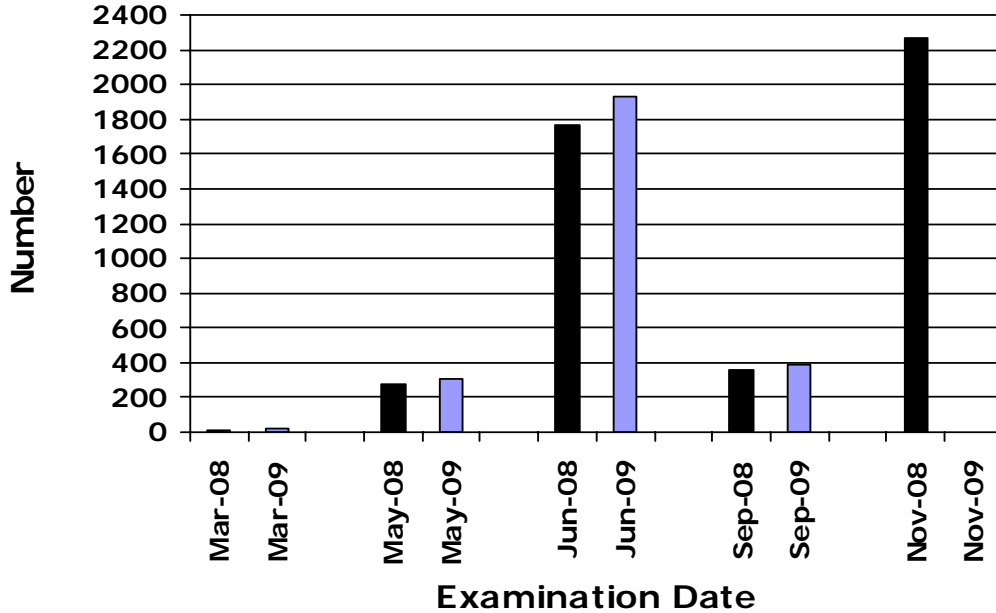
1. Summary of Examinations

	Number of candidates	Number of candidates who passed	Percentage passed
ESTA	276	207	75
ESTB	91	70	77
Elec. Regulations	0	0	0
Elec. Theory	15	10	67
Elec. Inspector	0	0	0
TEWC	7	6	86
E Security	2	2	100
September 2009	391	295	75.5

Pass Rates - All Examinations - 2009



Candidate Number - All Examinations - 2009



Mark Ranges

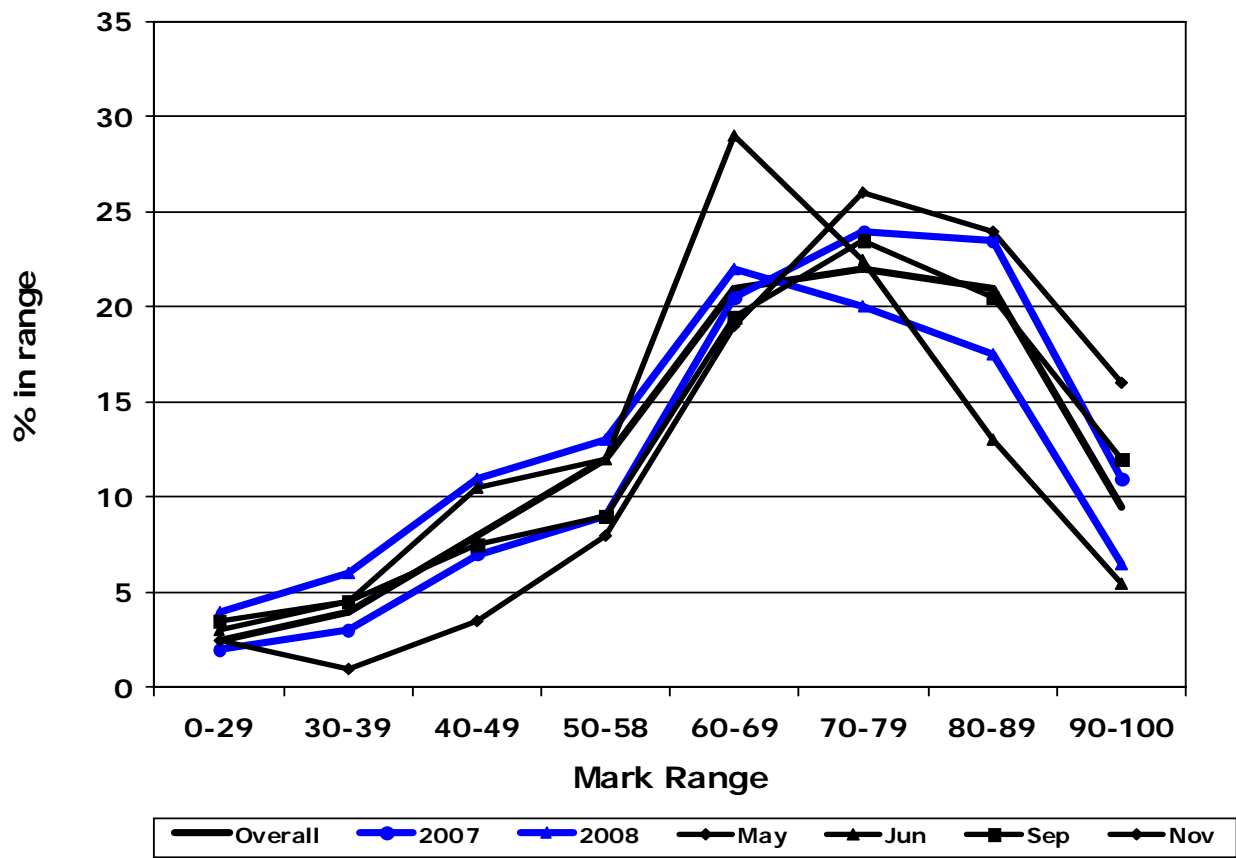
Number of candidates

Range	ESTA	ESTB	ER	ET	EI	TEWC	ES	September 2009	
90 – 100	38	3	0	1	0	2	2	46	candidates
80 – 89	56	23	0	1	0	0	0	80	candidates
70 – 79	58	25	0	5	0	4	0	92	candidates
60 – 69	55	19	0	3	0	0	0	77	candidates
50 – 58	19	13	0	3	0	1	0	36	candidates
40 – 49	25	5	0	0	0	0	0	30	candidates
30 – 39	14	3	0	0	0	0	0	17	candidates
0 – 29	11	0	0	2	0	0	0	13	candidates
	276	91	0	15	0	6	2	391	

% of candidates

Range	ESTA	ESTB	ER	ET	EI	TEWC	ES	September 2009	
90 – 100	14	3	0	7	0	29	100	12	% of candidates
80 – 89	20	25.5	0	7	0	0	0	20.5	% of candidates
70 – 79	21	27.5	0	33	0	57	0	23.5	% of candidates
60 – 69	20	21	0	20	0	0	0	19.5	% of candidates
50 – 58	7	14.5	0	20	0	14	0	9	% of candidates
40 – 49	9	6	0	0	0	0	0	7.5	% of candidates
30 – 39	5	2.5	0	0	0	0	0	4.5	% of candidates
0 – 29	4	0	0	13	0	0	0	3.5	% of candidates

Mark Ranges - All Examinations - 2009



2. General Comments

The number of candidates for the September examinations were the highest since 2004, the first year overall statistics were recorded.

There no major issues arising in the September Examination round.

3. Moderation

The moderation went well with all moderators having valuable input.

4. Marking

The marking went very well with all markers returning marked papers by the required dates.

5. Electrical Service Technician A

The pass rate of 75% was a reasonable result for an Electrical Service Technician A examination.

Candidates generally performed well in questions 1, 5, 6, 8 and 9. In questions 1, 5 and 8, between 69.5% and 77% of candidates were able to gain 7.5 or more marks. For those same questions, between 83% and 99% of candidates were able to gain 5 or more marks.

In questions 6 and 9, between 50% and 54% of candidates were able to gain 7.5 or more marks. For those same questions, between 71% and 83% respectively were able to gain 5 or more marks

Question 2 related to defining personal protective equipment and how it is used and the use of safeguards such as RCDs and isolating transformers. Only 25% of candidates were able to gain 7.5 marks or more for this question and over one-third of candidates failed to gain at least 5 marks. Candidates had difficulty in distinguishing between the requirements for employers and employees in relation to personal protective equipment. Many candidates did not know of the dangers of using two appliances with a single isolating transformer.

Question 3 related to determining the cause of different faults on two identical heaters and doing power calculations. Candidates had difficulties with this question with many have little knowledge of three-heat switching.

Candidates also had difficulties with question 7 which related to fault diagnosis. They had a reasonably sound knowledge of the problems associated with overloading circuits with too many appliances. The difficulty arose when the problems were associated with faulty appliances.

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

6. Electrical Service Technician B

While the pass rate of 77% was a good result, this is the lowest pass rate of the four Electrical Service Technician B examinations this year. The candidate numbers were similar to the numbers sitting previous September examinations for Electrical Service Technician B where about 100 candidates sit on average.

Candidates generally performed well in questions 1, 3, 4, 5, and 9. Between 49.5% and 90% of candidates were able to gain 7.5 or more marks for these questions, while between 75% and 96% of candidates were able to gain 5 or more marks.

Questions 2, 6 and 8 posed some problems for a number of candidates. Between 30% and 35% of candidates were able to gain 7.5 or more marks for these questions, while between 55% and 69% of candidates were able to gain 5 or more marks.

Question 7, diagnosing faults on a bakery oven proved too difficult for most candidates with 70.5% failing to gain at least 5 marks. It appears that most are unable to take a systematic approach to fault finding.

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 September 2009.

8. Electrician Theory

Fifteen candidates sat this examination and 10 passed. An abridged analysis is contained in Appendix 4 of this paper.

9. Electrical Inspector

There was no Electrical Inspector Examination in September 2009.

10. Tradespersons Electrical Work Certificate

Seven candidates sat this examination and 6 passed. An abridged analysis is contained in Appendix 6 of this paper.

11. Electronic Security Alarm Installer

Two candidates sat this examination and both passed. An abridged analysis is contained in Appendix 7.

Appendix 1

Electrical Service Technician A Examinations

10 and 12 September 2009

ESTA 1048, a moderated paper, was used for the examination of 12 September 2009.
ESTA 1049, a composite paper, was used for the examination of 10 September 2009.

A1.1 - Overall Candidate Performance

	Number of candidates	Number of candidates who passed	Percentage passed
ESTA 1048	275	206	75
ESTA 1049	1	1	100
September 2009	276	207	75

ESTA 1048

All candidates

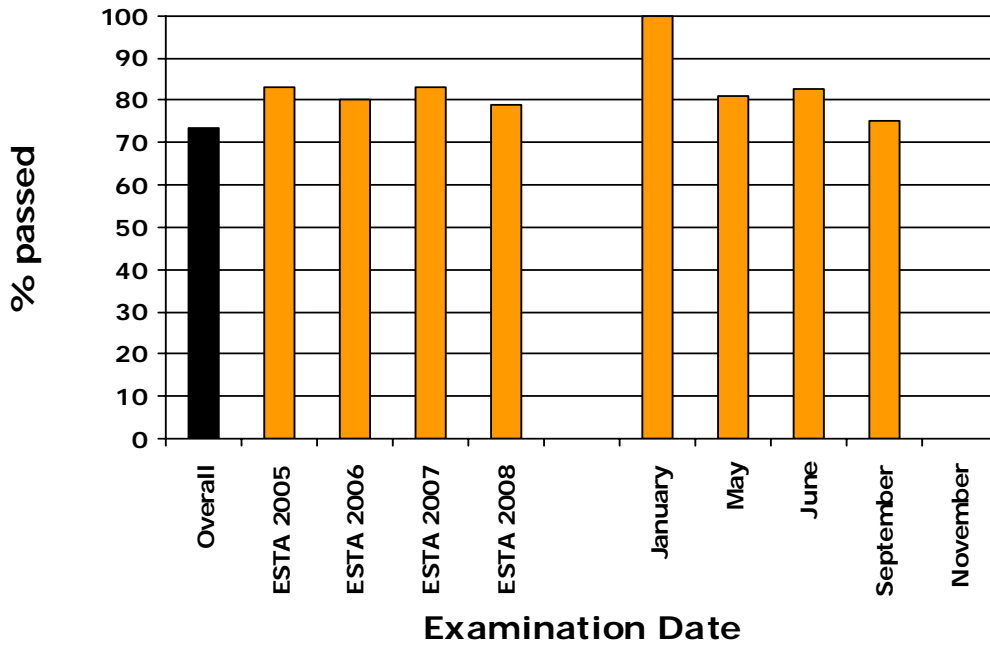
Average pass mark 68.5 %
Median mark 72

Those who passed

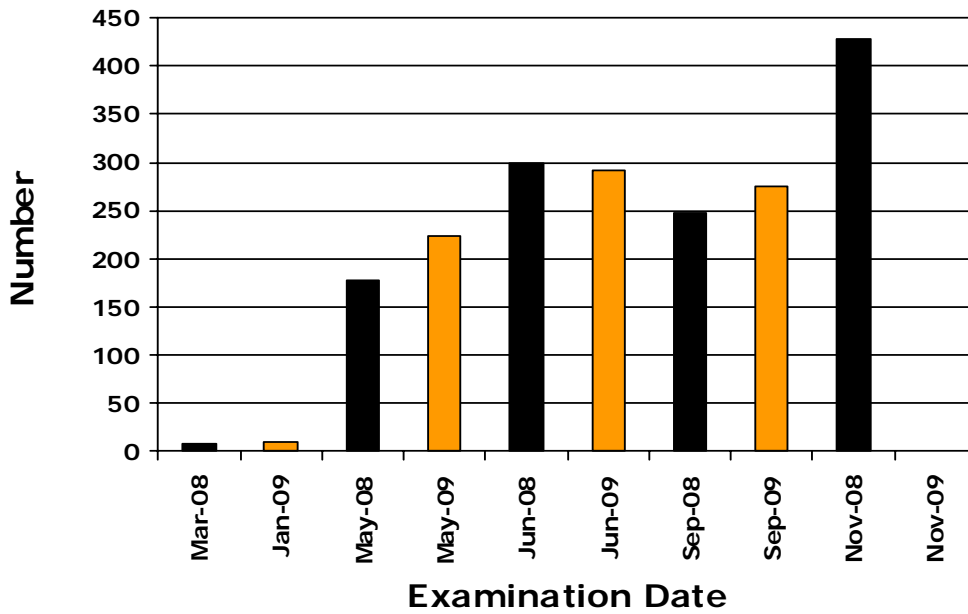
Average pass mark 77.5
Median mark 77

12 candidates gained 95 marks or more. 2 candidates gained 100 marks.

Pass Rates - ESTA Examinations - 2009



Candidate Numbers- ESTA Examinations - 2009



Mark Ranges

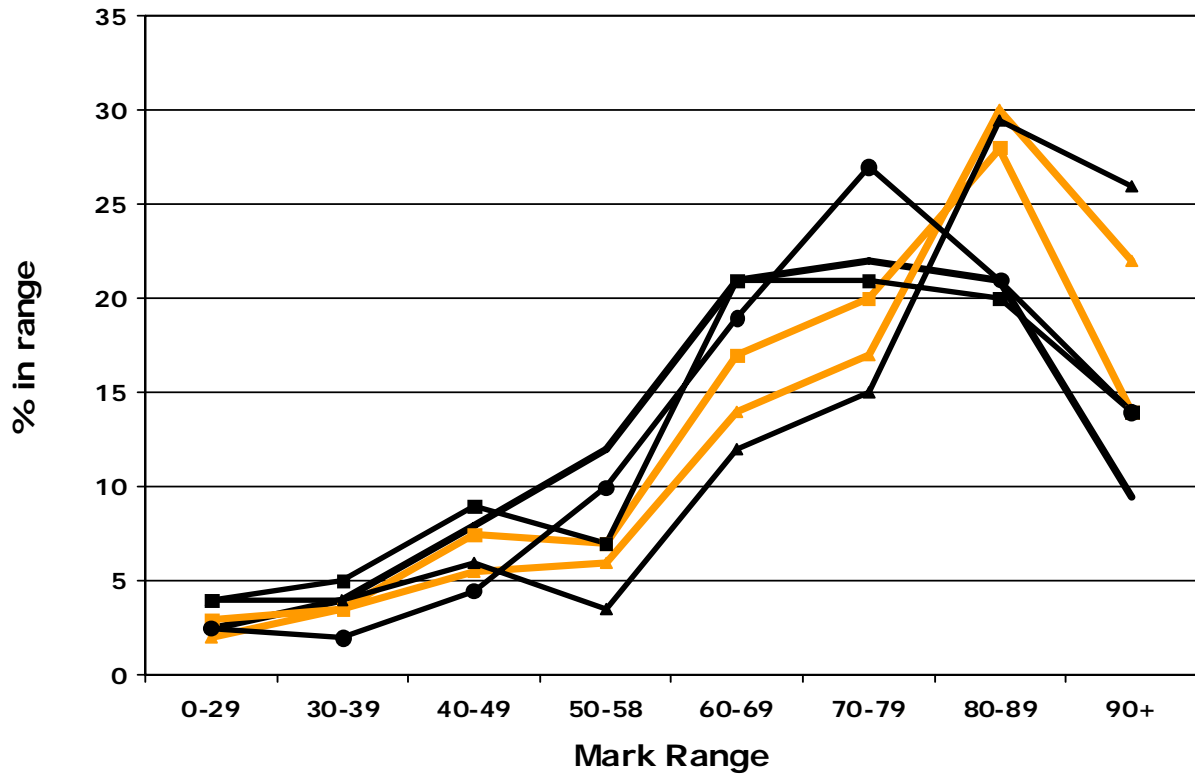
Number of candidates

Range	ESTA 1048	ESTA 1049			September 2009	
90 – 100	38	0			38	candidates
80 – 89	56	0			56	candidates
70 – 79	58	0			58	candidates
60 – 69	54	1			55	candidates
50 – 58	19	0			19	candidates
40 – 49	25	0			25	candidates
30 – 39	14	0			14	candidates
0 – 29	11	0			11	candidates
	275	1			276	

% of candidates

Range	ESTA 1048	ESTA 1049			September 2009	
90 – 100	14	0			14	% of candidates
80 – 89	20	0			20	% of candidates
70 – 79	21	0			21	% of candidates
60 – 69	20	100			20	% of candidates
50 – 58	7	0			7	% of candidates
40 – 49	9	0			9	% of candidates
30 – 39	5	0			5	% of candidates
0 – 29	4	0			4	% of candidates

Mark Ranges - ESTA Examinations - 2009



Overall
 ESTA-2007
 ESTA-2008
 May
 Jun
 Sep
 Nov

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				77	22	1
Q 2	L4.56	<u>Safe use of equipment</u>			Define personal protective equipment, responsibilities for using PPE. Using safeguards with equipment outdoors. Explain how using two appliances with isolating transformer increases possibility of electric shock.	25	40	35

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 3	F2.20	1ph-Motors - Selection, and fault finding			Circuit diagram of cap-start motor, reversing direction, how start winding disconnected. Effect if capacitor became disconnected. Reversing universal motor. Applications for universal motor	45	28	27
			May 2005	12	Circuit diagram, rotation and application of single phase motor	41	21	38
			Sep 2005	11	Starting and rotation direction of single phase motor	35	27	38
			Jun 2007	8	Circuit diagram of cap-start motor, reversing direction, how start winding disconnected, motor fault, reversing universal motor	58	25	17
			Jun 2007	8	Circuit diagram of split-phase motor, reversing direction, how start winding disconnected, reversing universal motor applications for universal motors	29	35.5	35.5
			May 2008	8	Name parts of diagram of 230V induction motor. How to reverse motor. Effect on motor if various parts were faulty.	28	41	31
			Jun 2008	3	Circuit diagram of cap-start motor, reversing direction. Effect if capacitor became disconnected, effect if run winding was open-circuited	31.5	32.5	36

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q.4	C2.11	<u>a.c.</u> – Measurements V, A, P, pf			Different faults on identical heaters. Calculate current drawn by heater. Calculate permitted voltage variation, power at minimum and maximum voltage variations.	40	12	48
			Jun 2008	2	Calculate current for heater at 230V. Calculate permitted voltage variation, power at minimum and maximum voltage variations. Faults on identical heaters	43	21	36
			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
			Sep 2008	8	Calculate voltage drop permitted at socket outlet. Calculate power consumed by heater and at minimum permitted voltage.	44	37	19
			Nov 2008	6	Calculate voltage drop permitted at socket outlet. Calculate power consumed by heater and at minimum permitted voltage.	40	31	29
			May 2009	2	Electric blanket – two 55W elements. Calculate current in low, medium and high.	35	10	55

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 5	K4.46	<u>Testing and inspection methods</u>			IR testing; state test voltage and acceptable test result; state alternative to an IR test and acceptable test result; method of testing when semi conductors in appliance. Describe test method for an IR test.	75.5	17	7.5
			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
			May 2009	6	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 2009	7	IR test of appliance with semi-conductor devices. Alternative to IR testing.	73.5	18.5	8

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 6	A5.5	<u>Theory</u> - Simple circuits			Draw circuit diagram of Class I heater with two heat settings. Calculate maximum power consumed and minimum current drawn.	54	17	29
			Jun 2008	7	Calculate total power consumed, current drawn if resistance open-circuited. Reading on voltmeter if resistance open-circuited	55	16	29
			Sep 2008	3	Draw circuit diagram – 2 resistances in series, one in parallel. Calculate total resistance, circuit voltage, total power consumed	65	8	27
			Sep 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
			May 2009	7	Draw 230V circuit supplying 2 elements controlled by two-position selector switch, Calculate maximum power and minimum current.	48	29	23
			Jun 2009	2	Heater with three-heat switch. Calculate maximum power @ 230V, power in medium position, minimum current, power @ minimum permitted voltage	45.5	12.5	42

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 7	H10.66	<u>Fault diagnosis</u>			Appliances plugged in socket outlet – fuse blows. Describe how to determine if socket outlet overloaded. Appliances plugged in socket outlet – MCB trips blows. Describe how to test to determine if appliance is faulty	35	17.5	47.5
			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
			May 2009	8	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
			Jun 2009	5	Appliances plugged in socket out – fuse blows. Describe how to determine if socket outlet overloaded, describe tests to determine if faulty appliance	49	23.5	27.5

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 8	H3d.41	<u>Cables and Cords</u> Specifications			State two sets of colours for cord for Class I appliance. Actions to prevent cord overheating. Characteristics of flexible cords	69.5	13.5	17
			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
			Nov 2008	3	Precautions with flexible cord wound on drum. Voltage drip in flexible cords. Flexible cord current ratings.	50	32	18
			May 2009	3	Colour coding and polarity of flexible cords for Class I and Class II appliances. Precautions to prevent cord failure.	86	8	6

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 9	D1.12	System theory - 3 – phase systems			Define Hertz, draw and label sine wave. How PEC contributes to safety, testing faulty PEC	50	33	17
			Dec 2003	12	Define Hertz, sketch & label one cycle	67	18	15
			Nov 2004	15	Define Hertz, sketch & label one cycle	54	22	24
			Nov 2006	2	Define Hertz, sketch & label one cycle, define standard low voltage, low voltage direct contact, isolated and indirect contact	56	30	14
			May 2007	9	Voltage waveform, name components, define Hertz, PEC conductors, repair of appliance PEC	55.5	28.5	16
			Sep 2007	5	Name parts of sine wave, define Hertz. How PEC contributes to safety, testing faulty PEC	66	25	9
			Sep 2007	5	Define Hertz, draw and label sine wave. How PEC contributes to safety, testing faulty PEC	49	31	20
			May 2008	9	Define standard low voltage, low voltage, direct contact, isolated. Name parts of sine wave, define Hertz.	76	12.5	11.5

A1.3 - ESTA 1048

A1.3.1 - Moderation

There were moderators for ESTA 1048.

ESTA 1048 was moderated by secure email. A teleconference was held with moderators on 18 August.

A1.3.2 - Marking

There were four markers for ESTA 1048.

Teleconferences were held with the markers on 23 September.

Version 2 of the answer schedule was sent to markers on 23 September.

Comments

This was a well moderated paper, with few alterations required.

This was a searching paper which, for the most part, separated those who had the required knowledge from those who did not.

A1.3.3 - Amendments to ESTA 1048

The significant amendments to <u>ESTA 1048</u> arising from the moderation and marking were as follows:			
No.	Question (Moderation)	Answer (Moderation)	Answer (Marking)
1(f)	Reference to 230V inserted	-	-
2(a)(ii)	Rewritten to make intention clearer	-	-
2(b)(i)	-	-	Two options added
2(c)	-	Rewritten to be more accurate	-
3(a)(ii)	Editorial amendment	-	Amended to clearly show that either option is acceptable
3(a)(iv)	Rewritten to remove ambiguity	Amended accordingly	Amended to be more accurate
3(b)(i)	-	-	Amended to clearly show that either option is acceptable
4(a)(ii)	Amended to align with answer	-	-
4(a)	Rewritten to make intention clearer	Amended accordingly	-
4(b)	Rewritten to make intention clearer	Amended accordingly	-
7(a)	Preamble rewritten to make intention clearer	-	-
7(b)	Preamble rewritten to make intention clearer	-	-
7(b)(i)	Amended to indicate that there is more than one reason	-	-
7(b)(ii)	Rewritten to align with (b)(i)	Amended accordingly	-
9(a)	Editorial amendment	-	-

Appendix 2

Electrical Service Technician B Examinations

19 September 2009

ESTB 2039, a moderated paper, was used for the examination of 19 September 2009.

A2.1 - Overall Candidate Performance

	Number of candidates	Number of candidates who passed	Percentage passed
ESTB 2039	91	70	77
September 2009	91	70	77

ESTB 2039

All candidates

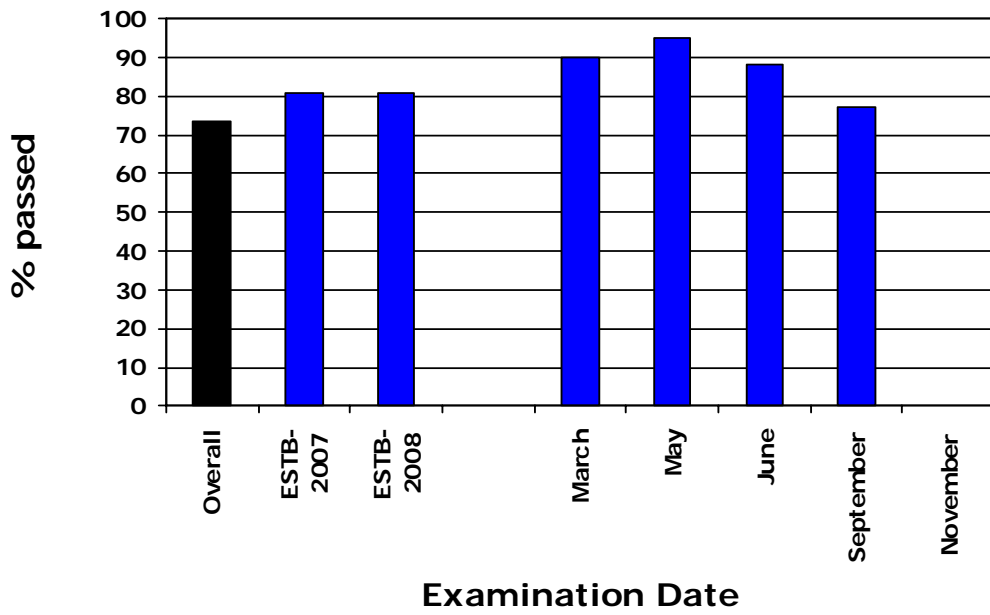
Average pass mark 69 %
Median mark 71

Those who passed

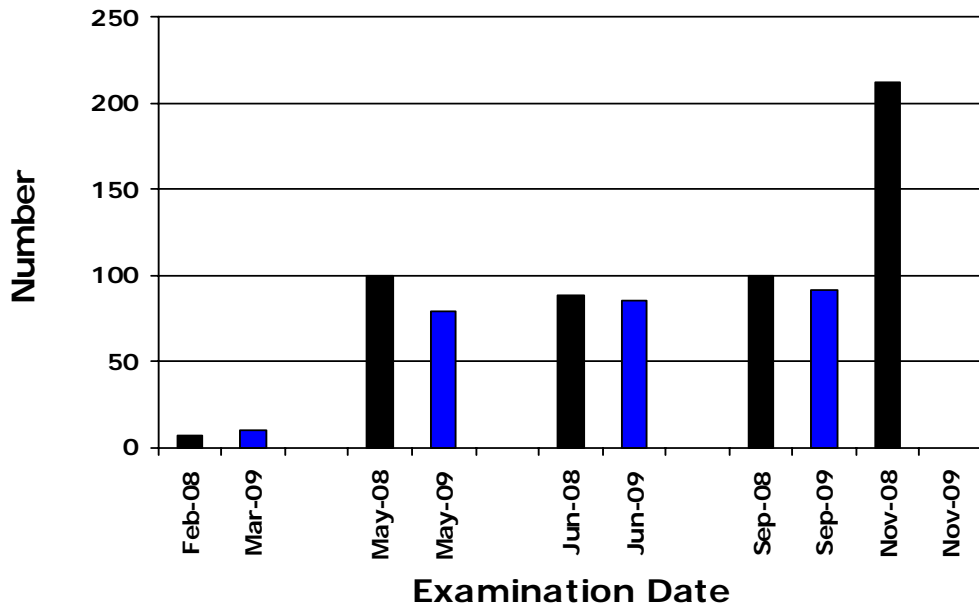
Average pass mark 75 %
Median mark 74

3 candidates gained 90 marks or better.

Pass Rates - ESTB Examinations - 2009



Candidate Numbers - ESTB Examinations - 2009



Mark Ranges

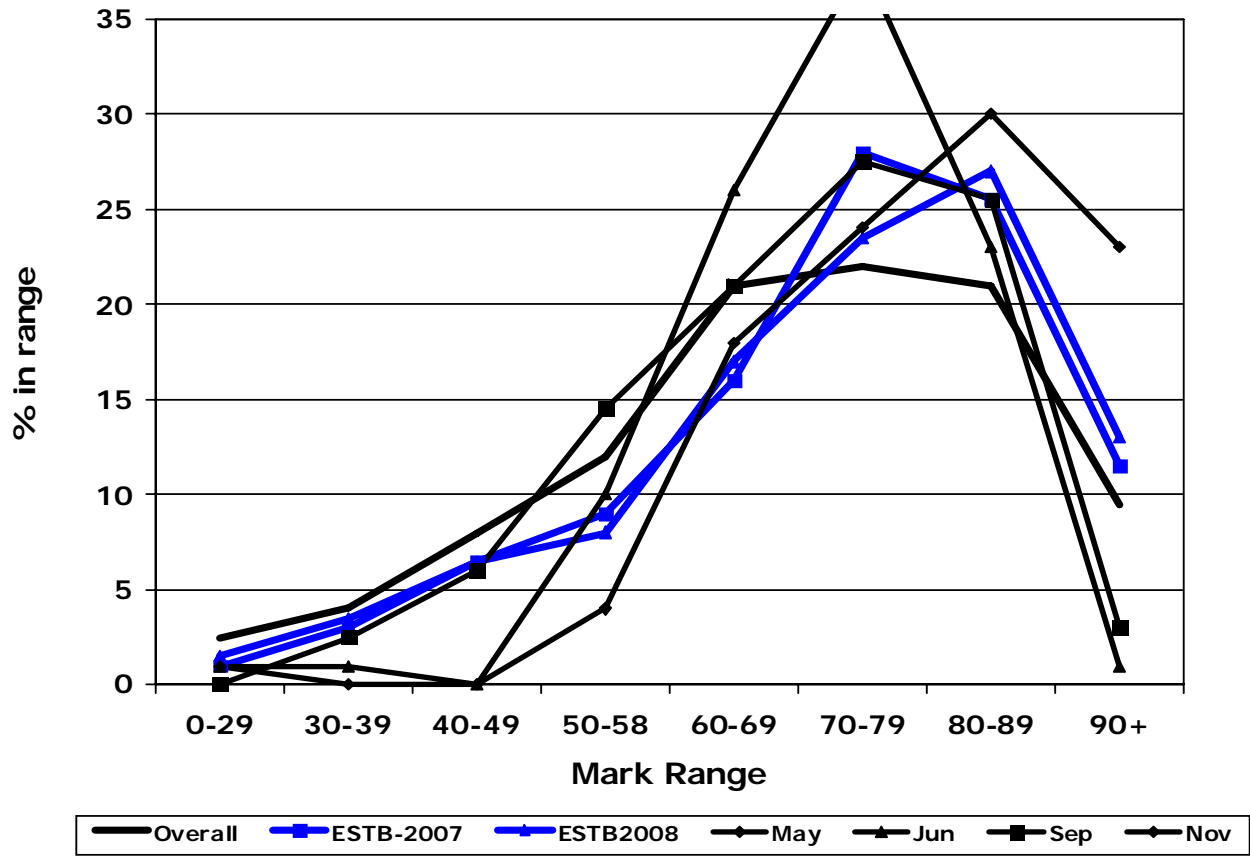
Number of candidates

Range	ESTB 2039			September 2009	
90 – 100	3			3	candidates
80 – 89	23			23	candidates
70 – 79	25			25	candidates
60 – 69	19			19	candidates
50 – 58	13			13	candidates
40 – 49	5			5	candidates
30 – 39	3			3	candidates
0 – 29	0			0	candidates
	91			91	

% of candidates

Range	ESTB 2039			September 2009	
90 – 100	3			3	% of candidates
80 – 89	25.5			25.5	% of candidates
70 – 79	27.5			27.5	% of candidates
60 – 69	21			21	% of candidates
50 – 58	14.5			14.5	% of candidates
40 – 49	6			6	% of candidates
30 – 39	2.5			2.5	% of candidates
0 – 29	0			0	% 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				81.5	14	4.5
Q 2	L4.56	<u>Safe use of equipment</u>			Using two appliances on one isolating transformer. Using appliances outdoors - why a portable RCD is plugged into the socket outlet. Why portable RCD is voltage dependent. Safeguards required to be used with appliances outdoors.	30	30	40
			Jun 2005	10	Why bonding necessary to outlets on isolating transformer. PPE and using PEC when working near battery charger	32.5	45.5	22

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 3	K2.38	<u>Statutory testing and inspection requirements</u>			Testing to AS/NZS 3760 – two instrument tests on appliance. Visual checks of flexible cord and the appliance. Describe how to carry out IR test and PEC test on Class I appliance.	80	14.5	5.5
			Sep 2007	7	Standard to which appliance must be tested, testing requirements and visual checks to Standard	56	38	6
			May 2008	3	Testing to AS/NZS 3000. PEC tests, testing to check integrity of insulation	80	16	4
			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
			Jun 2009	4	AS/NZS 3760 – state requirements for instrument tests on appliance. Describe IR test of appliance. Colour coding of conductors	61	31.5	7.5

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 4	F1.19	<u>1ph-Motors</u> - Theory			Reversing, capacitor start and universal motors. Calculate current drawn by motor. Circuit diagram of split phase motor, device that can be used in place of a centrifugal switch. Fault diagnosis of a universal motor	49.5	26.5	24
			Jun 2007	2	Reversal of cap start and universal motor, calculate current drawn circuit diagram of split-phase, use of reversing switch while motor running	37	52.5	10.5
			Jun 2007	2	Circuit diagram of cap-start motor, reversing, purpose of capacitor, calculate power, faults on single phase motors	55	35.5	9.5
			Sep 2008	6	Circuit diagram of cap-start motor, reversing motor. Reversing universal motor. Diagram of split-phase motor, reversing of motor. Motor fault.	72	15	13
			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 5	L1.40/54	Isolation Equipment and Personal safety			What prove-test-prove method establishes. Ensuring continued isolation of appliance. Safety precautions after appliance is disconnected	56	35	9
			Sep 2007	3	Why prove-test-prove is used and how it is carried out, difference between switching off and isolation four ways of ensuring continued isolation	38	43.5	18.5
			Feb 2008	3	Three precautions after disconnecting an appliance, why prove-test-prove is used, testing to confirm isolation, three ways of ensuring continued isolation	0	100	0
			Jun 2008	6	Three precautions after disconnecting an appliance, why prove-test-prove is used, testing to confirm isolation, three ways of ensuring continued isolation	50.5	39	10.5
			Sep 2008	4	What prove-test-prove establishes. Continued isolation. Safety of persons and property	38	52.5	9.5
			Jun 2009	6	Isolation when switch not adjacent to motor. Prove-test-prove method. Danger tag system. Securing isolation	53.5	35.5	11

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 6	H3d.41	<u>Cables and Cords Specifications</u>			Flexible cords - colour coding and polarity of single-phase and three-phase. Describe current rating and voltage drop	35	20	45
			Nov 2007	7	Flexible cords - volt drop, reduce effect of volt drop, colour coding	69	26	5
			Feb 2008	4	Flexible cords - four factors when selecting, volt drop and reducing the effect of voltage drop, colour coding	57	43	0
			May 2008	9	Flexible cords - four factors when selecting. Colours of three-phase cable, volt drop and reducing the effect of voltage drop, current rating of cords	64	33	3
			Jun 2008	3	Flexible cords - four factors when selecting. Colours of three-phase cable, fitting plug to flexible cord, current rating of cords	57.5	33.5	9
			Nov 2008	4	Flexible cords - four factors when selecting. Colours of three-phase cable, fitting plug to flexible cord, current rating of cords	57.5	33.5	9
			Jun 2009	7	Flexible cords - four factors when selecting. Factors affecting voltage drop in cord. Colours of three-phase cable.	65	28	7

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 7	H10.66	<u>Fault diagnosis</u>			Three-phase bakery oven – why it still worked with two fuses blown. Three locations for the fault. Instrument used to find the fault. Describe how to test for fault.	5.5	24	70.5
			Feb 2008	9	Fuse blows on circuit supply appliances. How to locate fault and remedial action	14	43	43
			Sep 2008	3	Reconnection of printing press – safety before connecting testing before connection, main safety checks after connection	52.5	32	15.5
			Sep 2008	3	Connect new hot water cylinder to existing isolating switch – testing before connection.	66.5	14.5	19
			Nov 2008	8	Connect new hot water cylinder to existing isolating switch – testing in order, describe tests, personal safety	57	24	19
			May 2009	5	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

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 8	K4.46	<u>Testing and inspection methods</u>			Testing three-phase machine to establish fault and likely causes of the fault. Actions to make machine operationally safe.	33	36	31
			Sep 2006	4	3 phase motor – IR test, PEC test, recommissioning	62.5	31.5	6
			Nov 2006	6	Fixed-wired planer – MCB functions than trips, small shocks off frame, describe PEC and IR tests	30	40	30
			Sep 2007	5	Detail tests before reconnection to be made to motor repaired by another person	16	48	36
			Nov 2007	3	Three-phase planer, tests to establish the fault, causes of fault, making machine operationally safe	10	51	39

	Topic No.	Topic	Year	Q.No.	Subject	75-100% (%)	50 – 70% (%)	0 – 45% (%)
Q 9	P3.13	<u>Legislation</u> Practising licences			Refresher courses, practising licences, classes of person who can carry out PEW	90	5	4
			Sep 2004	5	Three requirements for registration, practising licences and refresher courses	67	15	18
			May 2005	5	PEW, refresher courses	73	16	11
			May 2006	6	Three for registration, practising licence requirements, classes who may do PEW	56	20	24
			Jun 2006	2	Three requirements for registration, practising licences and refresher courses	47.5	25.5	27
			Sep 2006	9	Refresher courses, practising licences, classes of person who can carry out PEW	81	13	6
			Nov 2006	9	Registration requirements, practising licences, classes of person who can carry out PEW	67	17	16

2.3 - ESTB 2039

A2.3.1 - Moderation

There were two moderators for ESTB 2039.

ESTB 2039 was moderated by secure email. A teleconference was held with moderators on 19 August.

A2.3.2 - Marking

There were two markers for ESTB 2039.

A teleconference was held with the markers on 30 September.

Version 2 of the answer schedule was sent to markers on 30 September.

Comments

Regarding the moderation of this paper, there were several grammatical errors, and some numeration details that were incorrect.

A2.3.3 - Amendments to ESTB 2039

The significant amendments to <u>ESTB 2039</u> arising from the moderation and marking were as follows:			
No.	Question (Moderation)	Answer (Moderation)	Answer (Marking)
1(a)	-	Rewritten to highlight the points need to be covered	-
1(c)	Editorial amendment	-	-
1(d)	Rewritten to make intention clearer	-	Additional option added
1(h)	-	Amended to be more accurate	-
2(a)	Rewritten to make intention clearer	Amended to be more accurate	-
3(c)	Rewritten to make intention clearer	-	-
3(d)	Rewritten to make intention clearer	-	-
3(e)	-	Amended to be more accurate	-
4(c)(i)	-	Marks allocated for each part required to be provided	-
4(c)(ii)	-	Editorial amendment	Additional option added
4(c)(iii)	-	Amended to be more accurate	-
5(a)	-	Editorial amendment to 3 rd bullet point	-
5(b)	-	1 st bullet point amended to be more accurate	Additional option added
6(a)	Rewritten to make intention clearer	-	Additional option added
6(b)	Rewritten to make intention clearer	-	-
7	Rewritten to make intention clearer	Amended accordingly	-
8(a)	-	Amended to be more accurate	-
8(b)	-	2 nd bullet point amended to be more accurate	Additional option added
8(c)	Rewritten to make intention clearer	Editorial amendment	-
9(a)(ii)	Editorial amendment	-	-
9(c)	-	Marks inserted	-

Appendix 3

Electrician Regulations Examinations

There was no Electrician Regulations Examination in September 2009

Appendix 4

Electrician Theory Examinations

19 September 2009

ET 31, a composite paper, was used for the examination of 19 September 2009.

A4.1 - Overall Candidate Performance

	Number of candidates	Number of candidates who passed	Percentage passed
ET 31	15	10	67
September 2009	15	10	67

ET 31

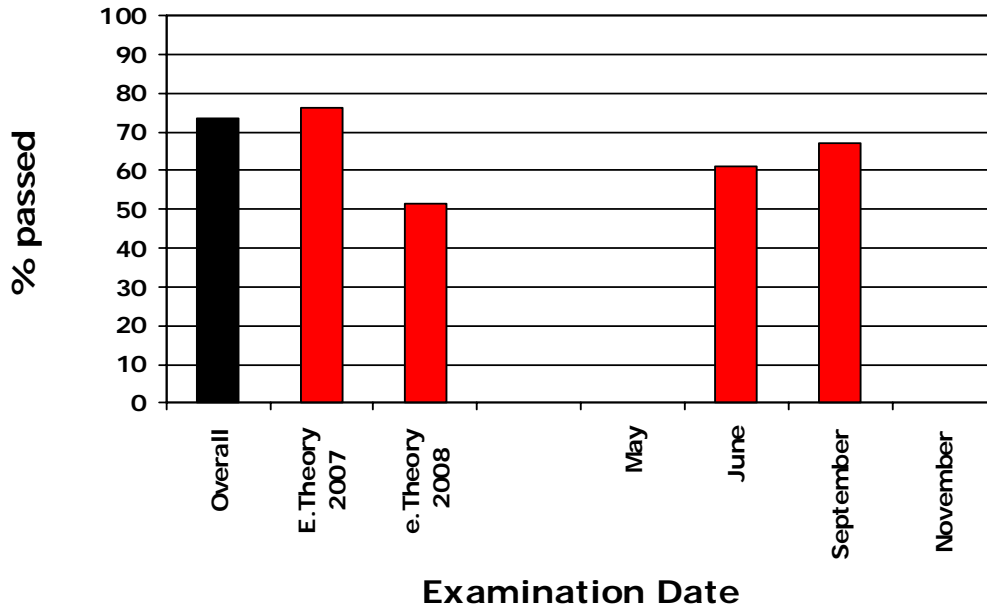
All candidates

Average pass mark 63 %
Median mark 69.5

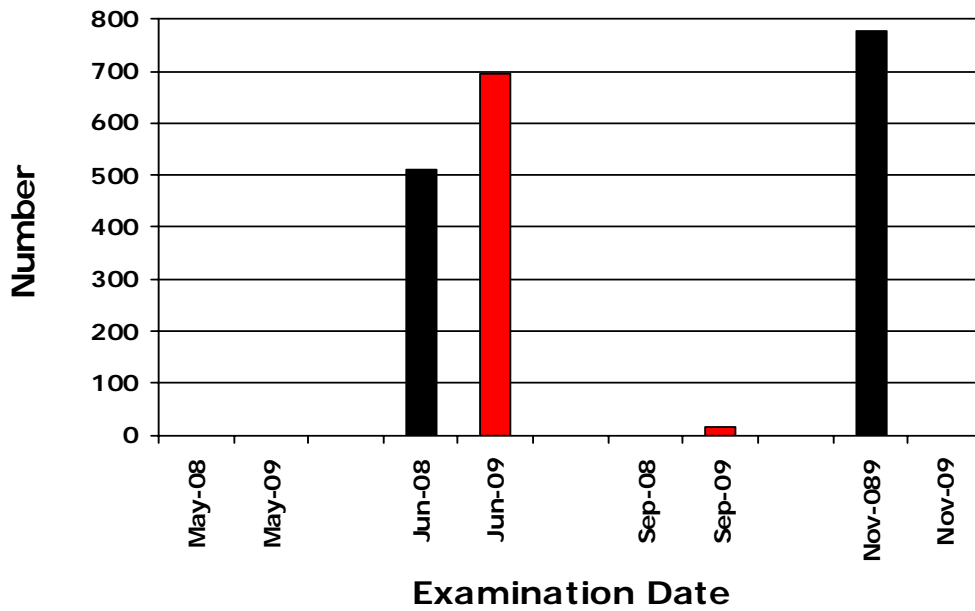
Those who passed

Average pass mark 74 %
Median mark 70

Pass Rates - Electrician Theory Examinations - 2009



Candidate Numbers - Electrician Theory Examinations - 2009



Mark Ranges

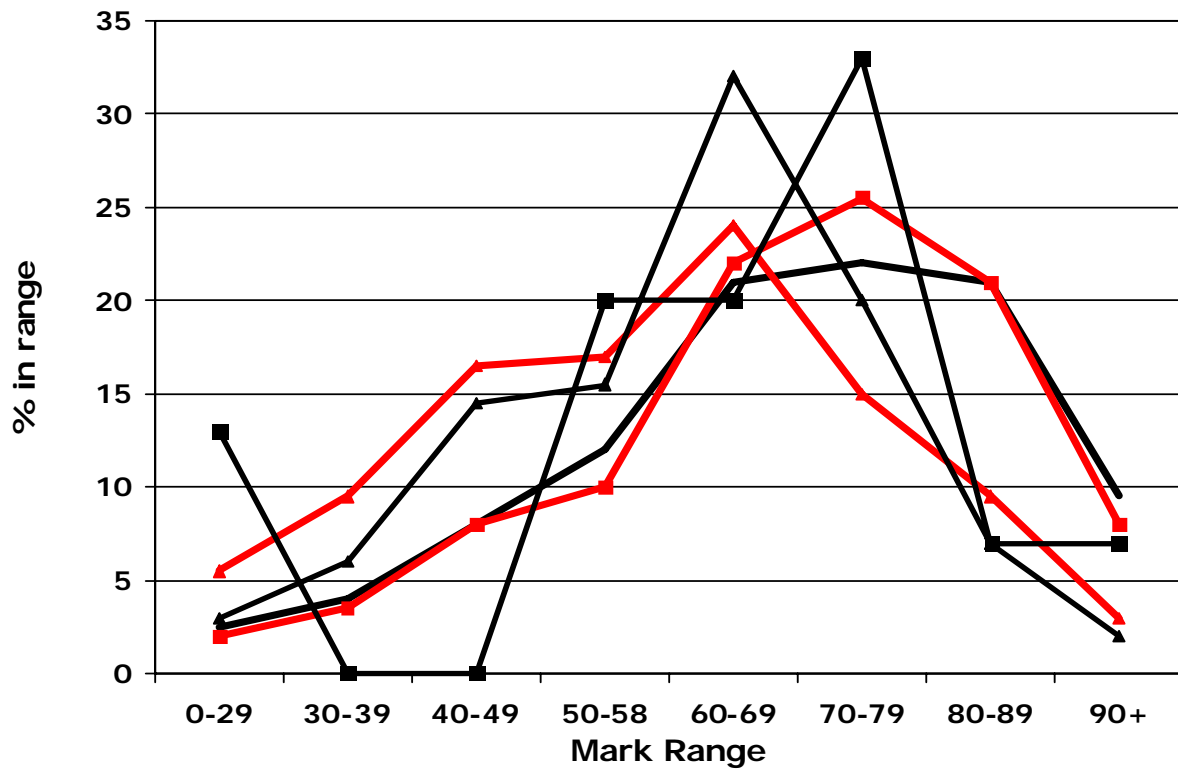
Number of candidates

Range	ET 31			September 2009	
90 – 100	1			1	candidates
80 – 89	1			1	candidates
70 – 79	5			5	candidates
60 – 69	3			3	candidates
50 – 58	3			3	candidates
40 – 49	0			0	candidates
30 – 39	0			0	candidates
0 – 29	2			2	candidates
	15			15	

% of candidates

Range	ET 31			September 2009	
90 – 100	7			7	% of candidates
80 – 89	7			7	% of candidates
70 – 79	33			33	% of candidates
60 – 69	20			20	% of candidates
50 – 58	20			20	% of candidates
40 – 49	0			0	% of candidates
30 – 39	0			0	% of candidates
0 – 29	13			13	% of candidates

Mark Ranges - Electrician Theory Examinations - 2009



Overall
 E.Theory 2007
 E.Theory 2008
 Jun
 Sept
 Nov

Appendix 5

Electrical Inspector Examinations

There was no Electrical Inspector Examination in September 2009.

Appendix 6

Tradesperson Electrical Work Certificate Examinations

19 September 2009

TEWC 153, 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 153A which comprised questions 1 to 4, 6, 7, 8, 9 and 10 of TEWC 153.

A6.1 - Moderation

There were two moderators for TEWC 153.

TEWC 153 was moderated by secure email. A moderators teleconference was held on 19 August.

A6.2. - Marking

There was one marker for TEWC 153.

Comments

Seven candidates sat this examination and six passed.

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(d)	Rewritten to make intention clearer		-
3(a)		Amended to make more accurate	-
3(c)		Editorial amendment	-
4(a)	Rewritten to make intention clearer		-
4(b)(ii)	Editorial amendment		-
4(c)		Additional option added	
6(b)	Rewritten to make intention clearer	Amended accordingly	-
7(b)		Additional option added	-
8(a)(ii)		Amended to make more general	-
8(b)		Answer corrected to align with term in question	-
11(b)	Rewritten to make intention clearer	Amended accordingly	-
12(b)		Additional option added	-
13(a)(ii)		Amended to make more general	-
13(b)		Answer corrected to align with term in question	-
14(c)	Editorial amendment	Last bullet point deleted as not being relevant to question	-

Appendix 7

Electronic Security Examinations

19 September 2009

ES 20, a moderated paper, was used for this examination.

A7.1 - Moderation

There were two moderators for ES 20.

ES 20 was moderated by secure email. A teleconference was held with markers on 20 August.

A7.2. - Marking

There was one marker for ES 20.

Comments

Two candidates sat and passed this examination.

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	-	-