BOARD OF STUDIES
NEW SOUTH WALES

2012 HSC Electrotechnology Marking Guidelines

Section I

Multiple-choice Answer Key

Question	Answer
1	A
2	D
3	C
4	B
5	B
6	A
7	C
8	D
9	B
10	A
11	C
12	B
13	C
14	C
15	A

Section II

Question 16 (a)

Criteria	Marks
• Identifies THREE personal protective equipment items	3
• Identifies TWO personal protective equipment items	2
• Identifies ONE personal protective equipment item`	1

Question 16 (b)

Criteria	Marks
• Provides a comprehensive outline of at least TWO unsafe electrical situations	5
• Provides an adequate outline of at least TWO unsafe electrical situations	4
• Provides a basic outline of at least TWO unsafe electrical situations OR provides a comprehensive outline of the unsafe potential of the drill, including at least three situations.	3
• Provides an adequate outline of the unsafe potential of the drill including at least two situations.	2
• Provides a limited outline of a potential unsafe practice or situation with the drill.	1

Question 17

Criteria	Marks
• Provides a comprehensive explanation of procedures and actions to be followed	6
• Provides a detailed explanation of procedures and actions to be followed	5
• Provides an adequate explanation of procedures and actions to be followed	4
• Provides a basic explanation of procedures and actions to be followed	3
• Provides a limited explanation of procedures and actions to be followed	2
• Provides a list of actions	1

Question 18

Criteria	Marks
• Both lamps correctly connected (parallel) AND ammeter wired correctly AND voltmeter wired correctly AND fuse wired correctly AND connected to supply correctly AND labelled correctly AND switch to control circuit*	7
• Any SIX of the above SEVEN items done correctly	6
• Any FIVE of the above SEVEN items done correctly	5
• Any FOUR of the above SEVEN items done correctly	4
• Any THREE of the above SEVEN items done correctly	3
• Any TWO of the above SEVEN items done correctly	2
• Any ONE of the above SEVEN items done correctly	1

*To receive full marks the circuit must be able to work

Question 19 (a) (i)

Criteria	Marks
• Correctly indicates the state of all switches	1

Question 19 (a) (ii)

Criteria	Marks
• Correctly indicates the state of all switches	1

Question 19 (a) (iii)

Criteria	Marks
• Correctly indicates the state of all switches	1

Question 19 (b)

Criteria	Marks
• Correctly calculates THREE resistors in series (total 25 Ω) and calculates correct circuit current	2
• Correctly calculates THREE resistors in series	1

Question 19 (c)

Criteria	Marks
• Correctly calculates R_2 and heating element resistance AND • Correctly calculates circuit current AND • Correctly calculates power dissipation of heating element	3
• Correctly calculates R_2 and heating element resistance AND correctly calculates circuit current	2
• Correctly calculates R_2 and heating element resistance	1

Question 20 (a)

Criteria	Marks
• Correctly totals R_4 and R_5	1

Question 20 (b)

Criteria	Marks
• Correctly totals R_1+R_2 (series) AND correctly totals R_1+R_2 and R_3 (parallel)	2
• Correctly totals R_1+R_2 (series)	1

Question 20 (c)

Criteria	Marks
• Correctly identifies I Total and applies ohm law across R_5 to determine V_{R5}	1

Question 20 (d) (i)

Criteria	Marks
• Correctly identifies resistance increases	1

Question 20 (d) (ii)

Criteria	Marks
• Correctly identifies current decreases	1

Section III

Question 21

Criteria	Marks
• Provides a comprehensive explanation of safe working practices, tools, equipment and processes that should be implemented in the given electrotechnology situation • Communicates clearly and logically, using standard industry terminology • Communicates ideas and information effectively in a well reasoned and cohesive response • Demonstrates an in-depth understanding of electrotechnology functions in reference to the scenario used in the question	13–15
• Provides a detailed explanation of safe working practices, tools, equipment and processes that should be implemented in the given electrotechnology situation • Communicates in an acceptable manner using standard industry terminology • Communicates ideas and information consistently in a reasoned and cohesive response • Demonstrates an understanding of electrotechnology functions in reference to the scenario used in the question	10–12
• Provides adequate explanation of safe working practices, tools, equipment and processes that should be implemented in the given electrotechnology situation • Communicates using some industry terminology • Communicates ideas and information adequately • Demonstrates a basic understanding of electrotechnology functions in reference to the scenario used in the question	7–9
• Provides a basic explanation of safe working practices, tools, equipment and processes that should be implemented in the given electrotechnology situation • Communicates using limited industry terminology • Communicates ideas and information in a basic manner • Demonstrates a basic understanding of electrotechnology functions in reference to the scenario given	4–6
• Provides a limited description of some safe working practices, tools, equipment and processes that should be implemented in the given electrotechnology situation • Communicates using limited industry terminology • Communicates ideas and information in a limited manner • Demonstrates limited understanding of electrotechnology functions in reference to the scenario used in the question	1–3

Section IV

Question 22 (a)

Criteria	Marks
• Identifies unsafe work practices and bullying and demonstrates an understanding of appropriate actions	3
• Identifies unsafe work practices and/or bullying and provides a basic understanding of appropriate actions	2
• Identifies unsafe work practices OR bullying with limited or no understanding of appropriate actions	1

Question 22 (b)

Criteria	Marks
• Identifies THREE or more examples of employer's duty of care towards employees	3
• Identifies TWO examples of employer's duty of care towards employees	2
• Identifies ONE example of employer's duty of care towards employees	1

Question 22 (c)

Criteria	Marks
• Provides a comprehensive list of actions to be undertaken in the given electrotechnology situation • Communicates ideas and information effectively in a well reasoned and cohesive response • Demonstrates an in-depth understanding of electrotechnology functions in reference to the scenario used in the question	9
• Provides a detailed list of actions to be undertaken in the given electrotechnology situation • Communicates ideas and information consistently in a reasoned and cohesive response • Demonstrates an understanding of electrotechnology functions in reference to the scenario used in the question	7–8
• Provides an adequate list of actions to be undertaken in the given electrotechnology situation • Communicates ideas and information adequately • Demonstrates a basic understanding of electrotechnology functions in reference to the scenario used in the question	5–6
• Provides a basic list of actions to be undertaken in the given electrotechnology situation • Communicates ideas and information in a basic manner • Demonstrates a basic understanding of electrotechnology functions in reference to the scenario given	3–4
• Provides a limited list of actions to be undertaken in the given electrotechnology situation • Communicates ideas and information in a limited manner • Demonstrates limited understanding of electrotechnology functions in reference to the scenario used in the question	1–2

Electrotechnology

2012 HSC Examination Mapping Grid

Section I

Question	Marks	Unit of competency/Element of competency	Employability skills (Please put an X where appropriate)							
			Communication	Teamwork	Problem-solving	Initiative and enterprise	Planning and organising	Self-management	Learning	Technology
1	1	UEENEEE002B Dismantle, assemble and fabricate electrotechnology components					X			X
2	1	UEENEEE001B Apply OHS practices in the workplace							X	
3	1	UEENEEE002B Dismantle, assemble and fabricate electrotechnology components								X
4	1	UEENEEE003B Solve problems in extra-low voltage single path circuits							X	
5	1	UEENEEE005B Fix and secure equipment			X					
6	1	UEENEEE002B Dismantle, assemble and fabricate electrotechnology components			X					X
7	1	UEENEEE003B Solve problems in extra-low voltage single path circuits							X	
8	1	UEENEEE001B Apply OHS practices in the workplace						X		
9	1	UEENEEE005B Fix and secure equipment	X							
10	1	UEENEEE001B Apply OHS practices in the workplace							X	
11	1	UEENEEE003B Solve problems in extra-low voltage single path circuits			X					
12	1	UEENEEE048B Carry out routine work activities in an electrotechnology environment							X	
13	1	UEENEEE004B Solve problems in multiple path circuits			X					
14	1	UEENEEE003B Solve problems in extra-low voltage single path circuits							X	
15	1	UEENEEE004B Solve problems in multiple path circuits			X					

Section II

Question	Marks	Unit of competency/Element of competency	Employability skills (Please put an X where appropriate)							
			Communication	Teamwork	Problem-solving	Initiative and enterprise	Planning and organising	Self-management	Learning	Technology
16 (a)	3	UEENEEE002B Dismantle, assemble and fabricate electrotechnology components (Appendix 2.11.2.1)				X				
16 (b)	5	UEENEEE002B Dismantle, assemble and fabricate electrotechnology components (Appendix 2.11.2.1)						X		
17	6	UEENEEE001B Apply OHS practices in the workplace		X	X				X	
18	7	UEENEEE048B Carry out routine work activities in an electrotechnology environment (Appendix 2.8.1.2(d)) UEENEEE004B Solve problems in multiple path circuits	X							X
19 (a) (i)	1	UEENEEE003B Solve problems in extra-low voltage single path circuits UEENEEE004B Solve problems in multiple path circuits	X		X					
19 (a) (ii)	1	UEENEEE003B Solve problems in extra-low voltage single path circuits UEENEEE004B Solve problems in multiple path circuits	X		X					
19 (a) (iii)	1	UEENEEE003B Solve problems in extra-low voltage single path circuits UEENEEE004B Solve problems in multiple path circuits			X					
19 (b)	2	UEENEEE003B Solve problems in extra-low voltage single path circuits UEENEEE004B Solve problems in multiple path circuits			X					
19 (c)	3	UEENEEE003B Solve problems in extra-low voltage single path circuits UEENEEE004B Solve problems in multiple path circuits			X					
20 (a)	1	UEENEEE004B Solve problems in multiple path circuits			X					X
20 (b)	2	UEENEEE004B Solve problems in multiple path circuits			X					X
20 (c)	1	UEENEEE004B Solve problems in multiple path circuits			X					X
20 (d) (i)	1	UEENEEE004B Solve problems in multiple path circuits			X					X
20 (d) (ii)	1	UEENEEE004B Solve problems in multiple path circuits	X		X					X

Section III

Question	Marks	Unit of competency/Element of competency	Employability skills (Please put an X where appropriate)							
			Communication	Teamwork	Problem-solving	Initiative and enterprise	Planning and organising	Self-management	Learning	Technology
21	15	UEENEEE001B Apply OHS practices in the workplace UEENEE005B Fix and secure equipment UEENEEEC010B Deliver a service to customers Employability skills — Communication	X	X		X	X	X		

Section IV

Question	Marks	Unit of competency/Element of competency	Employability skills (Please put an X where appropriate)							
			Communication	Teamwork	Problem-solving	Initiative and enterprise	Planning and organising	Self-management	Learning	Technology
22 (a)	3	UEENEEE001B Apply OHS practices in the workplace	X					X		X
22 (b)	3	UEENEEE001B Apply OHS practices in the workplace	X					X		X
22 (c)	9	UEENEEE001B Apply OHS practices in the workplace UEENEEC010B Deliver a service to customers UEENEEE048B Carry out routine work activities in an electrotechnology environment	X				X	X		X