

2012 HSC Software Design and Development Marking Guidelines

Section I

Multiple-choice Answer Key

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

Section II

Question 21

Criteria	Marks
<ul style="list-style-type: none">Shows a good knowledge of the differences between the pilot and phased installation methods providing examples to illustrate the differences	3
<ul style="list-style-type: none">Provides more than one difference between the pilot and phased installation methods OR <ul style="list-style-type: none">Provides a difference between the two methods and gives an example	2
<ul style="list-style-type: none">Provides a feature of either the pilot or phased installation method OR <ul style="list-style-type: none">Provides an example of either installation method	1

Question 22 (a)

Criteria	Marks
<ul style="list-style-type: none">A good description of more than one change relevant to the subroutine	2
<ul style="list-style-type: none">Identifies one aspect of well maintained code	1

Question 22 (b)

Criteria	Marks
<ul style="list-style-type: none">Correct result	1

Question 22 (c)

Criteria	Marks
• A good discussion of the aspects of correctness and efficiency	3
• Identifies issues relevant to the website or provides a good discussion of correctness or efficiency in relation to the website	2
• Identifies an issue relevant to the website	1

Question 23 (a)

Criteria	Marks
• Storyboard which shows screens for all of the required features as well as navigation elements, provision for data entry and all links between screens	4
• Storyboard which shows screens for some of the required features with navigation elements, provision for data entry and links between screens	3
• Storyboard which shows screens for some of the required features	2
• Adds an element to the storyboard	1

Question 23 (b)

Criteria	Marks
• Substantially correct data flow diagram that shows an understanding of the logic of the ordering and payment process	3
• A data flow diagram which shows understanding of the relationship between TWO data flow elements	2
• Shows some understanding of the logic of the problem OR • Shows ONE correct data flow element	1

Question 24

Criteria	Marks
• A substantially correct algorithm which includes looping through the array, handling left and right, checking for empty seats and handling the balance	4
• A partially correct algorithm which includes the majority of the features	3
• Shows some understanding of the features	2
• Shows some understanding of one feature	1

Question 25 (a)

Criteria	Marks
<ul style="list-style-type: none"> Identifies an appropriate approach and relates relevant characteristics of the approach to the following aspects of the scenario: <ul style="list-style-type: none"> Fast to market Hard-to-define requirements Close collaboration Flexible change (including technology and audience) 	3
<ul style="list-style-type: none"> Identifies a development approach and relates some relevant characteristics to the scenario 	2
<ul style="list-style-type: none"> Identifies a development approach and a relevant characteristic of that approach 	1

Question 25 (b)

Criteria	Marks
<ul style="list-style-type: none"> Identifies a comprehensive range in all three categories 	4
<ul style="list-style-type: none"> Identifies requirements/issues in two categories 	3
<ul style="list-style-type: none"> Names some functionality requirements or compatibility or performance issues 	2
<ul style="list-style-type: none"> Names one functionality requirement or one compatibility or performance issue 	1

Question 26 (a)

Criteria	Marks
<ul style="list-style-type: none"> Correctly describes a situation in which a driver would be used for software testing 	2
<ul style="list-style-type: none"> Identifies one relevant feature or characteristic of a driver 	1

Question 26 (b)

Criteria	Marks
<ul style="list-style-type: none"> A substantially correct response that addresses destination, weight of parcel, and shows the relationship between inputs and outputs 	3
<ul style="list-style-type: none"> A partially correct response that addresses the characteristics/features of a field and shows some understanding of the relationship between the inputs and outputs 	2
<ul style="list-style-type: none"> Provides general criteria for test data or provides characteristics/features of ONE field 	1

Question 26 (c)

Criteria	Marks
A substantially correct response that addresses: <ul style="list-style-type: none"> • Opening/closing files • Reading test data file • Checking returned message and cost • Writing to error file 	4
• A partially correct response that addresses the majority of the features	3
• Shows some understanding of the features	2
• Shows some understanding of the scenario	1

Question 27 (a)

Criteria	Marks
• Identifies ONE advantage and ONE disadvantage with a good description of both	3
• Identifies ONE advantage and ONE disadvantage OR • Identifies advantage or disadvantage and with a good description	2
• Identifies ONE advantage or ONE disadvantage	1

Question 27 (b)

Criteria	Marks
• Identifies and indicates the main features of more than one technical consideration clearly related to developers	3
• Identifies and indicates the main features of a technical consideration clearly relevant to developers	2
• Identifies a technical consideration	1

Question 28 (a)

Criteria	Marks
• A substantially correct solution	3
• Majority of elements correct	2
• A line of code $x(i-1) = x(i)$ or $x(i) = x(i+1)$ OR correct loop controlling variable OR correct handling of the end element	1

Question 28 (b)

Criteria	Marks
• Substantially correct algorithm including code to move through each character in the message, making the correct substitution as well as handling special characters and the end letters of the alphabet	4
• Substantially correct algorithm showing most of these features	3
• Algorithm showing some of these features	2
• Algorithm showing some understanding of the problem	1

Question 29

Criteria	Marks
• Identifies TWO risks and proposes changes to reduce these risks	4
• Identifies TWO risks and proposes a change to reduce the risk of one of these OR • Proposes relevant changes showing good understanding of the risks	3
• Identifies a risk and proposes a change to reduce this risk OR • Identifies TWO risks	2
• Identifies a risk in the plan OR • Propose a relevant improvement	1

Question 30 (a)

Criteria	Marks
• Identifies the error and suggests a correction	2
• Identifies the error	1

Question 30 (b)

Criteria	Marks
• Substantially correct algorithm which includes a main loop, a scan for a BOF and code to store data in the ID array	3
• Substantially correct algorithm which includes TWO features	2
• An algorithm which includes ONE feature	1

Question 30 (c)

Criteria	Marks
• Justifies the choice of a record structure and shows a structure with appropriate fields	2
• Shows an understanding of a record structure	1

Section III

Question 31 (a)

Criteria	Marks
<ul style="list-style-type: none"> Identifies TWO limitations of the imperative paradigm AND describes how they are addressed by the object oriented paradigm or the logic paradigm 	3
<ul style="list-style-type: none"> Identifies TWO limitations of the imperative paradigm OR <ul style="list-style-type: none"> Identifies ONE limitation of the imperative paradigm AND describes how it is addressed by another paradigm 	2
<ul style="list-style-type: none"> Identifies ONE limitation of the imperative paradigm OR <ul style="list-style-type: none"> Identifies a relevant characteristic of the object oriented paradigm or the logic paradigm 	1

Question 31 (b) (i)

Criteria	Marks
<ul style="list-style-type: none"> Applies the rules and facts correctly, using backward or forward chaining to determine if Jess is in the team called Legends 	2
<ul style="list-style-type: none"> Shows some understanding of backward or forward chaining. 	1

Question 31 (b) (ii)

Criteria	Marks
<ul style="list-style-type: none"> Gives substantially correct and efficient code demonstrating both requirements 	3
<ul style="list-style-type: none"> Provides a substantially correct and efficient code demonstrating either of the requirements 	2
<ul style="list-style-type: none"> Provides a fact for ONE of the requirements 	1

Question 31 (c) (i)

Criteria	Marks
<ul style="list-style-type: none"> Explains that this is done in OO languages in general so that actions associated with a variable may be tested OR <ul style="list-style-type: none"> Explains that in this specific case this is done so the balance can be checked before it is updated 	2
<ul style="list-style-type: none"> Describes that balance can only be updated via the method 'withdraw' but does not explain why that is done in OO languages 	1

Question 31 (c) (ii)

Criteria	Marks
<ul style="list-style-type: none"> Justifies that deposit shall be added to class ACCOUNT from where it is inherited by all the subclasses 	2
<ul style="list-style-type: none"> Correctly identifies that deposit should be added to class ACCOUNT without justifying why 	1

Question 31 (c) (iii)

Criteria	Marks
<ul style="list-style-type: none"> Identifies and justifies where the method should go, linking it explicitly to polymorphism 	4
<ul style="list-style-type: none"> Identifies a correct re-implementation of method 'withdraw' and where the modified method should go, with justification 	3
<ul style="list-style-type: none"> Identifies a correct re-implementation of method 'withdraw' and where the modified method should go, without justification OR	2
<ul style="list-style-type: none"> A discussion of polymorphism with reference to the scenario 	
<ul style="list-style-type: none"> Identifies a correct re-implementation of method 'withdraw' (perhaps by providing code) OR	1
<ul style="list-style-type: none"> Shows an understanding of polymorphism 	

Question 31 (d)

Criteria	Marks
• Shows how a combination of the paradigms applies to the scenario	4
• Shows how ONE paradigm applies to the scenario	3
• Identifies a characteristic of both paradigms OR • Identifies elements of the scenario that relate to a paradigm	2
• Identifies a characteristic of either paradigm	1

Question 32 (a)

Criteria	Marks
• Provides the correct hexadecimal ASCII code for Q AND shows an understanding of the relationship between upper case and lower case letters	3
• Provides the correct hexadecimal ASCII code for Q OR • Shows an understanding of the relationship between consecutive letters AND upper case and lower case letters	2
• Shows an understanding of the representation of consecutive letters OR • Shows an understanding of the relationship between upper case and lower case letters	1

Question 32 (b)

Criteria	Marks
• Provides an explanation that demonstrates correct understanding of both number systems using a 4-bit system	3
• Provides a relevant feature from each of the two's complement and sign and modulus systems OR • Provides a substantial understanding of either system	2
• Provides a relevant feature of two's complement OR sign and modulus	1

Question 32 (c) (i)

Criteria	Marks
• Provides a substantially correct answer	2
• Correctly represents a relevant logic gate in Boolean algebra	1

Question 32 (c) (ii)

Criteria	Marks
• Provides a correct simplified circuit	2
• Shows an understanding of the process of simplifying a circuit	1

Question 32 (c) (iii)

Criteria	Marks
• A correct description for all stages	2
• Describes more than one stage correctly	1

Question 32 (d)

Criteria	Marks
• Provides a substantially correct representation of 26.125 in 32-bit floating point notation	3
• Shows understanding of some aspects of the relevant features	2
• Shows understanding of ONE aspect of the relevant features	1

Question 32 (e) (i)

Criteria	Marks
• States the purpose of the header and of the trailer	2
• Identifies a characteristic of the header or the trailer	1

Question 32 (e) (ii)

Criteria	Marks
• Provides an appropriate specification that addresses all requirements	3
• Provides a specification that addresses some of the requirements	2
• Identifies one characteristic of the data block	1

Software Design and Development

2012 HSC Examination Mapping Grid

Section I

Question	Marks	Content	Syllabus outcomes
1	1	9.2.2	H4.2
2	1	9.2.2	H6.4
3	1	9.2.3	H1.3
4	1	9.2.2	H5.2
5	1	9.1.1	H3.1
6	1	9.2.1	H5.2, H6.2
7	1	9.2.1	H5.2
8	1	9.2.2	H4.2
9	1	9.2.2	H1.3
10	1	9.2.2	H4.2
11	1	9.2.2	H4.2
12	1	9.2.3	H1.1, H1.3
13	1	9.2.4	H5.2
14	1	9.2.2	H1.3
15	1	9.2.1	H1.2
16	1	9.2.3	H1.1, H1.3
17	1	9.2.2	H4.2
18	1	9.1.2	H1.2
19	1	9.2.3	H1.2
20	1	9.3	H1.3, H4.3

Section II

Question	Marks	Content	Syllabus outcomes
21	3	9.1.2	H1.2, H5.1
22 (a)	2	9.2.3	H4.3, H5.2
22 (b)	1	9.2.3	H4.2
22 (c)	3	9.2.3	H4.2, H4.3
23 (a)	4	9.2.1, 9.2.2	H1.2, H4.2
23 (b)	3	9.2.1, 9.2.2, 9.3	H1.2, H4.2
24	4	9.2.2	H3.2, H4.2
25 (a)	3	9.1.2	H1.2, H4.2
25 (b)	4	9.2.1	H4.1
26 (a)	2	9.2.4	H4.2
26 (b)	3	9.2.4	H4.2
26 (c)	4	9.2.2	H1.1, H1.3, H4.2
27 (a)	3	9.1.1	H2.2, H3.1

Question	Marks	Content	Syllabus outcomes
27 (b)	3	9.1.1	H2.2, H3.1
28 (a)	3	9.2.2	H1.3
28 (b)	4	9.2.2	H4.2, H5.2, H6.4
29	4	9.2.2	H4.2, H5.1, H5.2
30 (a)	2	9.2.1, 9.2.3	H3.2
30 (b)	3	9.2.2	H1.3, H4.2
30 (c)	2	9.2.2	H4.2

Section III

Question	Marks	Content	Syllabus outcomes
31 (a)	3	9.4.1	H1.2, H2.1, H5.3
31 (b) (i)	2	9.4.1	H4.2
31 (b) (ii)	3	9.4.1	H4.2
31 (c) (i)	2	9.4.1	H4.2
31 (c) (ii)	2	9.4.1	H4.2
31 (c) (iii)	4	9.4.1	H4.2
31 (d)	4	9.4.1	H1.2, H2.2, H4.1, H4.2
32 (a)	3	9.4.2	H1.3
32 (b)	3	9.4.2	H1.3
32 (c) (i)	2	9.4.2	H1.1
32 (c) (ii)	2	9.4.2	H1.1
32 (c) (iii)	2	9.4.2	H1.1, H1.3
32 (d)	3	9.4.2	H1.3
32 (e) (i)	2	9.4.2	H1.1, H1.3
32 (e) (ii)	3	9.4.2	H1.1, H1.3