

# Examiners' commentaries 2015–16

## C03348 Interaction design – Zone A

### General remarks

#### Overall Performance

The overall standard of answers to this examination paper was good. Candidates could choose three questions out of a selection of five – almost everyone chose Questions 1, 4 and 5. The next most popular was Question 2, while only a few chose Question 3. Percentages answering each question were:

Question 1	Design scenario	86%
Question 2	Design practices / Evaluation	34%
Question 3	Essay	10%
Question 4	Design practices	84%
Question 5	Design scenario	73%

Marks for Questions 1 and 4 were higher than those for other questions and those for Questions 3 and 5 were just above the half-mark level. Marks for Question 2 were rather lower than expected. The overall average for the paper as a whole was above the half-mark level. The questions in order of marks were as follows:

Question 1	Design scenario	Highest
Question 4	Design practices	Highest
Question 5	Design scenario	Next highest
Question 3	Essay	Next lowest
Question 2	Design practices / Evaluation	Lowest

#### Examination questions: general remarks

All questions were on a single independent topic: there was no mixing of different HCI topics within a single question. There was one essay question but no other question with only a single part. Questions were otherwise broken up into between two and five parts. In some cases, a part was further broken down into subsections. The marks allocated to each part were clearly indicated. The marks for a subsection could be calculated by dividing the mark for that part by the number of distinct points candidates were asked to identify. Marking was carried out strictly in accordance with this scheme. If a part or subsection was not answered, no marks were given for it. Credit was not given for excessive answers to one part at the expense of other parts. Answering only half the question would attract only half the available marks. No candidates answered more than the required number of questions.

It is important that candidates take note of the following points, since failing to do so means that questions are not answered as well as they could be.

- Ensure that you fully understand the topic area of the question.
- Ensure that you can attempt every part and subsection of the question. Only being able to answer some of the question will not help you achieve a good overall mark.
- Ensure that the level and detail of the answer you give correspond to the marks allocated to that part. Do not spend too much time and effort on a subsection of the question that, say, is worth only 5 per cent of the overall answer. Similarly, do not merely write cryptic notes or single points for a part of the question that is worth, say, 30 per cent. Try to achieve the balance reflected in the marks indicated.

Read the question carefully and answer in the way that is requested: wording such as **describe, compare and contrast, itemise, illustrate, explain with diagrams** tells you what sort of answer is expected and what sort of detail you should go into. Make sure you understand what type of answer is expected and do provide diagrams or examples where requested, since this is part of the marking scheme for the question.

- Do not spend unnecessary time restating the question, either in your own words or in repeating the question text. This is not required and wastes valuable time.
- Do not spend excessive time answering one question at the expense of others: it is generally better to answer three questions fully than one in great detail and two very briefly.
- Do not spend time providing unnecessary diagrams where this is not explicitly required. If diagrams are called for, they should be clearly labelled and described in full with suitable annotations. Merely providing an unlabelled diagram from memory as your answer will not attract good marks.
- Do not repeat details from one part of the question in another part: it is unlikely that this is what the examiners intended and the focus of your answer in each part should be quite distinct.
- Do try to use tables and lists where appropriate – for example, in a question which asks you to contrast two approaches or itemise the differences between two aspects of a topic.

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## Comments on specific questions

### Question 1

This question was a **Design scenario** divided into three parts, all on the topic of the interactive system design process. It concerned techniques of user-centred design and how these can be applied in early design stages, for elicitation of requirements and for initial testing. In Part (a) candidates were asked to detail the factors they would consider, as a design consultant, if asked to design both the interface and physical components of a portable memory assistant device, aimed at older people with poor memory. In Part (b) they were asked to specify how they would investigate and test the requirements of such users. In Part (c) they were asked to draw and specify their own mock-ups for the given scenario as a practical demonstration of design prototyping.

Candidates did best on Part (a) but also quite well on the two remaining parts of this question.

- For Part (a) good answers adequately identified contributing factors

within the user population, both physical and cognitive, and considered both interaction style (such as pointing, touch screen interaction etc.) and the physical ergonomics and cost considerations of such a device. The best answers also noted some formal requirements for accessibility and the significant cognitive needs and traits of the intended users. Poorer answers concentrated solely on either the physical design of the device or on simply listing some cognitive decline factors amongst an ageing population.

- For Part (b) good answers explained how user/task requirements could be gathered through different data collection techniques (e.g. observation, questionnaires, interviews/structured interviews, ethnographic involvement) and described these techniques correctly. The best answers gave an appropriate justification for the use of one particular technique in investigating the requirements of the specified set of target users.
- For Part (c) a good sketch of a potential device and its interface was required to attain good marks. Sketches should have been accompanied by highlighting of specific details and the design choices made should have been fully justified in additional text or comments. The best answers gave an appropriate potential solution and showed evidence of design knowledge and skill. Poor answers did not provide accompanying justification or description but simply produced an unlabelled drawing.

## Question 2

This question, on **Design and Evaluation**, was divided into four parts on standard and well-documented requirements elicitation techniques for user-centred design, and on HCI/ID usability assessment strategies or evaluation techniques. Parts (a) and (b) required a correct definition of user-requirement techniques, suitable to the scenario described (computer-based e-commerce website or smartphone interaction). This distinction should have been made very clear and the Part (b) answer should have differed from the answer given in Part (a). Part (c) asked for candidates' individual opinions and justification for the choice of most suitable modality, while Part (d) requested full details of a summative evaluation for both modalities.

This question was marked lowest of all, although candidates did best on Parts (a) and (c). They did much less well, but quite similarly, on Parts (b) and (d).

- For Parts (a) and (b) there were a wide range of suitable potential techniques from which to choose. For example, interviews and questionnaires would provide much information and would be suitable for a large number of participants and for eliciting subjective data; formal observation would produce more task-oriented information and focussed interviews would overlay a user's perspective on such data. The change of modality in Part (b) requires a change in elicitation techniques, to ones based more on observation than data collection (e.g. video-based analysis, participant observation or more ethnographic-style techniques). Good answers gave correct definitions and adequately described how to use specific techniques to elicit usable user requirements, whereas poor answers gave incorrect details or limited description.
- For Part (c) individual input, opinions and justification were looked for in an answer which was marked on correctness, quality and realism of the recommendations made.
- Part (d) required a detailed specification and description of an evaluation strategy for each of the two scenarios. Good answers identified the differences between the two modalities; specified in terms of screen size, commands, menus, input type and the ramifications for the correct identification of distinct evaluation strategies and user and task selection.

Additionally, such answers gave the correct placement in the design cycle (which was stated as being a summative rather than formative assessment), whereas poor answers confused these stages or gave incorrect detail of a usability assessment technique.

### Question 3

This question took the form of an **Essay** on the topic of ‘Serious Games’ and ‘Edutainment’.

This question was answered quite well by the small number of candidates who chose it. All candidates produced answers with a recognisable essay structure and addressed the topic specified.

The best essays displayed a high level of discussion and argumentation based on correct information, with appropriate detail and supporting evidence for the argument made. The question was intended to allow candidates to demonstrate their knowledge of research into novel aspects of and developments in learning and education, and to then relate this to topics and concepts in Interaction Design. Discussion of issues in areas such as games design, virtuality and artificial realities, computer-based learning and the pervasiveness of ‘entertainment computing’ as a strategy for online learning, helped in gaining good marks.

### Question 4

This question on Design practices was divided into four parts. The first two parts were on the topic of user requirements elicitation and the remaining parts on the use of icons at the interface. A scenario was proposed and, in Part (a), candidates were asked to identify appropriate criteria for selecting a set of users from whom to obtain user requirements. In Part (b) they were asked to choose between two methods of obtaining requirements from such a group of users and to identify the advantages and disadvantages of the two given methods. Part (c) moved on to the design of the proposed application interface (a touch screen kiosk) and the use of icons as an interaction mechanism, and Part (d) required sketches of the icons and screens that might make up such a design.

Performance on Part (b) was best by far. Candidates performed less well on the other parts, all of which had very similar average marks.

- For Part (a) candidates were expected to identify criteria to create a realistic and representative sample of the users (i.e. carers and patients), taking heed of different requirements such as accessibility and a varied age range. Good answers identified contributing physical and cognitive factors within the user population and also considered the impact of both interaction style (such as pointing and swiping) and the physical ergonomics of a kiosk. Poor answers were based on a misreading of the situation described and involved doctors and nurses in what was a kiosk designed only for patients (not for staff), or included inappropriate selection criteria.
- For Part (b) candidates were asked to compare the two techniques provided for obtaining initial user requirements. The differences between the two techniques (postal questionnaires and focus groups) are that focus groups are representative of small groups discussing a particular set of issues, mediated by a facilitator, whereas questionnaires are more suitable for a large user base, but with different and limited information being obtained. Good answers discussed and explained such factors, together with other issues such as cost and return rates, and the type of information – qualitative versus quantitative – that can be obtained with

each technique.

- For Part (c) an answer discussing the benefits and drawbacks of using an icon-based interaction modality for the kiosk was expected. Good answers explained the benefits: ease of pointing, familiarity (so less learning might be required), the overcoming of any language barriers, the potential for matching a navigation model and adhering to a suitable metaphor. The corresponding disadvantages might be that icons can be confusing for some users and that icons themselves (and the underlying mental model and metaphors) can be difficult to design appropriately. Poor answers tended to focus primarily on the different cultural interpretations of icons, which was only a small and not especially relevant part of the answer expected.
- For Part (d) an answer that provided a coherent and effective set of relevant icons and produced good examples and mock-ups was expected. No one solution is correct and a range of potential designs were possible, so marking took this into account. Good answers produced an attractive and appropriate set of screens and icons which matched the type of user defined in Part (a), as well as adhering to the scenario described (a kiosk installation for information-seeking and navigation through the hospital). Poor answers merely copied a set of standard icons, or showed screens and icons with no supporting explanation or identification of what was meant to be happening at the interaction level.

### Question 5

This question, a **Design scenario**, was divided into three parts. All related to a specific scenario involving the booking of classes at a local gym through a mobile app and its related design and evaluation processes. In Part (a) candidates were asked to develop user personas and task scenarios for evaluation purposes. In Part (b) candidates were asked to draw and annotate mock-ups or design prototype sketches for the controller in the scenario. Part (c) required candidates to specify a usability test plan employing these personas and scenarios.

Chosen by almost three-quarters of those taking this examination, candidates did best on Part (b) of this question, above average on Part (a) and much less well on Part (c).

- For Part (a) candidates were expected to create their own user personas and write their own task scenarios for the design specification given. There can be no one correct answer but marks were awarded for demonstration of skill and ability to construct realistic personas which could be used for evaluation purposes and for task scenarios, which could then lead to prototype development and evaluation. Good answers provided both useful detail in the user persona, describing two different users or user types, and in the task scenario by identifying suitable task sequences. Poor answers gave sketchy and limited detail for both, or only completed either the task or the persona part of the question.
- For Part (b) good responses provided a mock-up sketch of a potential mobile application and its interface, with important details highlighted and with full justification for the design choices made. As there can be no one correct answer, marks were awarded for appropriate and realistic solutions and for showing evidence of design knowledge and skill. Poor answers only drew a sketch of the device without explaining functions or any of the design decisions behind the prototype.
- Part (c) expected a timed and implementable outline of an evaluation/ usability test plan, with a good justification for the choice of technique out

of a variety of possible evaluation strategies. The choice of technique was a wide one, with no one particular technique being preferred, but the use of a prototype was paramount. Marks were allocated according to the level of correctness of the descriptions. Good answers gave suitably correct details, realistic sequencing and used the scenarios and personas from earlier parts of the question. Poor answers did not do as requested, or missed this part out completely.

# Examiners' commentaries 2015–16

## C03348 Interaction design – Zone B

### General remarks

#### Overall Performance

The overall standard of answers to this examination paper was quite good in parts, but rather less so elsewhere. Candidates could choose three questions out of a selection of five – almost everyone chose Questions 1, 4 and 5. The next most popular was Question 2, while a very small number chose Question 3. Percentages answering each question were:

Question 1	Design scenario	80%
Question 2	Evaluation	51%
Question 3	Essay	5%
Question 4	Design concepts	71%
Question 5	Design scenario	91%

Marks for Questions 1 and 5 were quite a bit higher than for all other questions. Marks for Question 2 were just below the half-mark range, while those for Questions 3 and 4 were rather lower. Overall, the average marks for the paper as a whole were below the half-mark point. The questions in order of marks were as follows:

Question 1	Design scenario	Highest
Question 5	Design scenario	Next Highest
Question 2	Evaluation	Next highest
Question 4	Design concepts	Next lowest
Question 3	Essay	Lowest

#### Examination questions: general remarks

All questions were on a single independent topic: there was no mixing of different HCI topics within the same question. There was one essay question but no other question with only a single part. Questions were otherwise broken up into between two and five parts. In some cases, a part was further broken down into subsections. The marks allocated to each part were clearly indicated. The marks for a subsection could be calculated by dividing the mark for that part by the number of distinct points candidates were asked to identify. Marking was carried out strictly in accordance with this scheme. If a part or subsection was not answered, no marks were given for it. Credit was not given for excessive answers to one part at the expense of other parts. Answering only half the question would attract only half the available marks.

It is important that candidates take note of the following points, since failing to do so means that questions are not answered as well as they could be.

- Ensure that you fully understand the topic area of the question.
- Ensure that you can answer every part and subsection of the question.

Only being able to answer some of the question will not help you achieve a good overall mark.

- Ensure that the level and detail of the answer you give correspond to the marks allocated to that part. Do not spend too much time and effort on a subsection of the question that, say, is worth only 5 per cent of the overall answer. Similarly, do not merely write cryptic notes or single points for a part of the question that is worth, say, 30 per cent. Try to achieve the balance reflected in the marks indicated.
- Read the question carefully and answer in the way that is requested: wording such as describe, compare and contrast, itemise, illustrate, explain with diagrams tells you what sort of answer is expected and what sort of detail you should go into. Make sure you understand what type of answer is expected and do provide diagrams or examples where requested, since this is part of the marking scheme for the question.
- Do not spend unnecessary time restating the question, either in your own words or in repeating the question text. This is not required and wastes valuable time.
- Do not spend excessive time answering one question at the expense of others: it is generally better to answer three questions fully than one in great detail and two very briefly.
- Do not spend time providing unnecessary diagrams where this is not explicitly required. If diagrams are called for, they should be clearly labelled and described in full with suitable annotations. Merely providing an unlabelled diagram from memory as your answer will not attract good marks.
- Do not repeat details from one part of the question in another part: it is unlikely that this is what the examiners intended and the focus of your answer in each part should be quite distinct.
- Do try to use tables and lists where appropriate – for example, in a question which asks you to contrast two approaches or itemise the differences between two aspects of a topic.

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## Comments on specific questions

### Question 1

This question was a **Design scenario** divided into two parts, both on the topic of the interactive system design process and, specifically, iterative prototyping and User-Centred Design (UCD). In Part (a) candidates were asked to describe the kind of prototyping approaches and types of prototypes they might use during the process of producing the new customisable interface for an online newspaper, to be used on a hand-held device. In Part (b) candidates were asked to draw and annotate mock-ups or design prototype sketches for the new interface in the scenario given.

Candidates did best on Part (b) of this question and much less well on Part (a).

- For Part (a) an answer covering all the various types of prototype was expected, with an emphasis on iterative prototyping and testing and showing an understanding of how such procedures fit into the UCD process. Good answers explained the diversity of prototypes and their suitability for providing initial design suggestions, as well as for later evaluation of usability and functionality. The best answers made a choice between different prototyping techniques and gave a good rationale for



that choice. Poor answers merely listed the different types of prototype, with no such supporting detail.

- For Part (b) candidates were expected to give examples and mock-ups of a prototype and to produce a coherent and effective design for the outline specification given. Such prototypes might be best used in the early stages of detailing the design or to suggest potential solutions to a client. No one solution is correct and a range of potential designs were possible; marking took this into account. Good answers demonstrated skill and ability to construct realistic designs and prototypes with the additional requirement of elements of user customisation. Poor answers did not annotate the sketches provided and merely gave a set of drawn images with no further information on the flow or function of each screen or the elements on those screens. Other poor answers did not address the issue of customisability at all.

## Question 2

This **Evaluation** question was divided into four parts, all on different HCI usability evaluation techniques and the provision of different types of data. In Part (a) the focus was on online logging of user interaction with a website; candidates were asked to explain how such logs might be used in a usability evaluation. In Part (b) an alternative technique (that of laboratory-based formal evaluation) was introduced and candidates were required to identify any potential problems with this approach, when applied to the same scenario as in Part (a). Part (c) asked for a clear description of two other potential techniques to test the same scenario, and Part (d) required candidates to choose the most appropriate technique from these four options, with a full justification for the choice made.

Candidates did best on Parts (c) and (d) of this question, about average on Part (a) and much less well on Part (b).

- For Part (a) good answers correctly identified and described what such logs consist of and assessed the type of data that could be gathered in terms of its validity, ease of information interpretation, user expectations and usefulness for usability evaluations. Extensive logging can also provide real-time indication of usability problems from users in distributed locations. Poor answers merely restated what the question said and did not consider implications for usability testing, or focussed on irrelevant issues such as speed of page reloading.
- For Part (b) good answers correctly defined all or most of the elements and factors that should be taken into account when carrying out a formal laboratory-based evaluation, and enumerated and described the potential problems with this approach (e.g. it can be expensive and time consuming, there is the need to recruit potential users to interact with a system under carefully controlled conditions, statistical analysis is required, there may be a mismatch with the less controlled world of a final implementation etc.). Poor answers either missed out this part of the question altogether or confused it with a Wizard of Oz scenario.
- For Part (c) good answers correctly defined two other usability evaluation methods, from a choice of many available techniques (e.g. Wizard of Oz, Discount usability techniques, Cognitive Walkthrough etc.). Poor answers gave insufficient detail or merely listed Nielsen's heuristics, rather than explaining the technique itself.
- For Part (d) good answers correctly explained how they would choose one particular technique over the others, justifying this choice in an

appropriate fashion. No one technique is favoured and marks were given for the validity of the answer given.

### Question 3

This question took the form of an **Essay** on the topic of how Artificial Intelligence research has impacted the field of HCI and Interaction Design.

This question was chosen by only a few candidates and it was answered very poorly. All candidates produced a recognisable essay structure and made some attempt to address the topic specified.

A good response for such an essay would have shown a high level of discussion and argumentation based on correct information, with appropriate detail and supporting evidence for such argumentation. The question was intended to allow candidates to demonstrate their knowledge of Artificial Intelligence research and developments and relate this to topics and concepts in Interaction Design. Discussion of issues in areas such as speech recognition, virtuality, learning and education, avatars and emotional interaction – to name but a few – was expected but was, disappointingly, not produced by the candidates who chose this question.

### Question 4

This question on **Design concepts** was divided into four parts. The first parts concerned the theory underlying design generally and how it is specifically utilised in HCI and ID, based on models that should be known to candidates from readings, study, lectures, classwork and practice. For Part (a) candidates were expected to give a correct definition of the common design concept of ‘affordance’ and to supply examples. For Part (b) a definition and example of the allied concept of ‘mappings’ was expected. For Part (c) candidates were expected to give a definition and example of a ‘conceptual model’, together with a description of how a user formulates such a model. The final part was an expansion of the previous concepts and covered the use of a specific metaphor in design, and when and how that particular metaphor could fail in practice.

Candidates did best on Part (b) of this question, just below average on Part (a) and much less well on the remainder, especially on Part (d).

- For Part (a) good answers adequately defined the term as requested (as used by Norman, Gaver etc. in discussions and studies of design practice). One definition is that an ‘affordance’ is the design aspect of an object which suggests how the object should be used, with visual clues to its function and use. In addition, suitable specific, relevant and correct examples (of which there are many in HCI/ID textbooks), with drawings to explain them more fully, should have been produced. Poor answers were very short, note-like responses, or were simply memorised definitions from textbooks without much understanding demonstrated. Similarly, answers which consisted merely of three simple drawings with no further explanation did not attract high marks. Many candidates did not attempt the final section of the question (i.e. to explain why affordances are important in design) and lost marks because of this omission. Note that where examples are requested, these should be specific, relevant and correct – and should always be annotated. In this subject area there are always numerous examples to choose from – many of them in textbooks – but answers focussing on candidates’ own examples, if suitably chosen and well-described, are equally acceptable.
- For Part (b) good answers correctly described the term requested (as used by Norman) and provided the necessary sketch or drawing as illustration.

Most candidates used the same examples of the arrangement of controls on a hob, or the arrangement of directional arrows on a keyboard.

- For Part (c) good answers would have included a clear explanation of the conceptual mental and design models used in HCI and ID and should have identified how users develop such models. In Norman's schema, a user interacts with the system image. From this and from previous knowledge, they develop a mental model which may be structural, functional or distributed. A user's model is the user view of a system; this may be inaccurate, incomplete and vary from one user to another. A designer's model is the designer's view of the system – the conceptual model of what the structure and functioning of that system is. Metaphors are used by users to make sense of system functions and relate them to real-world activities, thereby allowing greater learnability, user acceptance and comprehension. Good answers should also have described how a user develops a model of a system via the system image, metaphor, prior learning and expectations. Poor answers mixed up the different types of model and, in some cases, confused a conceptual design with users' models.
- For Part (d) good answers gave correct examples of the desktop metaphor (derived from early Xerox Star computers and the Trillium OS and now common to Windows and Mac OS) and explained why this metaphor is successful and useful, using the concepts of affordance and mappings. As requested, good answers gave specific details of the failure of the metaphor: the classic examples, as described in textbooks, are those of the Mac Wastebasket and ejecting disks, or the ability to store folders inside other folders, both of which contradict the metaphor. Poor answers to this question did not explain the metaphor correctly, or simply did not answer this part of the question. Then when the metaphor in question was explained well, the failures of the metaphor listed were often incorrect or missed out entirely.

### Question 5

This question was a Design scenario divided into three parts. These related to a specific scenario involving a hand-held controller for interactive TV and its related design and evaluation processes. In Part (a) candidates were asked to develop user personas and task scenarios for evaluation purposes. In Part (b) candidates were asked to draw and annotate mock-ups or design prototype sketches for the controller in the scenario given. Part (c) required candidates to specify a usability test plan employing these personas and scenarios.

Candidates did best on Parts (b) and (a) of this question and much less well on Part (c).

- For Part (a) candidates were expected to create their own user personas and write their own task scenarios for the design specification given. There can be no one correct answer but marks were awarded for demonstration of skill and ability to construct realistic personas which could be used for evaluation purposes and for task scenarios, which could then lead to prototype development and evaluation. Good answers provided both useful detail in the user persona, describing two different users or user types, and in the task scenario by identifying suitable task sequences. Poor answers gave sketchy and limited detail for both, or only completed either the task or the persona part of the question.
- For Part (b) good responses provided a mock-up sketch of a potential physical remote controller and its interface to a television, with important details highlighted and with full justification for the design choices

made. As there can be no one correct answer, marks were awarded for appropriate and realistic solutions and for showing evidence of design knowledge and skill. Again, poor answers merely drew a sketch of a hand-held controller without explaining functions or any of the design decisions behind the sketch.

- Part (c) expected a timed and implementable outline of an evaluation/usability test plan, with a good justification for the choice of technique out of a variety of possible evaluation strategies. The choice of technique was a wide one, with no one particular technique being preferred, but the use of prototypes was paramount. Marks were allocated according to the level of correctness of the descriptions. Good answers gave suitably correct details, realistic sequencing and used the scenarios and personas from earlier parts of the question. Poor answers did not do as requested, or missed this part out completely.