

THE UNIVERSITY OF AUCKLAND

SEMESTER TWO 2019

Campus: City

INFORMATION SYSTEMS

Business Systems Analysis

(Time Allowed: THREE hours)

NOTE:

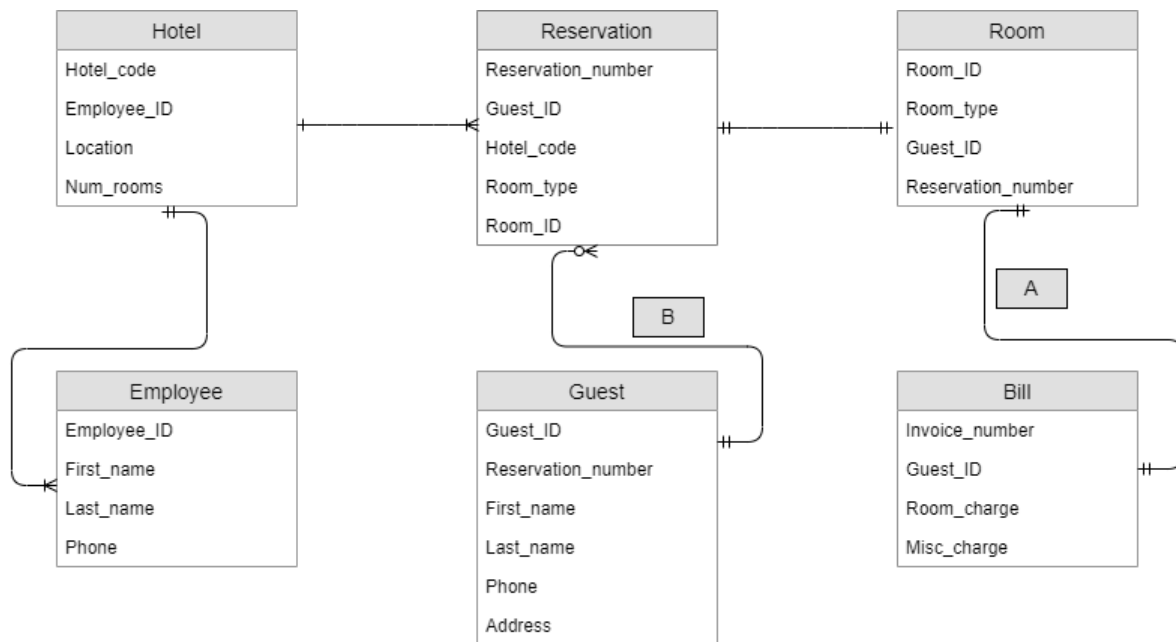
- Attempt ALL questions.
- It is advised you answer the questions in order.
- There are a number of mini cases in the exam that have been referred to across questions.
- Write your answers in the corresponding sections in the separate answer booklet provided.
- The total number of marks is 120.

Question	Topic(s)	Allocated
1	Data modelling	8 marks
2	Design Strategy	9 marks
3	UI, UI* and UX	10 marks
4	Guest Lecture	10 marks
5	Mobile Strategy and UI design	12 marks
6	System Architecture	6 marks
7	Testing and Validation	10 marks
8	Pre-implementation	15 marks
9	Conversion Strategy	7 marks
10	Operations and Maintenance; EOS and EOL	14 marks
11	Security	7 marks
12	Agile	12 marks

1. Data modelling (8 marks)

The owner of a set of hotels would like to have a hotel management system built for her hotels. The hotels are located in major cities and tourist attraction areas of Kenya. In each hotel, employees are hired to perform various duties. In each hotel, guests make reservations for rooms of their choice, and they are billed according to the type of room they have reserved.

Find below an initial draft of the proposed ERD based on the scenario.



- (a) Given the business scenario, describe the bi-directional entity relationships at points A and B.

(2 marks)

- (b) A partial table for the Employee entity is provided in your answer booklet. On the table:

- Append any missing elements from the ERD.
- Populate 2 instances of the entity with sample data.
- Annotate the sample data with an "X" to show the first instance of the third attribute.

(4 marks)

- (c) List two business rules that are communicated by the ERD

(2 marks)

2. Design Strategy (9 marks)

Small Potatoes is a family-operated seed business that has grown rapidly. Small Potatoes specialises in supplying home gardeners with the finest seeds and gardening supplies. Until now, the firm has done all its business by placing ads in gardening and health magazines, and taking orders using a toll-free telephone number.

Now, the family has decided to establish a website and sell online, but there is some disagreement about the best way to proceed. Some say it would be better to develop the site on their own, and Betty Lou Jones, a recent Computer Science graduate believes she can handle the task. Others, including Sam Jones, Betty's grandfather, feel it would be better to purchase i.e. get someone to build the website (with the online sales portal) for them instead. Suppose the family asked of your opinion. What additional questions would you ask to suggest an ideal solution? Outline 3 questions, and for each one, provide the ideal solution based on the family's answer.

3. UI, UI* and UX (10 marks)

- (a) Consider the list of activities and items of consideration outlined below for a new system design. On the answer booklet provided, classify the activities as either being part of UI or UX to explain the difference between the 2 to a layperson.

Interaction design
Wireframes
Visual design
Gesture feedback cues
Prototypes
Icon design/consideration
Colour schemes
Scenario generation
Layouts
Typography
User research
Graphic design

(3 marks)

- (b) Briefly explain why UI and UX are represented as they are in the classification diagram provided in the answer booklet.

(2 marks)

- (c) UI* has not been explicitly labelled or mentioned in the classification but as an aspiring BA, you know it is part of the classification diagram outlined. Briefly explain what UI* is and how it is part of the diagram.

(3 marks)

- (d) UI design bloggers and articles often say that “the best interface is no interface”. What does this mean?

(2 marks)

4. Guest Lecture (10 marks)

- (a) Nico, one of the guest presenters from ASB, referred to *Personas* when talking about UI and UX. What is a Persona and why is it important to consider in the context of UI and UX?

(4 marks)

- (b) The guest lecturers presented a list of items to consider to ensure they are delivering value. For the two items listed below, state which of Microsoft's 7 UI design principles are being referred to. Briefly explain your answer.

- i. Use component libraries
- ii. Allow users to make mistakes

(4 marks)

- (c) One of the things highlighted throughout the guest lecture was the need to consider users when designing a system e.g. through thorough user research, testing with real users, and improving based on feedback from users.

What is the other major consideration in the context of UX? Briefly explain.

Hint: This was highlighted in the UX process presented by Mike, as well as in Nico's answer to one of the student's question at the end of the lecture.

(2 marks)

5. Mobile Strategy and UI design (12 marks)

- (a) Assume that Small Potatoes now have a fully functioning website with an online sales portal. Their business continues to expand so they are considering having a mobile presence. One of Betty's friends studying INFOSYS 220 collates the following information to help make a decision on a mobile strategy.

- The user experience and feedback on the new website are very satisfactory so far. Customers have acknowledged how convenient it is to place orders on the website now vs. having to call over phone and/or come in store.
- In addition to being a platform for placing orders (the business specialises in supplying home gardeners with the finest seeds and gardening supplies), the website is being populated with valuable tips for budding home gardeners. This new feature is well appreciated by existing customers, as well as attracting several new customers.
- About 20% of users are accessing the website via their mobile devices.
- Given their thriving business, budget is not an issue for Small Potatoes' investment on a mobile presence.

Based on the information gathered by Betty's friend, suggest an ideal Mobile Strategy for Small Potatoes. Briefly explain your answer. (Hint: Refer to some or all of the 4 key considerations when determining a Mobile Strategy.)

(4 marks)

(b) Consider the interface(s) below to answer the following questions.



Interface 1

Interface 2

<https://thefinancialbrand.com/51691/banking-wearables-apple-watch/>

- i. Name 1 appropriate use case and actor for the interfaces shown. (1 mark)
- ii. Outline the function demonstrated on Interface 1 and Interface 2. (2 marks)
- iii. Briefly explain how progressive disclosure is demonstrated in interface 1. (2 marks)
- iv. UI researchers note that design elements have an opportunity cost. Has this aspect of design been executed well on the interfaces above? (circle your chosen answer on the answer booklet). Briefly explain your answer. (3 marks)

6. System Architecture (6 marks)

Fitbit is a company that makes a range of fitness bands, smartwatches, and accessories that you can use to track your steps, exercise, heart rate, weight, and more. The company also has mobile apps for iOS and Android and an in-browser dashboard where you can view your progress over time and manually log workouts. You can also look at the Fitbit app to see your progress by day or by week and adjust your goals accordingly.

- (a) Provide 1 example of an activity that can be done in the presentation tier in Fitbit's system architecture. Be sure to mention 1 hardware used in your example. (2 marks)
- (b) Consider the client/server perspective of system architecture. Based on the description of Fitbit above, list 2 items each for the client-side and server-side. Hint: Similar to items discussed for the Snapchat example in class. (4 marks)

7. Testing and Validation (10 marks)

Reflect on the following 2 sub-modules from the ARQ case scenario:

Housekeeping management – to include lists of check-ins and check-outs and manage housekeeping activities. Rooms can be assigned to specific staff, their task lists developed and managed.

Staff management – to help organise staff rostering, and availability. Further, it would be nice to include an integrated agenda as part of this module i.e. calendar notes, events and built-in email system that allows for communication between employees. The real-time data in the integrated module, combined with accessibility from mobile devices for its users could make staff and resort management more efficient.

- (a) Assume that each of these modules are developed separately. Based on the description of the modules, provide 1 example of a possible integration test and 1 example of a possible system test that could be conducted. (4 marks)
- (b) Outline 3 goals of the traceability requirements pyramid as discussed in class. (3 marks)
- (c) Amongst the International Project Leadership Academy's (IPLA) 101 common causes of "Why Projects Fail" is: "Testing in a test environment that is configured differently from the target production, or operational environment in which the project's deliverables will be used". Explain what this means in layperson terms. (3 marks)

8. Pre-implementation (15 marks)

- (a) The goal of the pre-implementation phase is to reduce risk. However, one needs to be aware of the risk vs. cost principle in order to prioritise activities that minimise risk.
 - i. With the help of a graph, briefly explain what the above statement means. (4 marks)
 - ii. List 2 activities typically used in projects to minimise risk (1 mark)
- (b) Reflect on the ARQ case scenario to answer this question. Outline an example of a possible source of risk that would be:
 - i. Internal to the organisation but external to the project (2 marks)
 - ii. External to the organisation (2 marks)
- (c) As part of ARQ's project documentation activities, they prepare a set of documents (listed in your answer booklet). For each document, state the documentation type (major and sub). (6 marks)

Refer to the following excerpt to answer questions 9 to 11

Novopay is a web-based payroll system for state and state-integrated schools in New Zealand, processing the pay of 110,000 teaching and support staff at 2,457 schools. It was purchased by the New Zealand Ministry of Education for \$182 million over ten years, and was implemented in August 2012 after seven years of planning and development by Australian human resources company Talent2. From the outset, the system led to widespread problems with over 8,000 teachers receiving the wrong pay and in some cases no pay at all; within a few months, 90% of schools were affected. Prior to adopting Novopay, the payroll for 90,000 teachers and school staff nationwide had been managed for the Ministry of Education by Datacom Group. However, in February 2005, the Ministry of Education decided a new payroll system for teachers was required. Ministry documents reveal that the existing payroll service had been stable during the previous eight years, but was considered 'dated'; there was no on-line access and the system provided insufficient data to "support the more complex information and research needs of the Ministry". Once the contract was signed, Novopay was meant to go live in May 2010 but the company missed a number of deadlines which delayed the rollout by more than two years. Along the way, the Ministry of Education spent \$650,000 trialling the system before it was rolled out nationally.

(adapted from https://en.wikipedia.org/wiki/Novopay#Implementation_of_Novopay_in_2012)

9. Conversion Strategy (7 marks)

The conversion strategy Novopay followed was assumed to be Direct, Simultaneous and Whole-system.

(a) What was the “location” aspect in their assumed conversion strategy?

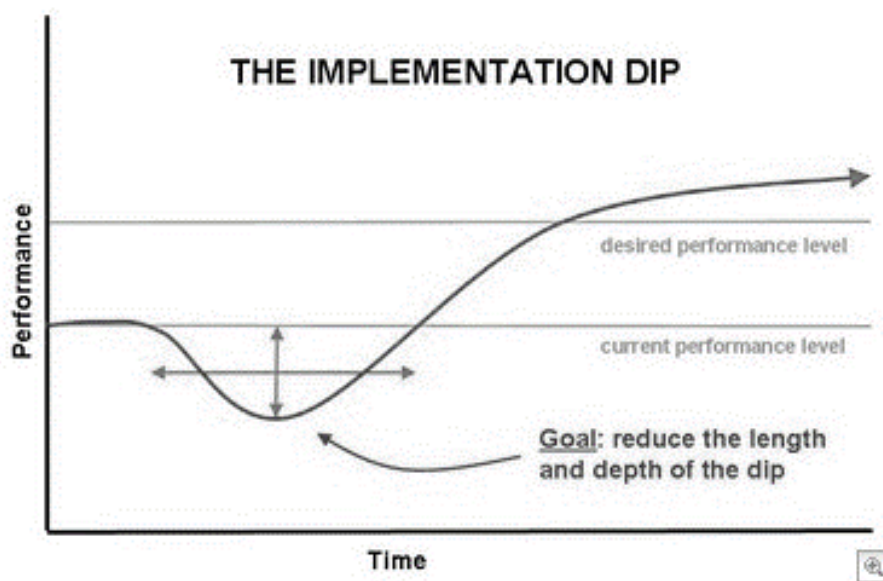
(1 mark)

(b) Which one of the options provided in your answer booklet would have been a better choice of conversion strategy given the issues Novopay faced? Explain your choice with reference to risk in each of the dimensions of your chosen conversion strategy relative to Novopay’s assumed conversion strategy.

(6 marks)

10. Operations and Maintenance (14 marks)

- (a) Which type of maintenance would Novopay have primarily engaged in after implementation in 2012? Providing 2 examples of activities for the type of maintenance. (5 marks)
- (b) Government employees working for Novopay (most of whom supported the previous payroll system by Datacom) noticed that they were spending much longer doing the same tasks they previously did. The project team explained to them that this phenomenon was called a productivity or implementation dip and showed them the following graph. List 3 activities that the Novopay team could have done better to reduce their implementation dip. (6 marks)



(6 marks)

- (c) Novopay Online is based on a feature of the Oracle Application Server, which Oracle will not be supporting after December 2019. What does this mean for Novopay? Explain in terms of EOL and EOS. (3 marks)

(3 marks)

11. Security (7 marks)

Provide examples of information for which *C*, *I* and *A* are important in the context of the Novopay system. For the example of *I*, suggest a way of avoiding an information security breach. (7 marks)

(7 marks)

12. Agile (12 marks)

(a) What are the implications for a BA when using an agile methodology vs. a traditional methodology such as waterfall? Outline the differences in terms of the following:

- Techniques
- Documentation
- Teams

(6 marks)

(b) List 2 scenarios/reasons in a project when one would not choose agile.

(2 marks)

(c) *Dual track development* and *Minimum Viable Product (MVP)* are both well-known terms in agile development. Briefly explain how dual track development supports MVP delivery.

(4 marks)

-END OF EXAM-



THE UNIVERSITY OF AUCKLAND

SEMESTER TWO, 2019

Campus: City

SUBJECT: INFORMATION SYSTEMS (Business Systems Analysis)

First name (please write as legibly as possible within the boxes)

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Last name

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Student ID number

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Email Address (Username)

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@aucklanduni.ac.nz

(Time Allowed: THREE hours)

INSTRUCTIONS FOR THIS EXAM ARE PROVIDED ON THE NEXT PAGE.

**READ THESE INSTRUCTIONS BEFORE COMMENCING:**

1. You must answer ALL questions in the answer booklet.
2. It is advised that you answer the questions in order.
3. You may use a pencil for any diagrams, but please use a pen for all writing.
4. This exam is worth 30% of your final grade.
5. This exam is marked out of 120 marks.
6. Answer each question in the space provided in the answer booklet. Anything written outside the page margins will not be marked.
7. If you require additional answer pages, overflow pages are provided at the end of this answer booklet. Within the regular space for that answer, you must provide a clear indication that your answer is continued on an overflow page e.g., "Answer is continued on overflow page X".
8. Notes can be made on the first page of this answer booklet. The page is labelled "NOTES ONLY. THIS PAGE WILL NOT BE MARKED".
9. Cross out notes and other work you do not wish to be marked.
10. DO NOT REMOVE ANY PAGES FROM THIS ANSWER BOOKLET.
11. After the examination, personally hand this answer booklet to a supervisor.

YOU MUST NOT REMOVE ANY ANSWER BOOKLETS FROM THE EXAMINATION ROOM.

WARNING:

Materials are permitted in examinations only if they are specifically authorised in the examination instructions sent to you.

For this exam, you are NOT allowed calculators, books, notes and unused paper and all dictionaries, including electronic versions.

Only implements you require for your exam should be on your desk along with your ID card. Pencil cases, glasses cases etc. should be left in your bag.

If you have any unauthorised material in your possession, put up your hand and give all the material to a supervisor BEFORE YOU COMMENCE WRITING. "In your possession" means on, under, or next to your desk or chair, in or on your clothing, on your body, or in your wallet or purse.

FAILURE TO ADHERE TO THESE REQUIREMENTS MAY RESULT IN REFERRAL TO THE UNIVERSITY DISCIPLINE COMMITTEE.



NOTES ONLY - These will not be marked

**QUESTION 1. Data modelling (8 marks)****(a)****Point A**

Relationship description 1:

Relationship description 2:

Point B

Relationship description 1:

Relationship description 2:

(b)

Employee_ID		Last_name		

(c)**Business rule 1:****Business rule 2:**



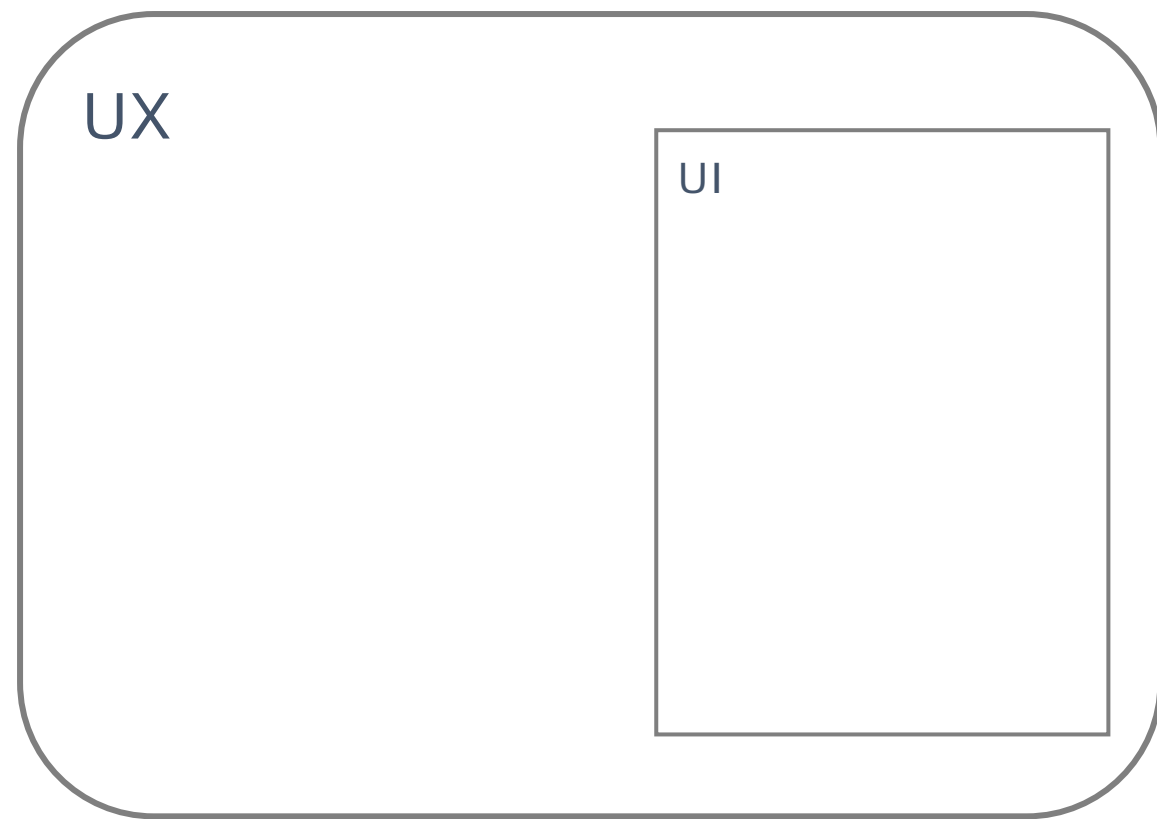
QUESTION 2. Design Strategy (9 marks)

Q1:
Develop on your own if:
Get someone to build if:
Q2:
Develop on your own if:
Get someone to build if:
Q3:
Develop on your own if:
Get someone to build if:



QUESTION 3. UI, UI* and UX (10 marks)

(a)



(b) UI and UX representation explanation:

(c) UI* explanation:

(d) “the best interface is no interface”:



QUESTION 4. Guest Lecture (10 marks)

(a) Personas:
(b)
(i) Component libraries MS UI design principle:
Explanation:
(ii) Allow users to make mistakes MS UI design principle:
Explanation:
(c) Other major consideration when designing a system:
Explanation:

**QUESTION 5. Mobile Strategy and UI design (12 marks)**

(a) Ideal Mobile Strategy:	
Explanation:	
(b)	
(i) 1 Use case:	Actor:
(ii)	
Interface 1 function:	
Interface 2 function:	
(iii) Progressive disclosure in interface 1:	
(iv) Opportunity cost principle	
Yes or No	
(circle your chosen answer)	
Explanation:	



QUESTION 6. System Architecture (6 marks)

(a) Example of 1 activity in the presentation tier:
(b)
Client-side
1.
2.
Server-side
1.
2.

**QUESTION 7. Testing and Validation (10 marks)****(a)****Example of integration test:****Example of system test:****(b) Traceability requirements pyramid goals****1.****2.****3.****(c) Test environment explanation:**



QUESTION 8. Pre-Implementation (15 marks)

(a) (i) Risk vs. Cost principle:	Explanation:

(ii) Two activities to reduce risk:
1.
2.

(b) (i) Internal to the organisation but external to the project:

(ii) External to the organisation:

(c)												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 45%;">Document</th> <th style="width: 25%;">Major type</th> <th style="width: 30%;">Sub-type</th> </tr> </thead> <tbody> <tr> <td>A guide on “Generating monthly statistical forecast reports”</td> <td></td> <td></td> </tr> <tr> <td>A data flow diagram</td> <td></td> <td></td> </tr> <tr> <td>A brief overview video showing customers how to make the most of their mobile app</td> <td></td> <td></td> </tr> </tbody> </table>	Document	Major type	Sub-type	A guide on “Generating monthly statistical forecast reports”			A data flow diagram			A brief overview video showing customers how to make the most of their mobile app		
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**QUESTION 9. Conversion Strategy (7 marks)****(a) Location in the assumed conversion strategy:****(b) Place a tick against your chosen answer**

Parallel, Simultaneous and Module by module	
Direct, Simultaneous and Module by module	
Direct, Pilot and Module by module	
Parallel, Phased and Whole system	
Direct, Phased and Whole system	
Direct, Pilot, Simultaneous and Whole system	
None of the options. The strategy they chose was ideal	

Explanation:



QUESTION 10. Operations and Maintenance; EOL and EOS (14 marks)

(a) Type of maintenance:
Example 1:
Example 2:
(b) 3 activities to reduce Novopay's implementation dip
1.
2.
3.
(c) Explanation (EOL and EOS):



QUESTION 11. Security (7 marks)

Example of information where C is important:
Example of information where I is important:
Example of information where A is important:
1 way of avoiding an information security breach of I:



QUESTION 12. Agile (12 marks)

(a) Techniques:
Documentation:
Teams:
(b) When not to choose agile
1.
2.
(c) Dual track development and MVP



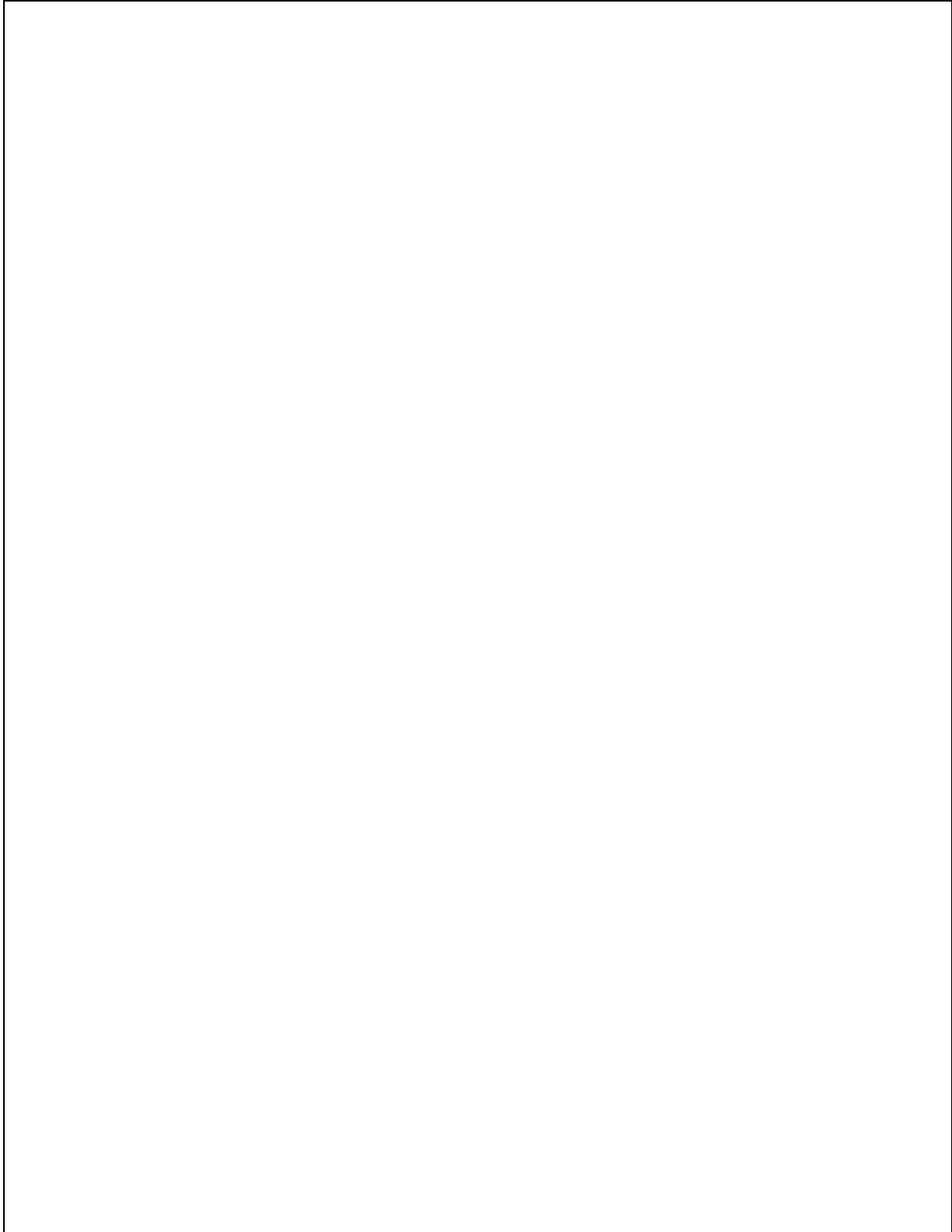
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INFOSYS 220
ANSWER BOOKLET

OVERFLOW PAGE 1





OVERFLOW PAGE 2

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-END OF EXAM-



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