

TUNKU ABDUL RAHMAN UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

FACULTY OF COMPUTING AND INFORMATION TECHNOLOGY

ACADEMIC YEAR 2023/2024

JANUARY EXAMINATION

AACS1304 SYSTEMS ANALYSIS AND DESIGN

TUESDAY, 9 JANUARY 2024

TIME: 9.00 AM – 11.00 AM (2 HOURS)

DIPLOMA IN COMPUTER SCIENCE

DIPLOMA IN INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION SYSTEMS

Instructions to Candidates:

Answer **ALL** questions. All questions carry equal marks.

AACS1304 SYSTEMS ANALYSIS AND DESIGN**Question 1**

XYZ Laboratories stands as one of the largest multinational companies specialising in healthcare products, operates in 130 countries with a workforce exceeding 100,000 employees, committed to ensuring a sustainable impact on global health. Despite its robust presence in the dynamic global market, XYZ faces challenges in order management due to its brick-and-mortar business model, which heavily reliant on manual order placement without an integrated online ordering system. This manual process results in high costs for staff recruitment. Additionally, the cumbersome nature of manual ordering, involving extensive paperwork, adds further complexity and time consumption to the process. Furthermore, there is always a delay in the decision-making process as real-time reports are not available to the management. To achieve digital transformation and operational efficiency, Mr. Leonard, the company's director, suggests transitioning to a click-and-mortar business model. This involves implementing online e-commerce platforms to streamline ordering and sales activities, and integrating chatbots to minimise staff recruitment costs in sales and consulting.

- a) (i) Based on the above case study, explain **TWO (2)** sources of system request. (6 marks)
- (ii) Briefly describe **THREE (3)** types of improvements observed in the proposed online e-commerce platforms. (9 marks)
- b) (i) Discuss **TWO (2)** issues of technical feasibility for the proposed online e-commerce platforms. (6 marks)
- (ii) Identify **TWO (2)** possible intangible benefits can be gained in the proposed online e-commerce platforms. (4 marks)

[Total: 25 marks]

AACS1304 SYSTEMS ANALYSIS AND DESIGN**Question 2**

Mr. Leonard, the director of the XYZ Laboratories, has approached ABC Software House with a request to develop an online e-commerce website and mobile application for ordering healthcare products online. The system will be integrated with a chatbot that act as customer service to handle all customer queries. Mr. Leonard has expressed his desire for the application to be developed quickly and cost-effectively. The responsibility of managing this project has been assigned to Miss Elysia, the project manager of ABC Software House.

- a) During the requirement gathering process, Miss Elysia decided to approach Mr. Leonard to further understand the current system operations for XYZ Laboratories. She also plans to work out the system requirements details with Mr. Leonard for the new e-commerce website and mobile application with chatbot integration.

(i) Suggest a suitable fact-finding technique to be adopted by Miss Elysia for the above-mentioned scenario. (1 mark)

(ii) Discuss **TWO (2)** advantages of the identified fact-finding technique from Question 2 a) (i). (6 marks)

(iii) Provide **THREE (3)** functional requirements for the above proposed system. (6 marks)

(iv) Provide **ONE (1)** non-functional requirement for the above proposed system. (3 marks)

- b) The following is the one of the recorded requirements for healthcare products online ordering system descriptions during requirement elicitation process:

"The customer initiates orders by browsing the e-catalogue and adding items to the shopping cart. After confirming the selected items, the customer proceeds to checkout. The system processes orders by validating product availability and confirming details by matching them with the product file. If a product is unavailable, the system sends an unavailable item notification message to the customer; otherwise, it proceeds to calculate the total payment and inform the customer. The customer makes the payment via the system, and upon successful payment, an order confirmation is generated. At the same time, the system will send the order details to the inventory department to pack the products for delivery."

Construct a Context Diagram DFD for the above scenario. (9 marks)

[Total: 25 marks]

AACS1304 SYSTEMS ANALYSIS AND DESIGN**Question 3**

- a) In conjunction with XYZ Laboratories' 20th anniversary, the company has decided to offer promotions to its customers as a reward. For non-members, if they make a purchase exceeding RM2000, they will be awarded free membership and a RM100 discount voucher as a welcome gift; otherwise, no discount will be provided. As for members, a RM50 discount voucher will be provided if the purchase exceeds RM2000; otherwise, a RM20 discount voucher will be provided. Additionally, if the membership is more than 3 years, an additional RM150 discount voucher and a free 3-year membership extension will be provided.

Construct a decision table for the above scenario.

(11 marks)

- b) Considering the staff's skills available in the software house and the nature of the proposed online website and mobile application system, Miss Elysia is evaluating the suitable programming languages for the e-commerce website.

Based on the above-mentioned scenario, suggest **TWO (2)** most significant criteria to be considered during the consideration of programming languages for application development. Justify your answers. (6 marks)

- c) Miss Mary, the programmer, is testing the cart management module she has developed. Throughout the testing process, she must ensure that the cart management module can interact well to receive the information passed from the ordering module before integrating the two modules later.

- (i) Propose the type of testing needs to be carried out by Miss Mary based on the above-mentioned scenario. (1 mark)

- (ii) Explain how the proposed testing method works, as described in Question 3 c) (i). (3 marks)

- (iii) Miss Mary also needs to conduct the system testing after all the modules are fully integrated.

Describe any **TWO (2)** scopes to be considered for the system testing. (4 marks)

[Total: 25 marks]

AACS1304 SYSTEMS ANALYSIS AND DESIGN**Question 4**

- a) Mr. Artic, the system analyst has been assigned to prepare the operation and program documentation during the system development process.

Explain the purpose and the content of the mentioned documentation respectively. (8 marks)

- b) Mr. Leonard requests Miss Elysia to organise training for his company's staff before the official launch and use of the system. The trainer will be provided by the software house.

(i) Identify types of training to be provided to XYZ Laboratories staff. (1 mark)

(ii) Discuss **TWO (2)** advantages of the identified training from Question 4 b) (i). (4 marks)

- c) During the system conversion process, Mr. Leonard is concerned about the high risks associated with the global implementation across all branches. He fears that the failure of the new ordering system could paralyse the entire ordering process, resulting in significant losses for the company. After communicating with Miss Elysia, it is decided to adopt a low-risk conversion method, i.e., parallel changeover method for the new system implementation, as there are no budgetary or resource issues hindering this changeover process.

Justify **TWO (2)** reasons why Miss Elysia should adopt parallel changeover method. (6 marks)

- d) After five years of implementing the new healthcare products online ordering system, Mr. Leonard has submitted requests to add new functions and remove unnecessary ones. Additionally, to accommodate a newly introduced web browser, an upgrade to the online ordering system is required.

Identify **TWO (2)** maintenance activities to be carried out for the above-mentioned scenario. Support your answer with proposed justification. (2, 4 marks)

[Total: 25 marks]