



PROGRAM : BACHELOR OF TECHNOLOGY
ENGINEERING: INDUSTRIAL

SUBJECT : **INFORMATION SYSTEMS 4**

CODE : **IIS 411**

DATE : SUPPLEMENTARY EXAMINATION 2020
9 JANUARY 2020

DURATION : (SESSION 2) 1130-1430

WEIGHT : 40: 60

TOTAL MARKS : 100

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MODERATOR : MR L.N BALOYI

NUMBER OF PAGES : 6 PAGES

INSTRUCTIONS TO STUDENTS

PLEASE ANSWER ALL QUESTIONS.
ANSWER THE QUESTIONS IN SEQUENCE

REQUIREMENTS

ONLY ONE POCKET CALCULATOR PER CANDIDATE MAY BE USED.
GRAPH PAPER

QUESTION 1

- 1.1 You are a Project Manager for the development of Banking Information Systems. The System Analyst on your project has resigned and now you have to recruit System Analyst. Discuss the System Analyst's primary qualities that you will consider during the recruitment process. **[6 Marks]**
- 1.2 The software development life cycle (SDLC) is a framework for defining tasks performed at each step in the software development process. Briefly explore three steps that are involved in the SDLC Application. Substantiate your answers with valid examples. **(6 Marks)**
- 1.3 You are a System Analyst at the University of Johannesburg. Management has requested you to deploy the system named '**Student Interface**', which will assist students with the following functions: Application, Registration, Submitting Assignments, Viewing Financial Statement and Transcripts. Due to uncertainty on the outcome of the project, the Project Sponsor suggested that you use the prototype methodology to implement the project. Discuss four types of prototypes that you can apply to deliver the system '**Student Interface**'. Give example based on the scenario provided on this passage. **(12 marks)**

QUESTION 2

You own a computer. There are standard operating procedures and conditions that you should adhere to as per instructions manuals from the EOM. The SOP and conditions attached to manuals are as follows.

If the computer is faulty, you should take it to the technician for repair otherwise you can write reports, play games, watch a movie and play music. Moreover, if there is an internet connection you will have an opportunity to browse internet and send emails or else you switch it off. If you not using a computer, you read books.

Based on the Structured English Principle, develop the decision structure for the above scenario.

(7 Marks)

QUESTION 3

The job application for the Dzima Enterprise is as follows:

Job seeker login into the system. If the job seeker does not have an account, they should create it with username and password. The job seeker then places an application for the job they aspire. The system sends an application to Human Resource Management (HRM) where the HRM checks the completeness of the submission. If the submission is incomplete, the HRM sends an error message to an applicant to resubmit the application or cancel the application. If the submission is complete, the HRM sends an application to the Functional Head (HOD). The HOD receives an application and evaluates if an applicant qualifies for an interview based on experience and academic qualifications. If an applicant does not qualify for an interview, the HOD notify the HRM to send the regret message to an applicant. However, if an applicant qualifies for an interview, the HOD requests the HRM to schedule an interview. The scheduling of the interview is conducted parallel with the arrangement of the boardroom and contacting an applicant for an interview. An applicant receives an invitation where they have a choice to either accept or decline an interview.

Construct an activity diagram with swimlanes for the job application in this enterprise.

(12 Marks)

QUESTION 4

Suppose you want to start an enterprise that will specialise in designing and manufacturing computers. Your computers are user-friendly and have a very effective processing system. The computer has a button where the user can switch off and on. When the laptop is on, the user can be able to open Microsoft Package and develop the report or presentation depending on the need. The design includes the keyboard that the user can use to type on. The user also has access to save and delete the files in the computer. The user uses the mouse to navigate and click on the computer. However, if the mouse is not working, the user has an option to use a computer touch screen to navigate into the computer. Furthermore, the computer is also equipped with features that the user can be able to connect to external devices through WI-FI or Bluetooth.

Briefly identify the top-level functional requirement for the computer, and model it with a use case diagram. State all your assumptions **(10 Marks)**

QUESTION 5

Suppose the System Analyst has completed the implementation of SAP System. She is now conducting Post Implementation Review (PIR) to assess if the business is realising the benefits that were earmarked. Part of her PIR study is to evaluate the user's satisfaction with the SAP system. Since there are numerous SAP Users in the organisation, she decided to find the adequate sample size that she should evaluate. The proportion of SAP Systems users in an organisation is sitting at 15%. She is conducting this study with 97% Confidence level and the accepted interval estimates is ± 0.04 .

- A) Calculate the sample size that she will use to evaluate the level of satisfaction on the SAP System **(5 Marks)**
- B) Determine the total population size of an organisation. **(2 Marks)**

QUESTION 6

Mnandi Burgers want to install a system to record orders for burgers and chips. When regular customers call Mnandi Burgers on the phone, they are asked their phone number. When the number is typed into a computer, the name, address, and last order date is automatically brought up on the screen. Once the order is taken, the total, including tax and delivery, is calculated. Then the order is given to the cook. A receipt is printed. Occasionally, special offers (coupons) are printed so the customer can get a discount. Drivers who make deliveries give customers a copy of the receipt and a coupon (if any). Weekly totals are kept for comparison with last year's performance. State all your assumptions!

- 5.1 Construct a context-level data flow diagram for Mnandi Burgers **[5 Marks]**
- 5.2 Construct a Physical Data Flow Diagram, include Data Storages **[10 Marks]**

QUESTION 7

Suppose you are a Project Manager who manages the development of banking software. Your project is on planning phase where you conduct project estimation such as time and cost and risks rating. The customer wants the project to be completed within 40 weeks and they are willing to pay R500 000 or less. The customer suggested that the projects should be either be cancelled or re-scoped if it does not meet their requirements.

The project should be cancelled under the combination of the following conditions:

- If the project duration exceeds 40 weeks, the budget exceeds R500 000 and there is very risk high
- If the project duration exceeds 40 weeks with high risk profile and the project cost is equal to R500 000
- If there is a very high risk but the time and cost are below 40 weeks and below R500 000 respectively.

The project should be re-scoped under the combination of the following conditions:

- If the project completion time exceeds 40 weeks and cost more than R500 000 with very low risk profile.
- If the project completion time is less than 40 weeks, the project cost is more than R500 000 and the risk of undertaking the project is relatively high
- If the project completion time is exactly 40 weeks, the project cost is R600 000 and the risk profile is not high.

Construct a decision table that will assist the Project Manager to take an informed decision based on the agreed conditions combinations. Which of those conditions have high influence on the decision that the project manager should take? **[15 Marks]**

QUESTION 8

Online Shopping involves the following steps:

- Customer browses through catalogue and selects items to buy.
- Customer goes to checkout.
- Customer fills out shipping information.
- System presents full pricing information, including shipping information.
- Customer fills in credit card information.
- System authorizes purchase.
- System confirms sale immediately.
- System sends confirming email to customer.

Draw a sequence diagram using boundary, control, and entity classes for the online shopping system.

Instructions: Add the customer in the upper left corner of the diagram and then the following classes from left to right along the top of the diagram:

1. Browse interface
2. Item Database

3. Purchase Interface
4. Checkout
5. Credit Card Authorization [10 Marks]

The End

A table of area under a normal curve

Confidence Level	Confidence Coefficient (z value)
99%	2.58
98	2.33
97	2.17
96	2.05
95	1.96
90	1.65
80	1.28
50	0.67