

28<sup>th</sup> April 2022

SECTION A

Question One

(a) Define the term **System Analysis**.

**Systems analysis** is a step-by-step process for developing high-quality information systems.

(b) HAMI enterprises wanted to develop a new system and tasked a system analyst to design one and hand it in within three days. This could not be possible but they were advised that a prototype model would be availed.

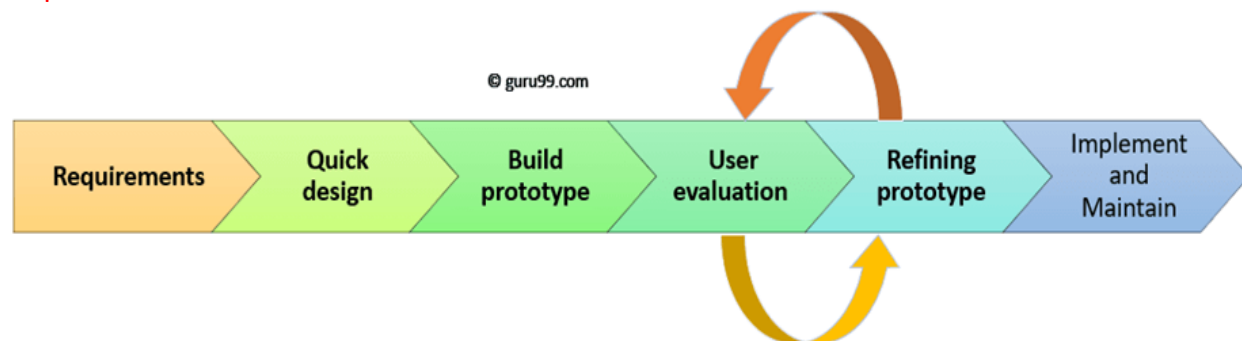
(i) Explain four advantages of prototyping.

- Increased user involvement in the product even before its implementation.
- Since a working model of the system is displayed, the users get a better understanding of the system being developed.
- Reduces time and cost as the defects can be detected much earlier.
- Quicker user feedback is available leading to better solutions.
- Missing functionality can be identified easily.
- Confusing or difficult functions can be identified.
- It also identifies the complex or difficult functions.
- Encourages innovation and flexible designing.
- It is a straightforward model, so it is easy to understand.
- No need for specialized experts to build the model

(ii) With the aid of an illustration, describe the phases of prototyping.

Prototyping is used to allow the users evaluate developer proposals and try them out before implementation.

Software prototyping model works best in scenarios where the project's requirement are not known.



## Question Two

- (a) Distinguish between **Software Engineering** and **System Design**.

**Software Engineering** is all about developing products, using well-defined, scientific principles and methods while **system design** is a phase within the system development life cycle (SDLC) that focuses on defining the architecture, components, modules, and data for a system to satisfy specified requirements

- (b) Explain five types of information systems.

**Transaction Information System.** This is designed to handle routine and repetitive transactions. It processes day-to-day transactions that occur in an organization, such as sales, purchases, and inventory updates

**Management Information System.** This focuses on providing middle and top-level management with summarized, structured information. It assists in monitoring and controlling the business operations

**Decision Support System.** This is designed to support decision-makers in semi-structured and unstructured decision-making. It provides tools for analyzing data and making decisions

**Executive Support System.** This is designed to provide top-level executives with strategic information for long-term planning

**Enterprise Resource Planning System.** This system integrates various business processes and functions across an organization into a unified system. It facilitates real-time information flow and collaboration

- (c) For information to be useful to managers, it must meet some qualities. Explain three qualities of such information.

**Timeliness.** Timeliness refers to the availability of information when it is needed.

**Accuracy and Reliability.** Accuracy and reliability are essential qualities that ensure the correctness and trustworthiness of information.

**Relevance.** Relevance refers to the degree to which information is applicable and meaningful to the decision at hand. Relevant information directly addresses the questions or issues that managers are trying to resolve.

**Completeness.** Completeness refers to the extent to which information includes all the relevant details and data needed for a particular decision or analysis. Complete information ensures that managers have a comprehensive understanding of the situation

**Precision and clarity.** Precision and clarity refer to the clear and unambiguous presentation of information. Precise information is specific, while clarity ensures that the information is easily understood without confusion.

**Accessibility.** Accessibility refers to the ease with which information can be obtained and retrieved. Accessible information is readily available to managers when they need it, reducing delays in decision-making.

### Question Three

An organization insisted that their current system must change immediately and called a system analyst to do the task. However, he was not availed with **CASE tools** making it difficult for him to execute the task.

(a) Define the above tools.

**CASE tools** are set of software application programs, which are used to automate System Development Life Cycle activities.

(b) Describe five types of the CASE tools.

- **Diagramming Tools:** It helps in diagrammatic and graphical representations of the data and system processes. It represents system elements, control flow and data flow among different software components and system structure in a pictorial form.  
For example, Flow Chart Maker tool for making state-of-the-art flowcharts.
- **Computer Display and Report Generators:** It helps in understanding the data requirements and the relationships involved.
- **Analysis Tools:** It focuses on inconsistent, incorrect specifications involved in the diagram and data flow. It helps in collecting requirements, automatically check for any irregularity, imprecision in the diagrams, data redundancies or erroneous omissions.
- **Central Repository:** It provides the single point of storage for data diagrams, reports and documents related to project management.
- **Documentation Generators:** It helps in generating user and technical documentation as per standards. It creates documents for technical users and end users.
- **Code Generators:** It aids in the auto generation of code, including definitions, with the help of the designs, documents and diagrams.

(c) Explain four components of CASE tools.

- **Central Repository** - CASE tools require a central repository, which can serve as a source of common, integrated and consistent information. Central repository is a central place of storage where product specifications, requirement documents, related reports and diagrams, other useful information regarding management is stored. Central repository also serves as data dictionary.
- **Upper Case Tools** - Upper CASE tools are used in planning, analysis and design stages of SDLC.

- **Lower Case Tools** - Lower CASE tools are used in implementation, testing and maintenance.
- **Integrated Case Tools** - Integrated CASE tools are helpful in all the stages of SDLC, from Requirement gathering to Testing and documentation.

## SECTION B

### Question Four

- (a) Explain what is meant by the term User Interface as applied in systems Analysis and design.

**User interface (UI)** is a critical component that focuses on how users interact with a system. The user interface encompasses the visual elements, controls, and interactions that enable users to interact with software applications or information systems.

- (b) Different IT professionals have different views about interface design, however a good interface design depends on some basic principles. Explain six of those basic principles.

- **Visibility.** This refers to the clarity with which users can perceive and understand the available actions and options within the interface. It involves making relevant information and controls easily visible to users.
- **Consistence.** This involves maintaining uniformity and predictability throughout the interface. It ensures that similar actions or elements result in similar outcomes, providing users with a sense of familiarity and reducing cognitive load.
- **Feedback.** Feedback provides users with information about the results of their actions. It helps users understand the system's response to their input, reinforcing their confidence in the interface and guiding them through the interaction
- **Simplicity.** Simplicity involves minimizing complexity in the interface design. It aims to present information and functionality in a straightforward manner, making it easy for users to understand, navigate, and accomplish their tasks
- **Flexibility.** Flexibility allows users to interact with the system in a way that suits their preferences and needs. It accommodates various user styles and adapts to different contexts and devices.
- **Error prevention and recovery.** Error prevention and recovery involve designing the interface to minimize the likelihood of errors and provide users with clear paths for correction when errors occur. It helps maintain user confidence and reduces frustration.
- **Efficiency.** Efficiency in interface design involves optimizing the user's workflow and minimizing the steps required to complete tasks. It ensures that users can accomplish their goals quickly and with minimal effort.
- **User Guidance.** User guidance involves providing clear instructions and assistance to users when needed. It helps users understand how to use the interface, especially when interacting with new features or complex tasks

(c) Describe three common features on the Graphical User Interface (GUI).

**Icons.** These are pictures that represent computer resources.

**Buttons.** These are used to trigger specific commands or actions.

**Menu.** These are interactive lists of options or commands that users can access to perform specific actions or navigate through different parts of the application.

**Dialogue boxes.** These are used to gather additional information or confirm commands.

### Question Five

(a) Define system Changeover as applied in System Analysis and Design.

System changeover is the process of transitioning from an old or existing system to a new one. It is a critical phase in the system development life cycle (SDLC) where the newly developed or updated system is put into operation, and users begin using it for their regular tasks.

(b) Explain four forms of system changeover methods implemented in organizations.

- **Direct changeover.** Direct changeover, often referred to as the "big bang" approach, involves an immediate and complete transition from the old system to the new one. In other words, the organization switches from the old system to the new system in a single event.
- **Phased changeover.** Phased changeover involves the gradual introduction of the new system in phases. Each phase typically focuses on specific modules, departments, or functionalities. The organization continues to use the old system for some components while transitioning to the new system incrementally.
- **Parallel run.** Parallel run involves running both the old and new systems simultaneously for a certain period. During this time, users perform their regular tasks on both systems, and outputs from the old and new systems are compared for accuracy.
- **Pilot implementation.** Pilot implementation involves introducing the new system to a limited group of users or within a specific department before extending it to the entire organization. The selected group uses the new system while others continue with the old system.

(c) During an interview for the post of System Analyst in Nambi Enterprise Limited, candidates were required to give the different types of system testing.

(i) State two objectives of systems testing.

- To ensure that the software system performs all the specified functions and features as outlined in the requirements specification.
- To verify the accuracy of calculations, data processing, and other algorithms within the system.
- To evaluate the reliability of the system by assessing its ability to perform consistently under various conditions over an extended period.
- To measure and validate the system's performance in terms of responsiveness, throughput, and scalability under different load conditions.
- To assess the user interface and overall user experience to ensure that the system is user-friendly and meets usability standards.

- To identify and address potential vulnerabilities and security risks within the system, including unauthorized access, data breaches, and protection against malicious activities.
  - To ensure that the software is compatible with different operating systems, browsers, hardware configurations, and third-party software.
  - To evaluate the system's ability to scale and handle increased loads, users, or data volumes as the business grows.
  - To assess the system's ability to recover from failures, errors, or disruptions and restore normal operation.
  - To ensure that the system complies with relevant industry standards, regulations, and legal requirements.
- (ii) As a member of the interviewing committee, describe five types of systems testing that you would expect.
- Functional testing
  - Non-functional testing
  - Performance testing
  - Usability testing

### Question Six

(a) Explain five duties of a System Analyst.

- Defining and understanding the requirement of user through various Fact finding techniques.
- Prioritizing the requirements by obtaining user agreement.
- Gathering the facts or information and acquires the opinions of users.
- Maintains analysis and evaluation to arrive at appropriate system which is more user friendly.
- Suggests many flexible alternative solutions, pick the best solution, and quantify cost and benefits.
- Draw certain specifications which are easily understood by users and programmer in precise and detailed form.

(b) Describe five qualities of a good System Analyst.

#### **Interpersonal Skills.**

A good system analyst should be able to Interface with users and programmer, Facilitate groups and lead smaller teams, Manage expectations. He must also have a good understanding, communication, selling and teaching abilities. He must be a motivator and having the confidence to solve queries.

#### **Analytical Skills**

A system analyst must be able to conduct a System study and have organizational knowledge. He must be able to identify, analyze and solve problems. He must have

sound commonsense, ability to access trade-off and curiosity to learn about new organization.

**Management Skills.** He should study and understand users' jargons and practices. He must be good at resource & project management, change & risk management. He should also understand the management functions thoroughly.

**Technical Skills.** He must have knowledge of computers and software, Keep abreast of modern development, know of system design tools and breadth knowledge about new technologies.

### Question Seven

- (a) Explain five factors you would consider while selecting a project.

**Feasibility.** Assess the technical, operational, economic, and scheduling feasibility of the project. Determine whether the organization has the resources, expertise, and capabilities to undertake and complete the project successfully.

**Resource availability.** Evaluate the availability of human resources, budget, technology, and other essential resources required for the project. Ensure that the organization can allocate the necessary resources.

**Risk analysis.** Conduct a thorough risk analysis to identify potential challenges, uncertainties, and obstacles that may impact the project. Assess the probability and impact of risks and develop mitigation strategies.

**Cost benefit analysis.** Perform a detailed cost-benefit analysis to evaluate the potential return on investment (ROI) of the project. Compare the expected benefits with the associated costs to determine the financial viability.

**Market demand and trends.** Assess the market demand for the product or service that the project aims to deliver. Consider current market trends, customer needs, and competitive landscape to ensure the project's relevance.

**Project complexity.** Evaluate the complexity of the project in terms of technology, scope, and stakeholder involvement. Consider the organization's experience and capacity to handle projects of similar complexity.

**Scalability.** Assess whether the project has the potential for scalability, allowing it to grow or adapt to changing requirements in the future. Consider how the project aligns with the organization's long-term growth plans.

**Organizational change.** Evaluate the potential impact of the project on organizational structure, processes, and culture. Consider how well the organization can manage and adapt to the changes brought about by the project.

- (b) When you inquired about the planning and scheduling of project tasks, your project manager suggested the use of **PERT charts** instead of **Gantt charts**.

- (i) Differentiate between the charts stated above.

A Gantt chart represents project tasks along a timeline. Each task is represented as a horizontal bar, with the length of the bar indicating the duration of the task

while a PERT Chart represents tasks as nodes and events (milestones) as circles. Arrows indicate the sequence of tasks, and each task node includes information about its estimated duration.

A Gantt chart focuses on the timing and duration of tasks. It is beneficial for tracking progress and managing timelines while a PERT chart focuses on the flow and logical sequence of tasks. It is useful for understanding the critical path and identifying tasks that can be performed in parallel.

- (ii) Explain three advantages of the model which your project manager preferred.
- PERT charts explicitly identify the critical path, which is the sequence of tasks that determines the shortest duration of the project. This helps project managers to focus on tasks that have the most significant impact on the project timeline.
  - PERT charts provide a clear visualization of task dependencies through the use of arrows connecting nodes. This helps project managers understand the logical sequence of tasks and identify where parallel activities can occur.
  - PERT charts allow for the inclusion of optimistic, pessimistic, and most likely time estimates for each task. This information can be used to calculate expected durations and assess the probability of meeting project deadlines.
  - PERT charts can help project managers allocate resources efficiently by providing a clear understanding of task dependencies and the critical path.
  - PERT charts allow for the inclusion of probabilistic time estimates for tasks, helping project managers assess the overall project risk.
  - PERT charts provide a framework for continuous monitoring of project progress.

### **Question Eight**

- (a) Differentiate between data flow diagram (DFD) and Entity relationship diagram (ERD).
- A Data Flow Diagram focuses on the flow of data and processes that manipulate the data while an Entity Relationship Diagram focuses on the entities within a system and the relationships between them.
  - A DFD does not directly represent entities and relationships. It may indirectly show data stores that could represent entities while an ERD represents entities, attributes, relationships, and sometimes cardinality.
  - A DFD includes processes that manipulate data while an ERD does not have processes. It focuses on the static structure of data.



(b) Describe the requirements engineering process.

Requirements engineering is a systematic process that involves eliciting, analyzing, documenting, and managing the requirements of a system. The primary goal is to understand and define what the system should do, ensuring that the final product meets the needs and expectations of its stakeholders.

(c) Nakalama College ICT department proposed a system for the school. The management tasked the ICT department to evaluate whether the system will be of great significant help to the school. To carry out this evaluation, the ICT department had to conduct a **Feasibility Assessment** of the system in question.

(i) Define the assessment above.

A feasibility assessment is a study to determine if the requirements of a project or a program can be met within the cost, schedule, and performance constraints of the project or program.

(ii) Explain **three** types of the above assessment.

- **Economic/ Financial feasibility** describes whether or not your project is fiscally viable. A financial feasibility report includes a cost/benefit analysis of the project.
- **A technical feasibility** study reviews the technical resources available for your project. This study determines if you have the right equipment, enough equipment, and the right technical knowledge to complete your project objectives.
- **The market feasibility** study is an evaluation of how your team expects the project's deliverables to perform in the market.
- **An operational feasibility** study evaluates whether or not your organization is able to complete this project.
- **Schedule feasibility** study is an evaluation of whether the project can be completed within the specified time.

(d) Explain **four** advantages of conducting a feasibility study.

- A feasibility study helps identify potential risks and challenges associated with the project.
- By evaluating the feasibility of a project, organizations can determine the required resources—financial, human, technological, and others.
- Feasibility studies include a thorough cost-benefit analysis. This analysis provides insights into the potential return on investment (ROI) and helps stakeholders assess the financial viability of the project.
- Stakeholders are equipped with comprehensive information about the project's feasibility. This enables more informed decision-making.
- Feasibility studies help in developing a well-structured plan for the project. This includes timelines, resource requirements, and specific milestones.

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- Feasibility studies often include a thorough analysis of the market. This involves understanding customer needs, market trends, competition, and potential demand for the product or service.
- Feasibility studies assess the legal and regulatory aspects associated with the project. Ensuring compliance with laws and regulations is vital to avoid legal issues and penalties.
- Identifying potential issues and challenges early in the process helps prevent costly mistakes.

9<sup>th</sup> August 2022

SECTION A

Question One

- (a) Define the term prototyping as applied to systems analysis and design.

Prototyping is a software development methodology that involves creating a preliminary version of a system or application in order to gather user feedback, test functionality, and identify design flaws before the final product is developed. Prototyping is an iterative and interactive process that allows stakeholders to visualize and interact with a working model of the system early in the development cycle.

- (b) Explain two types of prototyping carried out during systems analysis.

- **Throwaway/Rapid Prototyping**

It is quickly developed to show how the requirement will look visually. The customer's feedback helps drive changes to the requirement, and the prototype is again created until the requirement is baselined.

In this method, a developed prototype will be discarded and will not be a part of the ultimately accepted prototype. This technique is useful for exploring ideas and getting instant feedback for customer requirements.

- **Evolutionary Prototyping**

Here, the prototype developed is incrementally refined based on customer's feedback until it is finally accepted. It helps you to save time as well as effort. That's because developing a prototype from scratch for every interaction of the process can sometimes be very frustrating.

This model is helpful for a project which uses a new technology that is not well understood. It is also used for a complex project where every functionality must be checked once. It is helpful when the requirement is not stable or not understood clearly at the initial stage.

- **Incremental Prototyping**

Incremental prototyping refers to building multiple functional prototypes of the various sub-systems and then integrating all the available prototypes to form a complete system. This method is helpful to reduce the feedback time between the user and the application development team.

- **Extreme Prototyping**

Extreme prototyping is used in the web development domain. It consists of three sequential phases. First, a basic prototype with all the existing pages is presented in the HTML format.

This process is called Extreme Prototyping used to draw attention to the second phase of the process, where a fully functional UI is developed with very little regard to the actual services.

(c) TKL Limited developed a system for its client. Developers used Computer aided Software Engineering tools at the design stage to ensure a high quality and defect free system.

(i) Explain three types of tools the developers used.

**Diagramming tools.** Diagramming tools are used for creating graphical representations of system components, processes, and their interrelationships. Common types of diagrams include flowcharts, data flow diagrams (DFDs), entity-relationship diagrams (ERDs), and UML diagrams.

**Modeling tools.** Modeling tools enable the creation of detailed models that represent various aspects of the system, such as data models, process models, and object-oriented models.

**Code generation tools.** Code generation tools automatically generate source code from higher-level design or modeling representations. They help in translating design specifications into executable code in a specific programming language.

(ii) Suggest four benefits of the tools in 1(c)(i).

- CASE tools automate various aspects of the software development lifecycle, reducing the need for manual effort.
- CASE tools enforce consistency between different stages of software development.
- CASE tools facilitate the creation of detailed models and specifications.
- CASE tools provide a common platform for developers, designers, and other stakeholders to collaborate.

## Question Two

(a) Define the term **project** as used in systems analysis and design.

A project is a temporary and unique endeavor with a specific set of objectives that are planned, executed, and controlled to achieve a defined outcome.

(b) Explain **two** characteristics of a project.

**Temporary.** Projects have a defined start and end date. Once the project objectives are achieved, the project is considered complete.

**Unique.** Each project has a set of specific goals and deliverables that distinguish it from other activities. Even if the goals are similar to previous projects, the context, constraints, and stakeholders involved can make each project unique.

**Defined scope.** Projects have clear boundaries that outline the work that needs to be done to achieve the project objectives. The scope defines what is included and excluded from the project.

**Resource allocation.** Projects require the allocation of resources, including people, time, money, and materials, to accomplish the defined objectives.

**Planning and execution.** Projects involve planning activities to define the project scope, schedule, budget, and resources. Execution involves carrying out the planned activities to produce the project deliverables.

**Progressive elaboration.** Project details are often refined and elaborated upon as the project progresses and more information becomes available. This is known as progressive elaboration.

**Risk and uncertainty.** Projects often involve elements of risk and uncertainty, and effective project management includes identifying, assessing, and managing these uncertainties throughout the project life cycle.

(c) Suggest **three** conditions under which a project is considered a failure.

**Failure to meet objectives.** The project fails to deliver the intended outcomes and does not achieve its stated goals.

**Exceeding budget.** The project costs significantly exceed the initially allocated budget. This may result from poor cost estimation.

**Overrunning schedule.** The project takes much longer to complete than originally planned. Delays can be caused by various factors, including poor scheduling, resource constraints.

**Poor quality.** When the final deliverables do not meet the expected quality standards.

**Stake holder dissatisfaction.** Key stakeholders, including customers, sponsors, or end-users, are dissatisfied with the project's results.

**Scope creep.** The project experiences uncontrolled changes in scope, leading to confusion, increased costs, and delays. Failure to manage scope changes effectively can undermine the project's success.

(d) Explain **four** causes of project failure.

**Inadequate planning.** Poorly defined project scope, insufficient resource estimation, and inadequate risk assessment can lead to project failure. Lack of a comprehensive project plan can result in confusion, scope creep, and unanticipated challenges.

**Unclear objectives and requirements.** If project objectives and requirements are unclear or not well-defined, it becomes difficult to meet stakeholder expectations. Changes in requirements during the project can lead to scope creep and affect project success.

**Insufficient stakeholder involvement and communication.** Inadequate engagement with stakeholders, including sponsors, end-users, and team members, can result in misunderstandings and unmet expectations. Poor communication can lead to project delays, conflicts, and dissatisfaction.

**Lack of skilled team members.** A project team lacking the necessary skills and expertise can struggle to deliver quality outcomes. Inadequate training and a mismatch of skills to project requirements contribute to project failure.

**Inadequate resource management.** Insufficient allocation of resources, including human resources, time, and budget, can lead to delays, cost overruns, and compromised project quality. Resource constraints may hinder the project's ability to meet its objectives.

**Scope creep.** Uncontrolled changes in project scope, also known as scope creep, can lead to increased project complexity, additional costs, and delays.

**Poor risk management.** Failure to identify, assess, and manage risks can result in unexpected issues that derail the project. Lack of a proactive risk management approach can lead to increased costs, schedule delays, and overall project failure.

**Inadequate project monitoring and control.** Insufficient monitoring of project progress and a lack of effective control mechanisms can contribute to deviations from the project plan. Without timely intervention, issues may escalate, leading to project failure.

**Technology challenges.** Projects that involve the implementation of new or complex technologies may face technical challenges. Incompatibility issues, system failures, or difficulties integrating new technologies can jeopardize project success.

**Ineffective leadership.** Weak or ineffective project leadership can result in a lack of direction, poor decision-making, and an inability to inspire and motivate the project team. Leadership is critical for keeping the project on track and addressing challenges.

**External influences.** External factors, such as changes in market conditions, regulatory requirements, or geopolitical events, can impact a project. Failure to adapt to external influences can lead to project failure.

**Inadequate change management.** Projects often bring about changes in processes, systems, or organizational structures. Failure to manage these changes effectively can lead to resistance, confusion, and ultimately project failure.

### Question Three

- (a) Distinguish between tangible and intangible benefits from information systems projects. Tangible benefits are those benefits of information systems projects that can be quantified and measured in monetary terms while Intangible benefits are non-monetary advantages gained from information systems projects that are challenging to quantify in financial terms.

- (b) Give two examples of each of the benefits in 3(a).

#### Tangible benefits

**Cost saving.** Implementing an Enterprise Resource Planning (ERP) system that streamlines business processes, reduces manual efforts, and decreases operational costs.

**Increased revenue.** Launching an e-commerce platform that expands the customer base and leads to a measurable increase in sales and revenue.

#### Intangible benefits

**Improved customer satisfaction.** Enhancing the user interface and functionality of a mobile banking app, leading to increased customer satisfaction and loyalty.

**Enhanced organizational image.** Implementing sustainable and eco-friendly practices through an information system, positively impacting the organization's reputation and brand image.

(c) Fred has been recruited in a project management company. The manager invited him for a project initiation and planning meeting.

(i) Suggest two reasons why the above meeting is very important to the new employee.

**Understanding project objectives.** The meeting provides an opportunity for the new employee to gain a clear understanding of the project's objectives, goals, and expected outcomes.

**Building relationships.** The meeting allows the new employee to interact with project team members, stakeholders, and the manager, facilitating relationship-building and fostering a collaborative work environment.

(ii) Explain four factors to consider while determining the scope of a project.

**Project objectives.** Ensure a clear definition of the project's objectives and goals. Understand what the project aims to achieve and the specific outcomes it should deliver.

**Stakeholders' expectations.** Consider the expectations and requirements of key stakeholders, including clients, end-users, and sponsors.

**Project constraints.** Identify and understand the constraints that may impact the project, such as budget limitations, time constraints, and resource availability. Ensure that the project scope is feasible within these constraints.

**Scope changes and flexibility.** Anticipate potential changes in project scope and establish mechanisms for handling scope changes. Define how changes will be evaluated, approved, and incorporated into the project plan to maintain control over the scope.

## SECTION B

### Question One

(a) KADO limited has approached you as a computer specialist to design a job advert for the position of systems analyst.

(i) State four qualities that the applicants must possess.

Analytical skills

Technical skills

Management skills

Interpersonal skills

(ii) Explain four roles you will specify for the advertised position.

- Defining and understanding the requirement of user through various Fact finding techniques.
- Prioritizing the requirements by obtaining user agreement.
- Gathering the facts or information and acquires the opinions of users.

- Maintains analysis and evaluation to arrive at appropriate system which is more user friendly.
- Suggests many flexible alternative solutions, pick the best solution, and quantify cost and benefits.
- Draw certain specifications which are easily understood by users and programmer in precise and detailed form.

(b) Describe four approaches of systems development.

- **Prototyping** is a software development methodology that involves creating a preliminary version of a system or application in order to gather user feedback, test functionality, and identify design flaws before the final product is developed. Prototyping is an iterative and interactive process that allows stakeholders to visualize and interact with a working model of the system early in the development cycle.
- **Waterfall Model/Structured**  
The Waterfall Model was the first Process Model to be introduced. It is also referred to as a **linear-sequential life cycle model**. It is very simple to understand and use. In a waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases.
- **Rapid application development** is a software development methodology that uses minimal planning in favor of rapid prototyping. It involves a group of developers who come up with system requirements when developing a software.
- **Data modeling.** This is the process of creating a data model for an information system by applying certain formal techniques. Data modeling is a process used to define and analyze data requirements needed to support the business processes within the scope of corresponding information systems in organizations.

#### NOTE

A **data model** is an abstract model that organizes elements of data and standardizes how they relate to one another and to the properties of real-world entities.

#### Question Five

Catherine's Catering enterprise is a small business that handles meals for individuals and social occasions. The business started on a small scale but with time, the number of events started to increase. Previously, Catherine was able to manage the business using spreadsheets and word processing but later she found difficulty in handling endless phone calls about the types of meals available, changes to the number of guests attending an event and so on. You have been hired to design a system that addresses the enterprise issue.



- (a) Identify two problems Catherine's business is currently facing.

**Communication challenges.** Handling endless phone calls about meal options, changes in the number of guests, and other event-related details can lead to inefficiencies and misunderstandings.

**Limited scalability of manual methods.** The business has grown, and the manual methods (spreadsheets and word processing) are no longer sufficient to handle the increasing number of events and associated data.

**Data management challenges.** Managing and updating information about available meals, customer preferences, and event details manually can lead to errors, inconsistencies, and difficulties in tracking changes.

**Customer service challenges.** The manual system may lead to delays and inaccuracies in responding to customer inquiries, impacting overall customer satisfaction.

- (b) Outline two methods that she should use to collect data about her business.

**Surveys and feedback forms.** Distribute surveys or feedback forms to customers to gather information about their preferences, satisfaction levels, and any suggestions for improvement.

**Interviews.** Conduct interviews with Catherine and her staff to understand their workflow, pain points, and requirements for a new system.

**Observation.** Observe the current processes in the business to identify bottlenecks, redundancies, and areas where automation can be beneficial.

**Existing data analysis.** Analyze existing spreadsheets and word processing documents to identify patterns, data structures, and any limitations in the current system.

- (c) State two objectives of the system you will design.

**Efficient order management.** Streamline the process of managing meal orders, including tracking changes in the number of guests and updating meal options.

**Improved communication.** Enhance communication channels to reduce reliance on phone calls, ensuring accurate and timely information exchange between Catherine, her staff, and customers.

**Scalability.** Design a system that can scale with the growing business, accommodating an increasing number of events, customers, and data.

**Enhanced customer service.** Improve customer service by providing a user-friendly interface for customers to inquire about meals, make changes to orders, and receive timely responses.

- (d) Describe the steps you will take to come up with a system that will solve Catherine's problems.

*Phases of System Development Life Cycle*

**Requirement collection and analysis:** The requirement is the first stage in the SDLC process. This stage gives a clearer picture of the scope of the entire project and the

anticipated issues, opportunities, and directives which triggered the project. It is conducted by the senior team members with inputs from all the stakeholders and domain experts in the industry.

**Feasibility Analysis.** This is carried out to determine whether the system design is viable and achievable within the defined cost, schedule and resources. This process conducted with the help of 'Software Requirement Specification' document also known as 'SRS' document. It includes everything which should be designed and developed during the project life cycle.

### **Design**

In this third phase, the system and software design documents are prepared as per the requirement specification document. This helps define overall system architecture. This design phase serves as input for the next phase of the model.

### **Coding:**

In this phase, developers start build the entire system by writing code using the chosen programming language. In the coding phase, tasks are divided into units or modules and assigned to the various developers. It is the longest phase of the Software Development Life Cycle process. In this phase, Developer needs to follow certain predefined coding guidelines.

### **Testing:**

Once the software is complete, and it is deployed in the testing environment. The testing team starts testing the functionality of the entire system. This is done to verify that the entire application works according to the customer requirement.

### **Installation/Deployment:**

Once the software testing phase is over and no bugs or errors left in the system then the final deployment process starts. Based on the feedback given by the project manager, the final software is released and checked for deployment issues if any.

### **Maintenance:**

Once the system is deployed and customers start using the developed system, the following 3 activities occur;

- **Bug fixing** - bugs are reported because of some scenarios which are not tested at all
- **Upgrade** - Upgrading the application to the newer versions of the Software
- **Enhancement** - Adding some new features into the existing software

## **Question Six**

(a) Distinguish between a data flow diagram and a decision tree.

A Data Flow Diagram is a visual representation of how data moves within a system. It illustrates the flow of data between processes, data stores, and external entities while a decision tree is a tree-like model used for decision-making under uncertainty. It breaks down a decision into a series of choices and possible outcomes.

(b) Outline three components of a data flow diagram.

**Processes.** Actions or transformations applied to data within the system. It is represented with circles or ovals.

**Data stores.** Storage locations for data within the system. It is represented using parallel lines.

**Data flows.** Depict the movement of data between processes, data stores, and external entities. They are represented by arrows.

**External entities.** Sources or destinations of data that are external to the system. They are represented using rectangles.

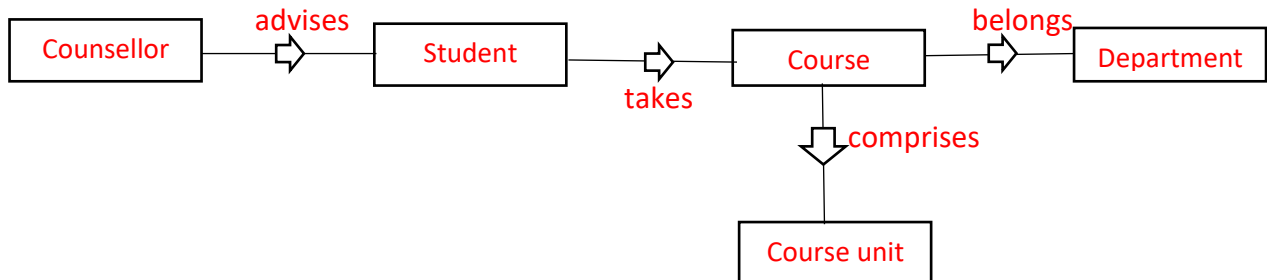
**Annotations.** Descriptive labels providing additional information about processes, data stores, or data flows.

(c) The university has a counsellor whose role is to advise students. Students take a course that comprises of a number of course units. Each course belongs to a given department.

(i) Identify the main entities of the university.

Student  
Course  
Course Unit  
Department  
Counsellor

(ii) Draw an Entity Relationship diagram showing the above entities and their relationships.



## Question Seven

The management of Blookies Financial Services limited has approached the country manager requesting him to conduct user training sessions for the new project managers.

(a) Explain five scheduling techniques that the new managers should use while handling their tasks.

**Critical path method.** CPM is a method for scheduling a set of project activities based on identifying the critical path, which is the longest sequence of activities that determines the earliest completion date of the project.

**Program Evaluation Review Technique.** PERT is a statistical tool used for scheduling, planning, and coordinating tasks within a project. It involves estimating the time required for each project activity and determining a probability distribution for completion times.

**Gantt charts.** Gantt charts are visual representations of project schedules. They display tasks along a timeline, allowing project managers to see the duration of each task and its dependencies.

**Resource levelling.** Resource leveling involves allocating resources efficiently to avoid overloading or underutilizing them.

**Agile scheduling.** Agile scheduling is particularly relevant for projects with evolving requirements. It involves breaking the project into small, manageable iterations called sprints. The team works on specific tasks during each sprint, allowing for flexibility and adaptability as project requirements change.

(b) Describe five functions of the projects manager position.

**Communication and stakeholder management.** Project managers serve as communication hubs within the project team and with external stakeholders. They facilitate effective communication.

**Project planning.** Project managers are responsible for creating a comprehensive project plan.

**Monitoring and control.** Project managers continuously monitor project progress against the plan. This involves tracking key performance indicators.

**Resource management.** Project managers allocate and manage resources such as human capital, finances, and materials.

**Risk management.** Identifying and mitigating risks is a crucial function of project managers.

## Question Eight

(a) Outline four components of a Database Management System.

Hardware

Software

Data

Procedures

Users

(b) Explain four advantages of using databases in an organization.

**Control of data redundancy;** Databases help in integrating files and avoiding multiple copies of the same data.

**Improved Security.** If data is always accessed through the databases. The database can enforce integrity constraints e.g. before inserting salary information for an employee, the database can check that the department budget is not exceeded.

**Increased concurrency;** Databases can allow two or more users to access data at the same time without loss of data integrity.

**Improved data accessibility and responsiveness;** data crosses departments and unplanned questions can be asked unlike fixed queries in file based systems.

**Improved backup and recovery services;** DBMS provides facilities of minimizing amount of processing that is lost following a failure.

**Sharing of data.** Typically files are owned by the departments that use them. On the other hand the database belongs to the entire organization and can be shared by all authorized users.

### NOTES

#### **Disadvantages**

- ☐ **Complexity:** It has several components which need serious and careful planning to get a good DBMS.
- ☐ **Size:** large size of software taking large disk space and memory.
- ☐ **Cost of DBMS:** varies with the number of users 1 or 50.
- ☐ **Additional hardware costs:** e.g. storage, memory etc.
- ☐ **Cost of conversion;** costs of converting existing applications to run on the new DBMS and hardware, employing specialists, training staff etc.
- ☐ **Performance;** some applications may not run as first as the used to because DBMS caters for several applications at once.
- ☐ **Higher impact of a failure;** integration of resources increases vulnerability.

(c) BAILER is a Web-based trading company based in Kampala. The company has expanded, and needs a new Information System to manage the inventory, the brokerage operation and information about prospective buyers. You have been approached to design samples of computer screens and reports that the new system might produce.

(i) Outline four guidelines you will follow to come up with a good user interface.

**User-centered design.** Prioritize the needs and preferences of end-users.

Conduct user interviews and gather feedback throughout the design process to ensure that the interface aligns with user expectations and workflows.

**Responsive design.** Ensure the interface is responsive to accommodate users accessing the system from different devices and screen sizes.

**Feedback mechanisms.** Provide immediate feedback for user actions. Use visual cues, such as success messages or error notifications, to keep users informed about the outcome of their interactions with the system.

**Efficient navigation.** Design an intuitive navigation structure. Group related functions together, use a logical menu hierarchy, and incorporate quick access buttons for frequently used features.

**Visual design.** Pay attention to the visual elements, including color schemes, fonts, and layout.

**Simplicity and clarity.** Keep the interface simple and avoid unnecessary complexity.

- (ii) Explain two types of reports you will design for a client.
- Inventory status report.** Provides an overview of current inventory levels, including the quantity of each product, their locations, and any critical information such as expiration dates.
  - Prospective buyers' analysis report.** Offers insights into potential buyers, their preferences, and historical interactions with the company.
  - Transaction history report.** Provides a detailed record of all transactions, including purchases, sales, and any changes in inventory.
  - User activity log.** Tracks user interactions within the system, including logins, data modifications, and system access.
  - Financial performance report.** Summarizes the financial aspects of the business, including revenue, expenses, and profits.

19th May 2023

SECTION A

Question One

- (a) Define the term **system development life cycle** as applied in systems design.

System Development life cycle is a systematic process for building software that ensures the quality and correctness of the software built.

- (b) Explain **prototyping-based methodology** as used in system design.

Prototyping is a software development methodology that involves creating a preliminary version of a system or application in order to gather user feedback, test functionality, and identify design flaws before the final product is developed.

Prototyping is an iterative and interactive process that allows stakeholders to visualize and interact with a working model of the system early in the development cycle.

- (c) Give **three** advantages of the prototyping-based methodology in system development.

- Increased user involvement in the product even before its implementation.
- Since a working model of the system is displayed, the users get a better understanding of the system being developed.
- Reduces time and cost as the defects can be detected much earlier.
- Quicker user feedback is available leading to better solutions.
- Missing functionality can be identified easily.
- Confusing or difficult functions can be identified.
- It also identifies the complex or difficult functions.
- Encourages innovation and flexible designing.
- It is a straightforward model, so it is easy to understand.
- No need for specialized experts to build the model

- (d) MAGMA Enterprises Company would like to replace their old stock management system to a new and modern system. They have contacted you for technical support. As an expert of systems design, describe **four** activities involved in the planning phase of the system development cycle.

**Requirements analysis.** Conduct thorough discussions with stakeholders, including management, stock managers, and end-users, to understand the current system's limitations and gather requirements for the new stock management system.

**Feasibility study.** Perform a feasibility study to assess the viability of implementing the new stock management system.

**Project planning.** Create a detailed project plan outlining the scope, timeline, resource requirements, and responsibilities. Define project milestones and deliverables, and establish a project schedule with clear timelines for each phase of development.

**Technology selection.** Evaluate and select the most suitable technologies, frameworks, and platforms for developing the stock management system.

**Security planning.** Conduct a comprehensive security assessment to identify potential vulnerabilities in the stock management system.

### Question Two

- (a) Define the term system analysis as applied in SDC.

**System analysis** is the process of studying and understanding a complex system to identify its components, interactions, and functionalities.

- (b) State two techniques a system analyst should use to gather information about system needs requirements.

**Interviews.** Conducting one-on-one or group interviews with stakeholders, including end-users, managers, and other relevant personnel, to gather information about their needs, expectations, and concerns.

**Surveys and questionnaires.** Distributing structured surveys or questionnaires to a larger audience to collect quantitative data about system requirements, preferences, and opinions.

**Document review.** Analyzing existing documents, such as manuals, reports, and procedures, to understand the current system's structure, processes, and limitations.

**Observation.** Directly observing users and system processes to gain insights into daily operations, identify bottlenecks, and understand how the current system functions in real-world scenarios.

**Prototyping.** Creating a simplified version of the system or its components to allow users to interact with a tangible representation.

- (c) Explain three major steps for achieving the objectives of system analysis.

**Problem identification.** Identify and define the problems or inefficiencies in the current system or the requirements for a new system.

**Feasibility study.** Assess the feasibility of implementing the proposed system. Evaluate technical, economic, and operational aspects to determine if the project is viable.

**Requirements gathering.** Gather detailed information about user needs, system functionalities, data requirements, and any constraints.

**System design specifications.** Develop detailed specifications for the new system based on the gathered requirements. This includes defining system architecture, data models, and interaction diagrams.

**Prototyping and validation.** Create prototypes or models to validate the proposed system's design. Gather feedback from stakeholders and make necessary adjustments to ensure alignment with user expectations.



- (d) UDI Company has expanded over time and recently procured a new system. The company plans to hire a systems analyst. As a knowledgeable person of system analysis, describe to UDI management five interpersonal skills a suitable system analyst must possess.

**Communication skills.** Effective verbal and written communication skills are crucial for explaining technical concepts to non-technical stakeholders, facilitating meetings, and creating comprehensive documentation.

**Problem solving.** The capacity to analyze complex issues, identify solutions, and make informed decisions is critical for a systems analyst, especially when addressing challenges during the system analysis and development process.

**Team collaboration.** Systems analysts often work with diverse teams. Strong collaborative skills are essential for effective teamwork, cooperation, and achieving common project goals.

**Adaptability to changing requirements.** The ability to adapt to changing requirements, technologies, and project dynamics is crucial in the fast-evolving field of system analysis.

**Negotiation skills.** Negotiating with various stakeholders, managing conflicting priorities, and finding compromises are essential skills for a systems analyst in achieving successful project outcomes.

**Active listening.** The ability to actively listen to stakeholders allows the systems analyst to understand user needs, concerns, and feedback accurately.

**Empathy.** Understanding and empathizing with end-users' perspectives helps in designing systems that align with their requirements and improve user satisfaction.

### Question Three

- (a) Distinguish between project management and project planning.  
Project planning is the process of defining the project, setting its goals, and establishing the tasks and activities required to achieve those goals while Project management is the overall process of planning, organizing, executing, and controlling the project from initiation to completion.
- (b) Many risks can endanger the successful completion of a project. Explain four risks project management team should anticipate during project implementation and their mitigation measures.
- Uncontrolled expansion of project scope, leading to delays and increased costs.
  - Insufficient resources (human, financial, or technical) to complete tasks on time.
  - Unforeseen technical difficulties or issues that hinder progress.
  - Ineffective communication among team members, stakeholders, or project managers.
  - Exceeding the allocated budget for the project.
  - Delays or failures in dependent tasks or deliverables.
- (c) During project management, users are trained on how to use a newly designed system. Describe four topics to be included in the manual of such type of training.
- Introduction to the new system, its purpose, and how it aligns with organizational goals.

- Detailed guidance on how to navigate through the system, including menus, buttons, and navigation paths.
- Step-by-step instructions on how to input data into the system, ensuring accuracy and completeness.
- Training on how to search for information within the system and retrieve relevant data.
- Instructions on how to perform various transactions or operations within the system, such as creating, updating, and deleting records.
- Guidance on accessing and generating reports, as well as analyzing data within the system.
- Information on user authentication, password management, and access control to ensure data security.
- Common issues users may encounter and troubleshooting steps. Frequently Asked Questions (FAQs) can be included for quick reference.
- Information about how system updates will be handled and any maintenance procedures users should be aware of.
- Details on how users can seek assistance, report issues, and contact the support team. Include contact information and support hours.

### SECTION B

#### Question Four

A college management have decided to design a registration system using a **USE CASE modelling** for student registration and billing.

- (a) Define the modeling used by the college
- USE CASE modeling** is a technique in software engineering that helps visualize and document the interactions between users (actors) and a system.
- (b) Describe two primary artifacts that were involved.
- **Use Case Diagrams.** Use case diagrams visually represent the interactions between actors (users) and the system. Use cases are depicted as ovals, and actors are represented as stick figures. Lines connecting actors to use cases show the relationships and interactions.
  - **Use case descriptions.** Detailed textual descriptions of each use case, specifying the functionality, preconditions, post conditions, and the flow of events.
  - **Actor list.** A list that identifies and describes each actor involved in the system.
  - **System boundary.** A representation of the boundaries of the system, indicating what is inside (the system) and what is outside (external actors). This helps define the scope of the system.
- (c) Explain the meaning of **ACTOR** in the 4(a).
- An **ACTOR** refers to an external entity or role that interacts with the system. An actor can be a user, another system, or an external entity that plays a specific role in relation to the system being modeled.

- (d) Discuss four types of ACTORS and their roles in modeling 4(a).

**Primary Actor.** The primary actor is the main user or entity that initiates a specific use case to accomplish a goal.

**Secondary (supporting) Actor.** Supporting actors assist the primary actor in achieving their goals by providing necessary information or services.

**System actor.** The system itself can be considered an actor, representing automated processes or components within the system that interact with external entities.

**Boundary (unassociated) actor.** An actor that is outside the system boundary but interacts with it in a more general sense without participating in specific use cases.

### Question Five

PARTRISE Technologies Ltd intends to design a computerized information management system. The management is wondering if it is a wise decision to kick start the process of performing a feasibility analysis. As an expert in this field.

- (a) Define the term feasibility analysis as applied to system development.

**Feasibility Analysis** is the process of evaluating the practicality and viability of a proposed project before committing significant resources to its development. The objective is to determine whether the project is technically, economically, operationally, and legally feasible.

- (b) Explain four steps undertaken while carrying out a feasibility analysis.

- **Define the problem.** Clearly articulate the problem or opportunity that the proposed project aims to address.
  - **Conduct preliminary analysis.** Gather initial information about the project idea. Identify key stakeholders, potential users, and high-level requirements.
  - **Define the scope.** Clearly outline the boundaries of the proposed project.
  - **Identify alternatives.** Explore various alternative solutions to the problem or opportunity. This may involve considering different approaches, technologies, or methods that could meet the project's objectives.
  - If applicable, analyze the market to understand the demand for the proposed product or service.
  - **Summarize findings.** Consolidate the findings from the feasibility analysis into a comprehensive report. Clearly present the results, highlighting key factors that support or challenge the project's viability.
  - Make recommendations and prepare a feasibility study report and present the report to the stake holders.
- (c) Examine five benefits the company will attain from performing the analysis.
- Feasibility analysis helps identify potential risks and challenges early in the project lifecycle.
  - The analysis provides decision-makers with the information needed to make informed choices about whether to proceed with the project, modify its scope, or abandon it.

- By identifying technical, economic, or operational constraints, the company can optimize resource allocation.
- Feasibility analysis ensures that the proposed system aligns with the company's overall business goals and objectives.
- The economic feasibility component of the analysis involves a cost-benefit evaluation. This helps the company understand the financial implications of the project and assess whether the expected benefits justify the costs.
- Feasibility analysis contributes to enhanced project planning by providing a comprehensive understanding of the project's technical, economic, and operational requirements.
- Conducting a thorough feasibility analysis demonstrates due diligence to stakeholders, including investors, clients, and employees. It enhances confidence in the company's ability to manage projects effectively.

### Question Six

(a) Define the following terms in reference to data in system modeling.

(i) Entity

An entity is a distinct and distinguishable object, concept, or thing about which data is stored.

(ii) Attribute

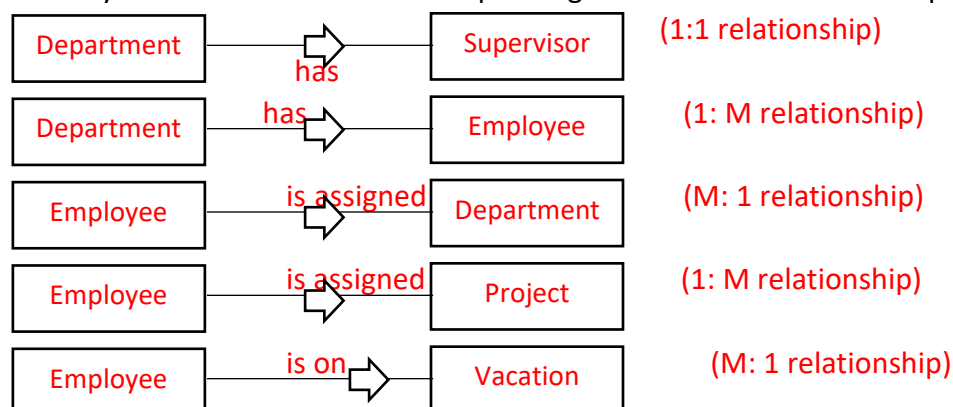
An attribute is a characteristic or property of an entity.

(iii) Relationship

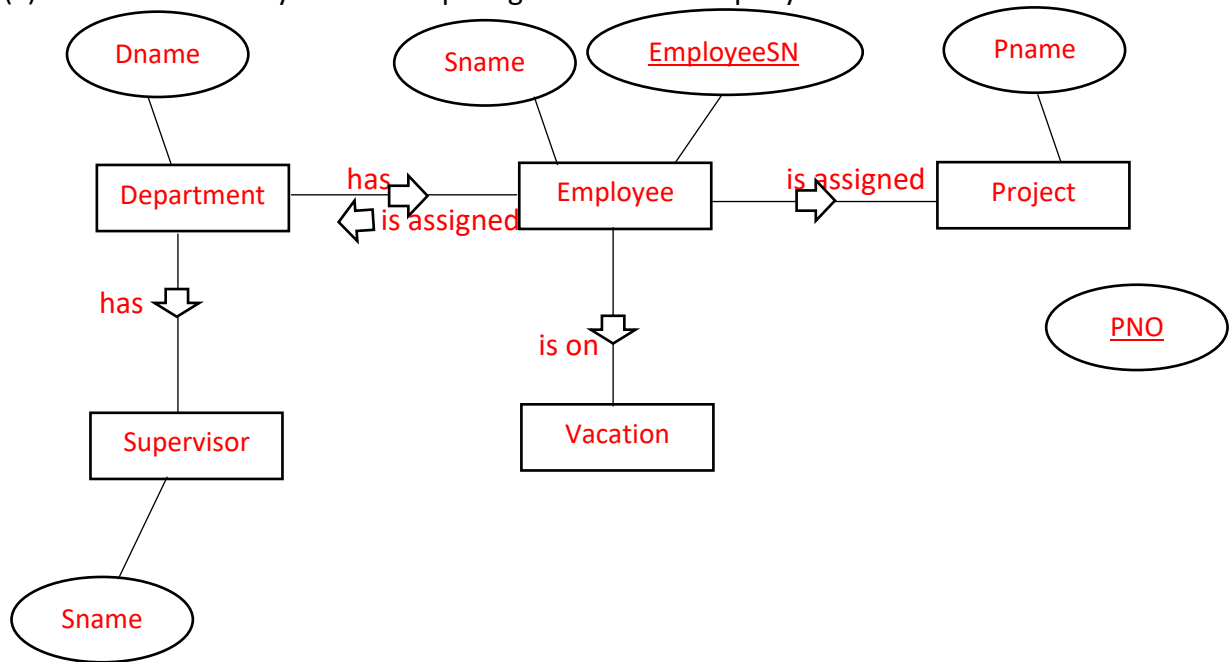
A relationship describes how entities are related to each other in a database. It defines the associations and connections between entities.

(b) MAXSWA International Company has several departments. Each department has a supervisor and at least one employee. Employees must be assigned to at least one, but possibly more departments. At least one employee is assigned to a project, but an employee may be on vacation and not assigned to any project. The important data fields are the “names of departments”, “projects”, supervisors” and “employees”, as well as the “supervisor” and “employee SN” and a “unique project number”.

(i) Identify the Entities and Relationships using a matrix in the above company.



(ii) Draw an Entity Relationship Diagram for the company.



(c) Explain three types of information systems.

**Transaction Information System.** This is designed to handle routine and repetitive transactions. It processes day-to-day transactions that occur in an organization, such as sales, purchases, and inventory updates

**Management Information System.** This focuses on providing middle and top-level management with summarized, structured information. It assists in monitoring and controlling the business operations

**Decision Support System.** This is designed to support decision-makers in semi-structured and unstructured decision-making. It provides tools for analyzing data and making decisions

**Executive Support System.** This is designed to provide top-level executives with strategic information for long-term planning

**Enterprise Resource Planning System.** This system integrates various business processes and functions across an organization into a unified system. It facilitates real-time information flow and collaboration

## Question Seven

(a) Differentiate between Logical Design and Physical Design.

Logical design primarily focuses on the conceptual structure and functionality of the system while Physical design concentrates on the actual implementation and execution of the logical design.

(b) Define Out-sourcing as used in system analysis and design.

Outsourcing is the practice of contracting out certain aspects of the development process to external third-party vendors or service providers. This could include tasks such as software development, system testing, maintenance, or other related functions. Outsourcing is often done to leverage specialized skills, reduce costs, and focus on core business functions.

(c) Describe five merits of the out-sourcing concept.

- Outsourcing can lead to cost savings, as external vendors may operate in regions with lower labor costs, and they often have specialized expertise that can reduce development time and costs.
- External service providers may have specialized skills and experience that the in-house team lacks. Outsourcing allows organizations to tap into this expertise without having to invest in extensive training.
- Outsourcing non-core functions allows the organization to concentrate on its core business activities, leading to increased efficiency and competitiveness.
- Outsourcing provides flexibility in scaling resources up or down based on project requirements.
- Outsourcing opens the door to a global talent pool, allowing organizations to access a diverse range of skills and perspectives that may not be available locally.

(d) Outline four guidelines involved in out-sourcing.

- Clearly define the objectives and scope of the outsourcing arrangement.
- Conduct thorough research to identify reputable vendors with a proven track record.
- Address legal and security concerns by establishing clear contracts, including confidentiality agreements, data protection measures, and service level agreements.
- Establish open and effective communication channels with the outsourcing partner. Regular updates, progress reports, and feedback mechanisms are crucial for successful collaboration.
- Identify and assess potential risks associated with outsourcing.
- Implement robust quality assurance measures to ensure that the outsourced work meets the desired standards.
- Ensure that the outsourcing arrangement allows for scalability and flexibility to adapt to changing business needs and project requirements.
- Regularly monitor the performance of the outsourcing partner against predefined metrics and goals.

### **Question Seven**

(a) Define the term System Design.

System design is the phase in the System Development Life Cycle (SDLC) where the detailed specifications for the hardware, software, and network components of a system are developed.

## SYSTEMS ANALYSIS AND DESIGN PAST PAPERS SOLUTIONS AND MINI-NOTES

- (b) Differentiate between Rapid Application Development (RAD) and Joint Application Development (JAD).

RAD is an iterative and incremental development methodology that emphasizes rapid prototyping and quick feedback while JAD is a collaborative and structured approach to gather requirements and develop systems with the active participation of stakeholders.

- (c) KATIKA Ltd recently acquired a newly designed information management system. However it has been discovered that the system does not capture categories of data of their interest. The managing director of the company has approached you as an expert in systems design.

- (i) Identify the system that will resolve the problem in 8(c).

Customized system.

- (ii) Explain the meaning of system in 8(c) (i).

A customization or enhancement system involves modifying or extending an existing information management system to meet specific requirements. In this case, KATIKA Ltd needs to enhance its current system to capture categories of data that are of interest to the company.

- (iii) Describe three characteristics of the identified system 8(c) (i).

- The customization system should be adaptable to changes, allowing for the integration of new data categories without major disruptions to the existing system.
- It should be scalable to accommodate future modifications and expansions as the organization's data needs evolve.
- The customized system should maintain compatibility with the existing infrastructure, databases, and workflows of KATIKA Ltd.
- The enhancements should provide a user-friendly interface for data input, retrieval, and manipulation, ensuring that users can easily interact with the modified system.
- The customization should maintain data integrity and security measures, ensuring that the modifications do not compromise the confidentiality, integrity, or availability of the data.