L-Università ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE
EXAMINATIONS BOARD

**INTERMEDIATE MATRICULATION LEVEL
2025 FIRST SESSION**

SUBJECT:	**Information Technology**
DATE:	20th May 2025
TIME:	4:00 p.m. to 7:05 p.m.

Section A: Information Systems

Answer question 1 and any TWO questions from this section.

This question is compulsory.

1. EduLearn is an online learning platform that provides comprehensive educational services across multiple schools and educational institutions. Students can enrol in courses, access learning materials, track their academic progress, and interact with educators through an integrated digital platform.

    a. How does the online learning platform function as an Information System (IS)? (2)

    b. Identify at least **TWO** internal and **TWO** external sources of information for the EduLearn platform. (2)

    c. Identify **TWO** key benefits of how the EduLearn platform utilises a Management Information System (MIS) to support decision-making for:
       i. School Administrators; (2)
       ii. Educators. (2)

    d. List **TWO** ways that EduLearn could benefit from using a data warehouse to improve its services. (2)

    e. Give **TWO** examples of how **each** of the following data capture methods could be used within the EduLearn platform:
       i. RFID; (2)
       ii. QR Codes. (2)

    f. Give **TWO** examples to show how the EduLearn platform can utilise Internet of Things (IoT) devices to enhance the learning experience. (2)

    g. Discuss the potential impact of data breaches on the EduLearn platform, considering factors like student privacy and institutional reputation. (4)

    (Total: 20 marks)

Please turn the page.

Answer any TWO questions from the following.

2. TechSol is a software development company specialising in creating mobile applications. They work on a variety of projects, from developing educational apps for children to creating innovative solutions for businesses.

    a. List the main stages of development for a typical mobile application project undertaken by TechSol. (4)

    b. Describe the purpose of the third stage in the context of a mobile app development project for TechSol. (2)

    c. Describe the purpose of the fifth stage in a typical systems development lifecycle. Provide **THREE** different approaches commonly used during this stage. (4)

    d. List and briefly explain **THREE** characteristics of an effective project manager in the context of a mobile app development project at TechSol. (3)

    e. Describe how resource management can have an impact on the quality and success of a mobile application development project at TechSol. (2)

    (Total: 15 marks)

3. TechCore Industries is a leading computer manufacturer that specialises in designing and building both consumer and industrial computing systems. Their product line includes everything from basic computing systems to advanced data processing units. As a technical consultant hired by TechCore Industries, address the following questions to help document their systems and processes.

    a. Draw a simple diagram illustrating the Von Neumann architecture, clearly labelling the CPU, Main Memory, Input/Output devices, and the flow of data. (3)

    b. Give **TWO** examples of how embedded systems are used in household appliances. (2)

    c. Compare and contrast the advantages and disadvantages of Solid State Drives (SSDs) and Hard Disk Drives (HDDs) in terms of speed, and capacity. (4)

    d. Give **TWO** examples of how 3D printing technology can be used in different industries. (2)

    e. Explain the difference between batch processing and real-time processing, providing a simple example of **each**. (4)

    (Total: 15 marks)

4. NetVision Academy is a leading technical training institute specialising in network education. By enrolling in an advanced networking course at this Academy, hands-on experience with various networking technologies will be gained. Answer the following questions to begin the learning journey and assess the current networking fundamentals.

    a. Define the term network and give an example of a network used in everyday life. (2)

    b. List **TWO** advantages and **TWO** disadvantages of using a network. (4)

    c. Compare and contrast a Local Area Network (LAN) and a Wide Area Network (WAN) in terms of their geographical scope and typical uses. (4)

    d. Describe the characteristics of a Star network topology, including **ONE** advantage and **ONE** disadvantage. (4)

    e. Give **ONE** example of how Cloud Computing is used in businesses today. (1)

    (Total: 15 marks)

Section B: ICT in Organisations

Answer any question from this section.

1. Techno Solutions is a growing company that has recently adopted e-Business and e-Commerce practices to expand its reach and improve efficiency.

   a. Define the terms e-Commerce and e-Business. (2)

   b. List **TWO** advantages and **TWO** disadvantages of e-Business for:
      i. businesses; (4)
      ii. customers. (4)

   c. Techno Solutions makes use of both the Business-to-Business (B2B) and Business-to-Consumer (B2C) models.
      i. Compare and contrast the functionality and applications of the B2B and B2C models by providing **ONE** similarity and **ONE** difference. (2)
      ii. Provide **ONE** example for **each** model (B2B and B2C) that could be used by Techno Solutions. (2)

   d. In the future Techno Solutions is also planning to adopt e-Marketing to enhance its online presence
      i. What is 'e-Marketing' and explain how can it be beneficial to Techno Solutions? (2)
      ii. Explain the concept of 'e-Markets' and provide **ONE** example to illustrate your answer. (2)
      iii. Define 'web portals' and explain how Techno Solutions could use a web portal to centralise its services and improve customer experience. (2)

   (Total: 20 marks)

2. Eco-Tech Innovations is a start-up manufacturing company committed to integrating sustainable ICT technologies while maintaining a safe and healthy working environment for its employees.

   a. What does sustainability in ICT mean? (2)

   b. Why is it important for ICT companies to adopt sustainable practices? (2)

   c. Outline how storage techniques can contribute to sustainability and provide **ONE** example of how this could be applied at Eco-Tech Innovations. (2)

   d. Explain how the IoT can promote sustainability and provide **ONE** example of its potential use at Eco-Tech Innovations. (2)

   e. Automation is being introduced at Eco-Tech Innovations to enhance sustainability. Discuss how automation can promote sustainability in the following departments of the company, giving **ONE** example for **each:**
      i. manufacturing; (2)
      ii. transport. (2)

   Question continues on the next page.

f. Health and safety are key priorities for Eco-Tech Innovations, and the company is committed to addressing issues such as techno stress and preventing RSI.
   i.   Define the concept of techno stress. (1)
   ii. Explain the idea of a digital detox and how it can help mitigate the effects of techno stress. (2)
   iii. Define the term RSI. (1)
   iv. List **TWO** health risks or health issues related to ICT which might be present at Eco-Tech Innovations. (2)
   v.   Suggest **TWO** ways how the issues specified in part f (iv) can be avoided. (2)

(Total: 20 marks)

Section C: Software

Answer question 1 and any other question from this section.

This question is compulsory.

1. ABC Event Planners is developing a database to manage bookings and events.

   a. Define the following terms:
      i.   file; (1)
      ii. database; (1)
      iii. entity; (1)
      iv. tuple. (1)

   b. Why are databases important in terms of usability and data organisation? (2)

   c. Mention and describe **TWO** types of database systems. (2)

   d. Compare and contrast the **TWO** database systems mentioned in part (c) by mentioning **TWO** similarities and **TWO** differences. (4)

   e. Draw a representation of both database systems mentioned in part (c) using block diagrams. (4)

   f. Below is a list of data attributes that ABC Event Planners need to be stored in their database. Identify the most suitable data type for each attribute:
      i.   event name; (½)
      ii. number of guests; (½)
      iii. event date; (½)
      iv. is paid (Indicates whether the event booking fee has been paid (Yes/No)). (½)

   g. Define what is a primary key and select **ONE** of the attributes to be the primary key. (2)

(Total: 20 marks)

Answer any ONE question from the following.

2. Global Eduware, a company that develops educational software for schools and universities, is conducting a seminar to help educators and administrators understand key software concepts and properties.

    a. Define the term software. (1)

    b. Global Eduware is evaluating different types of software for its operations. Distinguish between the following **THREE** types of software in terms of usage and licensing:
        i.   open source; (1)
        ii. free; (1)
        iii. proprietary. (1)

    c. Global Eduware aims to protect its innovative software designs. Define Intellectual Property and explain its importance for a company like Global Eduware. (2)

    d. Define the following software properties and justify their need in the context of the educational software developed by Global Eduware:
        i.   software portability; (2)
        ii. downward compatibility. (2)

    (Total: 10 marks)

3. Innovative Web Tech, a company specialising in web solutions, is training its new employees to understand the basics of the World Wide Web (WWW).

    a. As part of the training, new employees need to understand key web concepts. Define the following terms:
        i.   World Wide Web (WWW); (1)
        ii. website; (1)
        iii. web browser. (1)

    b. Innovative Web Tech ensures that the websites it develops function effectively across different web browsers. Mention and outline **THREE** essential features of a web browser that enhance user experience and security. (3)

    c. Explain the purpose of a Uniform Resource Locator (URL) in accessing websites, and discuss how URL structure impacts security and usability. (1)

    d. Identify and describe **THREE** key parts of a URL, and explain their role in web navigation. (3)

    (Total: 10 marks)