الجامعة الوطنية
National University
Science & Technology للعلوم والتكنولوجيا
كلية عمان البحرية الدولية
International Maritime College Oman

Final Exam
PITI.II: IT FOUNDATION
Spring 2026

Points of attention:

- For each question, the maximum earned points are specified in the question.
- Write clearly! Answers that are not readable are not marked and don't earn marks!
- All answers should be written in English using **blue or black pens** only.
- Use the pencil only for diagrams and graphs.
- Show all the calculation steps in the given space.
- When finished, submit the question paper, together with the answer scripts and the signed cover page to the invigilator.
- Any cheating/copying may result in an instant failing of the examination.

Exam Duration:	2 hours
Instructor's Name:	Ahlam Mohammed Al Balushi
Exam Date:	05/05/2026
Program:	LTM

	40
	10

Student Information			
Name:		ID:	
Signature:			

Invigilator			
Initials:		☐ Student ID checked	
Time received:			

Question 1 **[17 marks]**

1. Open MS Excel and complete the FMEA table below for a logistics operation.

Process Step	Failure Mode	Effect	Cause	S(1-10)	O (1-10)	D (1-10)	RPN
Order Processing							
Inventory Storage							
Packaging							
Shipment Scheduling							

2. Based on the above table, answer the following:

   a. Identify one failure mode for each step. (4 marks)
   b. Determine one effect for each step. (4 marks)
   c. Determine one cause for each step. (4 marks)
   d. Assign Severity (S), Occurrence (O), and Detection (D) for each step. (3 marks)
   e. Calculate RPN. (1 mark)
   f. Identify the highest risk. (1 mark)

Question 2 **[13 marks]**

A customer was furnishing a new home. After visiting a showroom, they selected sofas and placed an order for the same models. When the delivery arrived, some of the sofas were in poor condition, with visible mold and dirt. Use the Draw.io program to create a Bowtie diagram illustrating this scenario.

a. The hazard (1 mark)
b. Three threats that can cause the event. (3 marks)
c. Three consequences of the event. (3 marks)
d. Three prevention and mitigation barriers. (6 marks)

Question 3 **[10 marks]**

A logistics company manages a shipment process involving planning, preparation, and delivery coordination with the activities shown in the table below.

Activity	Description	Duration (Days)	Predecessor
A	Customer Order Confirmation	3	—
B	Stock Allocation	2	A
C	Transport Scheduling	5	A
D	Fleet Preparation	4	B
E	Goods Dispatch Preparation	3	C, D
F	Final Shipment Execution	6	E, G
G	Compliance Verification	2	C

1. Draw the network diagram for the above table. (1 mark)
2. List all network paths and identify the critical one. (1.5 marks)
3. Calculate ES, EF, LS, and LF. (3.5 marks)
4. Determine the free float for all activities. (2 marks)
5. Determine the total float for all activities. (2 marks)

MLO and Bloom's Level of Complexity

Q #	MLO Addressed	Complexity Level	Mark	Remark
1	**3 & 4**	Create	**17**	
2	**5**	Create	**13**	
3	**1&2**	Apply	**10**	