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

ACADEMIC YEAR 2023 - 2024

Program	Year	Semester	Paper
LTM	1	2	MAIN 1

MODULE NAME:	**IT FOUNDATION**		
MODULE CODE:	**PIT I.II**	**EXAM DATE:**	**12/05/2024**
INSTRUCTOR's NAME:	**Ahlam Mohammad**	**DURATION:**	**2 hrs**

Questions to be answered on:	**Allowed tools:**	**Number of pages**
✓ Computer	Pen, Pencil & Calculator	(Incl. cover page)**:** **7**

Points of attention:

- For each question, the maximum earned points are mentioned between brackets at the end of each question.
- Write very clearly! Answers that are not readable are not marked and don't get points!
- Make sure your answers are written to the point.
- All answers should be written **in English.**
- Write all the answers in **blue or black pen only.**
- Use the **pencil** only for **diagrams & 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.

STUDENT NAME:

STUDENT ID:

FINAL MARKS	
	40
	10

Number of answer scripts:……..…….

Invigilator:……..……..…..

Student's signature: ……

Time of receipt:……..…..

Question 1 **[15 Marks]**

On a sunny day, a cargo plane carried valuable supplies and goods. The crew members were experienced pilots and had flown this route many times before, so they were confident in their ability to navigate the plane safely to its destination. However, just as the plane approached the airport, something went wrong. A loud noise echoed throughout the plane, and suddenly the cockpit was filled with smoke. When the pilot radioed for help, it was too late; he had lost control.

The cargo plane crashed into a nearby field with a deafening impact, sending debris flying in all directions. Emergency services were alerted and rushed to the scene, but there were no survivors. The entire crew and valuable cargo were lost in the crash.

The news of the cargo plane crash spread quickly, with shock and sadness spreading among the people. The loss of cargo would have a significant impact on individuals and organisations.

Create a Bowtie diagram illustrating:

a. Hazard and top event in the scenario above. (3 marks)
b. Three threats that cause the event in the above scenario. (3 marks)
c. Three consequences of the event in the above scenario. (3 marks)
d. Prevention and mitigation barriers. (6 marks)

Question 2 **[10 Marks]**

A logistics company in Sohar Port is working on a project that requires several activities to be completed over time.
Answer the following questions based on the table below.

Activity	Duration /Days	Predecessor
A	2	–
B	5	–
C	1	–
D	10	B
E	3	A, D
F	6	C
G	8	E, F

1. Draw the network diagram for the above table. (2 marks)
2. List the network paths. (1.5 marks)
3. Determine the critical path(s). (0.5 mark)
4. Calculate ES, EF, LS, and LF. (4 marks)
5. Determine the free float for all activities. (1 marks)
6. Determine the total float for all activities. (1 marks)

Question 3 **[15 Marks]**

Employees in logistics companies perform various activities such as packaging or labeling products, tracking and monitoring packages, and carrying packages to their destination. However, sometimes packages can get lost, and customers may not receive them. One such package was sent to a customer named Abdullah. Let's find out whether Abdullah will receive his shipment.

The loss of shipment packages is determined by how well staff are trained in tracking and monitoring packages and how properly products are packaged or labeled.

Conditional probabilities for the relationship between variables are as follows:

a. There is a probability of 0.8 that the worker is well trained and a probability of 0.2 that they don't receive enough training.
b. The probability that a product will be packaged or labeled adequately is 0.9 when workers are well-trained. However, there is a 0.6 probability that products will be packaged or labeled incorrectly when they are not well-trained.
c. There is an 80% probability that a product will be tracked and monitored when staff are effectively trained. Without training, there is a 0.4 probability that items will not be adequately tracked and monitored.
d. If products are packaged or labeled properly and tracked effectively, there is a 0.9 probability that the packages will not be lost and customers will receive their packages. In contrast, if the products are not packaged or labeled appropriately and the packages are not monitored and tracked effectively, there is a 0.7 probability that the packages will be lost and not delivered to the customers.
e. There is a 0.8 probability that the shipment will be received by customers if the product is packaged or labeled appropriately, even if it is not tracked and monitored. However, if the product is packaged or labeled inadequately but is monitored and tracked effectively, the probability is 0.5.

Use Hugin 8.9 to draw Bayesian networks and determine whether Abdullah is likely to receive his shipment package or not. The file must be saved in .hkb format and uploaded to Moodle.

MLO & Bloom's Level of Complexity

Q #	MLO Addressed	Complexity Level	Mark	Remark
1	5	Application	15	
2	1, 2	Application	10	
3	4	Application	15	