UNIVERSITI KUALA LUMPUR
MALAYSIA ITALY DESIGN INSTITUTE

FINAL EXAMINATION

MARCH 2026 SEMESTER

COURSE CODE	:	POB 30203
COURSE TITLE	:	BUSINESS ANALYTICS
PROGRAMME NAME	:	BACHELOR OF PROJECT MANAGEMENT (HONOURS)
DATE	:	22 JUNE 2026
TIME	:	9:00AM - 11:30AM
DURATION	:	2 HOURS 30 MINUTES

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of ONE sections.
4. Section A consist of five questions. Answer FOUR (4) questions only.
5. Please write your answer on the answer booklet provided.
6. Please answer all questions in English only.
7. Refer to the attached Formula/ Appendies. ☐ *Tick if applicable*

THERE ARE 10 PAGES OF QUESTIONS INCLUDING THIS PAGE

SECTION A (Total: 100 marks)

Answer FOUR (4) questions.

Please use the answer booklet provided.

Question 1

Mal Elecktrik Sdn Bhd produces electrical appliances. Its most popular products are stoves (X1) , washers (X2), electric dryers (X3) , gas dryers (X4) and refrigerators (X5). All the products goes through three processes ie. moulding, assembly and packaging. The manufacturing costs of stoves, washers, electric dryers, gas dryers and refrigerators are RM100, RM110, RM25, RM60 and RM200 respectively. The selling prices of stoves, washers, electric dryers, gas dryers and refrigerators are RM210, RM200, RM100, RM140 and RM330 respectively. Each week there are 80 hours available for moulding, 20 hours each for stove assemble and refrigerator assembly, 50 hours for packaging and 40 hours for assembling of washers, electric dryers and gas dryers.

The table : Process Times gives the per unit moulding , assembly and packaging times **(in minutes)**

Refer Below - Table1 : Process Times (Minutes) .

Table 1: Process Times (Minutes)

	Molding/ Pressing	Assembly	Packaging
Stove	5.5	4.5	4.0
Washer	5.2	4.5	3.0
Electric Dryer	5.0	4.0	2.5
Gas Dryer	5.1	3.0	2.0
Refrigerators	7.5	9.0	4.0

(a) Answer the following questions

Refer Below - Table2 : Processing Times (Minutes) .

Table 2: Processing Times (Minutes)

	Molding/ Pressing	Assembly	Packaging
Stove	5.5	4.5	4.0
Washer	5.2	4.5	3.0
Electric Dryer	5.0	4.0	2.5
Gas Dryer	5.1	3.0	2.0
Refrigerator	7.5	9.0	4.0

i. Calculate the unit profit for each product

(2 marks)

ii. Formulate the linear programming model for this problem. Use the Xi notation given in the question.

(9 marks)

iii. Develop the excel model to solve this problem using Excel Solver. Show all relevant excel function formulae. Use the excel sheet provided in the Appendix.
Important : Attach the appendix sheet to your answer booklet for submission.
Refer Appendix Attachment - Appendix : Excel Sheet for LP Question .

(7 marks)

iv. Attached is a partial report generated by Excel Solver. Based on this report recommend to Mal Elektrik Sdn Bhd management the optimal quantities to produce in a week.
Refer Below - Table3 : Partial Answer Report .

(2 marks)

Table 3: Partial Answer Report

Variable Cells

Cell	Name	Original Value	Final Value	Integer
F8	Dec Var X1	266.6666667	266.6666667	Contin
G8	Dec Var X2	448.7179487	448.7179487	Contin
H8	Dec Var X3	0	0	Contin
I8	Dec Var X4	0	0	Contin
J8	Dec Var X5	133.3333333	133.3333333	Contin

v. Based on the partial answer report, are there any appliances that Solver recommends not to make ? State the appliances and the reason why Solver recommends not to make these appliances.

(2 marks)

vi. Calculate the optimal profit

(3 marks)

Question 2

TechLaunch Inc. is deciding whether to launch a new software product. The success of the product depends on market demand, which is uncertain. The management has identified three alternatives (decisions) which are launch, test or wait. The profits generated will depend on the market conditions which are High, Moderate or Low demand. Also, the probability of the market conditions happening in the future are High =0.3 , Moderate = 0.5 and Low = 0.2. The payoff table in RM millions is shown below.

Refer Below - Table4 : The Payoff Table .

Table 4: The Payoff Table

	High (RM)	Moderate (RM)	Low (RM)
Launch	500	200	-150
Test	300	150	50
Wait	100	100	100

(a) Prescribe to the management of TechLaunch the best decision based on the following decision making rules

i. Maximax

(3 marks)

ii. Maximin

(3 marks)

iii. Hurwicz with a coefficient of optimism of 0.6

(3 marks)

iv. Minimax Regret

(5 marks)

v. Expected Value

(3 marks)

vi. Expected Opportunity Loss

(5 marks)

(b) The company intends to employ an international economist to predict with 100% certainty the market condition in the future. What is the maximum fee should the company pay to the economist

(3 marks)

Question 3

Answer all questions.

(a) Draw the flowchart of the forecasting process.

(6 marks)

(b) The weekly demand of Hot Pizza for the month of January is shown below:
Refer Below - Table5 : Demand of Pizza .

Table 5: Demand of Pizza

Week	1	2	3	4	5	6
Demand	108	116	118	102	110	108

i. Plot the demand graph and identify the demand pattern.

(3 marks)

ii. Calculate the trial forecast up to week 6 using 2 month Moving Average

(4 marks)

iii. Calculate the trial forecast up to week 6 using exponential smoothing with a smoothing constant of 0.2

(4 marks)

iv. Calculate the forecast accuracy using Mean Squared Error (MSE) for both moving average and exponential smoothing methods

(6 marks)

v. Calculate the forecast for week 7 using the forecast method that gives the better accuracy

(2 marks)

Question 4

Answer all questions.

(a) There are several types of business analytics that organisations can use to gain insights and make informed decisions. Describe 4 types of business analytics used by business and give 2 common techniques used for each type of analytics.

(12 marks)

(b) Describe the 5 steps in the data analysis process.

(13 marks)

Question 5

Answer all questions.

(a) A box contains 20 balls consisting of four different colors ie. Red, Black, Blue and Green. The quantity of each color balls in the box are 8, 4, 2 and 6 for Red, Black, Blue and Green respectively.
Present the above data visually using the following charts. The charts must be properly labelled.

i. Frequency Bar chart
ii. Radar Chart
iii. Pareto Chart

(9 marks)

(b) The following data is shown in the Data table below:
Refer Below - Table6 : Data Table .

Table 6: Data Table

8	8	5	7	5
6	5	10	7	10
9	7	9	5	7

i. Claculate the average

(2 marks)

ii. Calculate the median.

(2 marks)

iii. Calculate the mode

(2 marks)

iv. Calculate the Range

(2 marks)

v. Calculate the coefficient of varaition given that the standard deviatioon of the sample data is 1.78

(2 marks)

vi. Draw the Box and Whisker plot for the data given that the 1st Quartile and 3rd Quartile values are 4.5 and 8.5 respectively. Determine if the data value of 16 is an outlier.

(6 marks)

END OF EXAMINATION PAPER

APPENDIX

Appendix for Section A Question 1 a (iii) : Appendix : Excel Sheet for LP Question

