



**FINAL EXAMINATION**

**COURSE : OPERATIONS MANAGEMENT**

**COURSE CODE : PMG3093**

**DURATION : 2 HOURS 30 MINUTES**

**INSTRUCTIONS TO CANDIDATES:**

1. This question paper consists of **FIVE (5)** questions.
2. Answer ALL questions. Appendix 1.1, Appendix 1.2 and graph paper need to be attached in the Answer Booklet.
3. Please check to make sure that this examination pack consists of:
  - i. The Question Paper
  - ii. An Answer Booklet
  - iii. Appendix 1.2 Appendix 1.2
  - iv. Graph paper
  - v. Appendix 2
4. Do not bring any material into the examination hall unless permission is given by the invigilator.
5. Please write your answer using a ball-point pen.

**MYKAD NO. :** \_\_\_\_\_

**ID. NO. :** \_\_\_\_\_

**LECTURER :** \_\_\_\_\_

**SECTION :** \_\_\_\_\_

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**DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO**

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*The question paper consists of 07 printed pages*

MAR2024/A/PMG3093

## QUESTION 1

(12 points)

## a. (4 points)

- i. Define critical activities. (1 point)
- ii. Describe any **TWO (2)** purposes of project scheduling. (3 points)

## b. (8 points)

Bougainvillea Sdn. Bhd. has been appointed to upgrade the football field for Kejora mini stadium. All the major activities for this project and the estimated duration time has been estimated as follows:

Activity	Activity Code	Immediate Predecessor (s)	Time (day)
Select the best grass seed for your lawn	A	-	2
Test the soil	B	-	5
Prepare to plant at the right time of year	C	A, B	5
Prepare the soil	D	B	10
Plant the grass seed	E	C, D	8
Rake the grass seed	F	E	7
Apply mulch	G	E, F	5
Water the lawn	H	F, G	3
The first mow	I	G	2
Enjoy the new lawn	J	I	3

Table 1

Using the information given;

- i. Construct a network diagram for Bougainvillea Sdn. Bhd. (2 points)
- ii. Compute Earliest Start (ES), Earliest Finish (EF), Latest Start (LS), and Latest Finish (LF) for the project. (4 points)
- iii. Compute total completion time and critical activities for the project. (2 points)

**QUESTION 2**  
**(13 points)**

**a. (4 points)**

Explain any **TWO (2)** criteria for short-term scheduling.

(4 points)

**b. (9 points)**

Berjaya Manufacturing Sdn. Bhd an electrical contractor in Johor Bahru has six important jobs waiting for processing for the new construction project in 2024.

Processing time and due dates are given below in Table 2.

Job	Job Processing Time (Day)	Due Date (Day)
P	8	25
Q	16	18
R	17	33
S	5	22
T	13	28
U	7	39

Table 2

Using the information given;

- i. Demonstrate the sequences using the shortest processing time (SPT) and earliest due date (EDD) method. For each sequence, complete the average completion time, average number of jobs, and average job lateness. Show your supporting calculations.

(7 points)

- ii. Which method has the best score for average completion time, average number of jobs, and average job lateness?

(2 points)

**QUESTION 3**  
**(16 points)**

**a. (7 points)**

- i. State any **THREE (3)** functions of inventory. (3 points)
- ii. Explain any **TWO (2)** types of inventory. (4 points)

**b. (9 points)**

Shira Bakery requires 60,000 kg of flour per year. The annual carrying cost is RM30 per kg. The ordering cost is RM40 each time an order is placed. The bakery store operates 300 days a year. The supplier takes 3 working days to deliver the flour.

- i. Compute the economic order quantity (EOQ). (2 points)
- ii. How many orders would be made per year? (1 point)
- iii. Compute the time between orders. (1 point)
- iv. Compute the reorder point (ROP). (2 points)
- v. Compute the total inventory cost for Shina Bakery. (3 points)

**QUESTION 4**  
**(10 points)**

**a. (3 points)**

Describe lead times for each of the following items:

- i. For production
- ii. For purchased items

(3 points)

**b. (7 points)**

Ais Kreem Enterprise produces a product called MANEEZ. MANEEZ is made of three components which are two units of A, three units of B, and two units of C. The number of MANEEZ required in Period 6 is 250. All other relevant information is given in the Table 3 below:

ITEM	ON HAND (UNIT)	SCHEDULED RECEIPTS (UNIT)	LOT SIZE (UNIT)	LEAD TIME (WEEK)
MANEEZ	40	0	LFL	2
A	80	100, Period 4	FOQ = 400	2
B	155	0	FOQ = 700	2
C	0	0	LFL	2

Table 3

Notes:

FOQ = Fixed order quantity

LFL = Lot for lot

Using the information given;

- i. Construct the bill of material for the MANEEZ.

(2 points)

- ii. Prepare the appropriate inventory record for each item using the table from Appendix 1.1 and 1.2.

(5 points)

**QUESTION 5**  
(14 points)

**a. (6 points)**

i. List any **THREE (3)** tools of Total Quality Management.

(3 points)

ii. Describe user based and manufacturing based of quality.

(3 points)

**b. (8 points)**

Sedap Food Manufacturing Sdn. Bhd. has been having a problem with quality in one of its product lines. You, as a production manager, have been asked to examine the facility. On the first day, the company took 15 samples, each containing 40 products. The results are as follows in Table 4 below:

Sample	Number of Defectives	Fraction Defectives
1	6	0.15
2	2	0.05
3	4	0.10
4	0	0.00
5	6	0.15
6	4	0.10
7	12	0.30
8	10	0.25
9	6	0.15
10	6	0.15
11	12	0.30
12	4	0.10
13	14	0.35
14	2	0.05
15	6	0.15

Table 4

- i. Construct a p-chart using a 99.73% confidence interval ( $Z$  score = 3).  
(6 points)
- ii. What is your comment about the quality of product by the Sedap Food Manufacturing Sdn. Bhd. Explain your answer.  
(2 points)

**END OF QUESTIONS PAPER**