

**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 in the Answer Booklet provided. 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. Graph paper
 - iv. Appendix 1 (1) and Appendix 1 (2)
 - v. Appendix 2 (1) and Appendix 2 (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 :** _____

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

The question paper consists of 07 printed pages

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QUESTION 1

(12 points)

a. (4 points)

List **FOUR (4)** levels of Work Breakdown Structure (WBS).

(4 points)

b. (8 points)

Radiant Construction is tasked with developing a jogging track in a community park. The project's activities and their durations are listed in Table 1 below.

Activity	Preceding Activities	Time (Weeks)
A	-	6
B	A	12
C	A	11
D	C	8
E	C	14
F	B, E	12
G	D	7
H	E, G	4
I	H	8

Table 1

Based on the information given;

i. Draw a network diagram for the Radiant Construction.

(2 points)

ii. Calculate the Earliest Start (ES), Earliest Finish (EF), Latest Start (LS), and Latest Finish (LF) for each activity.

(5 points)

iii. Identify the project completion time.

(1 point)

QUESTION 2**(13 points)****a. (4 points)**

Explain any **TWO (2)** importance of short-term scheduling.

(4 points)**b.(9 points)**

Five consulting engineers at Muhammad Engineering Consultancy are waiting for jobs. The senior engineer must determine the most efficient schedule to minimize both lateness and total completion time for these consulting services. The jobs, along with their respective due dates and processing times, are detailed as follows:

Job	Work Processing Time (Hours)	Job Due Date (Hours)
A	12	10
B	9	15
C	16	20
D	14	8
E	8	12

Table 2

Using the information given;

i. Complete the table below by using supporting calculations.

Dispatching Rule	Job Sequence	Average Flow Time	Average Number of Jobs	Average Job Lateness
EDD				
SPT				

(8 points)

ii. Which dispatching rules has the best score for average flow time and average job lateness?

(1 point)

QUESTION 3**(16 points)****a. (7 points)**

- i. List **THREE (3)** types of inventory cost.

(3 points)

- ii. Differentiate between Record Accuracy and Cycle Counting techniques in managing inventory.

(4 points)

b. (9 points)

A local bookstore sells a popular novel titled My Love with an annual demand of 16,000 copies. The bookstore incurs an ordering cost of RM50 every time they place an order for more copies and the holding cost is RM10 per copy per year. The company operates 250 days per year and the lead time to receive the order is 5 working days.

- i. Compute economic order quantity (EOQ)

(2 points)

- ii. What is the average inventory?

(1 point)

- iii. How many numbers of orders would be made per year?

(2 points)

- iv. Determine reorder point (ROP).

(2 points)

- v. Calculate total annual cost of managing inventory.

(2 points)

QUESTION 4**(10 points)****a. (3 points)**

Contrast the lead time in purchasing system and lead time in production system.

(3 points)

b. (7 points)

My Cafe produces a menu called GULA. GULA is made of components which are 1 unit of A, 3 units of B and 4 units of C. Component A is made of 2 units of D and 3 units of E. The number of GULA required in the period 6 is 70 units. All other relevant information is provided in the table below:

ITEM	ON HAND (UNITS)	SCHEDULED RECEIPTS (UNITS)	LOT SIZE (UNITS)	LEAD TIME
GULA	20	0	LFL	2
A	15	0	FOQ=65	1
B	0	15, period 4	LFL	2
C	10	20, period 4	LFL	3
D	20	5, period 3	FOQ=250	2
E	0	5, period 3	LFL	1

Table 3

Notes:

LFL = Lot for lot

FOQ= Fixed order quantity

Using the information given;

i. Construct the bill of material for product GULA.

(2 points)

ii. Prepare the appropriate inventory record for each item using the table in Appendix 1(1) and Appendix 1(2).

(5 points)

QUESTION 5**(14 points)****a. (6 points)**

- i. List **THREE (3)** categories of quality definitions. (3 points)
- ii. Distinguish between Pareto Chart and Statistical Process Control Chart. (3 points)

b. (8 points)

Clerks at Super Data Systems key in thousands of insurance records daily for a various client firm. Diana, the manager, carefully examines 20 records keyed in by each clerk and counts the number of errors. She also computes the fraction of defectives in each sample. The information about the data been collected is shown in Table 5.

Sample	Number of defects	Fraction Defectives
1	3	0.15
2	0	0
3	2	0.1
4	1	0.05
5	2	0.1
6	6	0.3
7	3	0.15
8	3	0.15
9	15	0.75
10	3	0.15
11	6	0.3
12	2	0.1
13	1	0.05
14	7	0.35
15	3	0.15

Table 5

- i. Construct a P- chart for the sample of inspection by using 99.73% confidence level.

(6 points)

- ii. Based on your finding in (i), evaluate whether the quality of services provided by the clerks at Super Data Systems. Justify your answer.

(2 points)

END OF QUESTIONS PAPER