

**CONFIDENTIAL**



**UTHM**  
Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2017/2018**

COURSE NAME : INDUSTRIAL MANAGEMENT  
COURSE CODE : BPC 23303  
PROGRAMME CODE : BPB  
EXAMINATION DATE : DECEMBER 2017 / JANUARY 2018  
DURATION : 3 HOURS  
INSTRUCTION : ANSWER ALL QUESTIONS

**TERBUKA**

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

**CONFIDENTIAL**

- Q1** (a) Define these terms.
- (i) Lead time. (2 marks)
  - (ii) Reorder point. (2 marks)
  - (iii) MROs. (2 marks)
- (b) Ahmad Bait and Tackle Shop has been buying a chemical water conditioner for its bait using an optimal fashion of EOQ analysis. The supplier has now offered Ahmad a discount of RM0.50 off all units if the firm will make its purchases monthly or RM1.00 off if the firm will make its purchases quarterly. Current data for the problem are:  $D = 720$  units per year;  $S = \text{RM}6.00$ ,  $I = 20\%$  per year;  $P = \text{RM}25$ .
- (i) Calculate the Economic Ordering Quantity (EOQ) of a current purchase system. (4 marks)
  - (ii) Calculate the annual total cost, including product cost, of continuing their current purchasing system. (5 marks)
  - (iii) Propose the new purchasing rule based on the situation given. (10 marks)

**TERBUKA**

- Q2** More Spice Sdn. Bhd. is known as one of the major spices manufacturer in Sarawak. **Table Q2(a)** and **Q2(b)** show aggregate demand requirements and planning data for the upcoming four quarters.

**Table Q2(a): Aggregate Demand**

Quarter	Demand
1	700
2	900
3	1200
4	600

**Table Q2(b): Planning Data**

Previous quarter's output	800 units
Beginning inventory	0 units
Stock out cost	RM100 per unit
Inventory holding cost	RM10 per unit at end of quarter
Hiring workers	RM20 per unit
Laying off workers	RM40 per unit
Subcontracting cost	RM200 per unit
Unit cost	RM100 per unit
Hiring workers	RM20 per unit

- (a) Develop a production plan based
- (i) Plan A– chase demand by hiring and layoffs.  
(ii) Plan B– pure level strategy.  
(iii) Plan C– 700 level with the remainder by subcontracting.
- (15 marks)
- (b) Calculate total cost of production of each plan based on **Q2(a)**.
- (6 marks)
- (c) Propose the best production plan for More Spice Sdn. Bhd.
- (4 marks)

**TERBUKA**

- Q3** The operations manager of a body and paint shop has five cars to schedule for repair. He would like to minimise the throughput time to complete all work on these cars. Each car requires body work prior to painting. **Table Q3** shows the estimate times required to do the body and paint work.

**Table Q3: Production Time**

Car	Body Work (Hours)	Paint (Hours)
A	8	7
B	9	4
C	7	9
D	3	4
E	12	5

- (a) Analyse the optimal sequence for these jobs using Johnson Rules. (15 marks)
- (b) Determine the job sequence for the production. (5 marks)
- (c) Calculate the idle time of the production based on the **Q3(a)**. (5 marks)

**TERBUKA**

**Q4** (a) Explain breakdown maintenance.

(5 marks)

- (b) Great Southern Consultants Group's computer system has been down several times over the past few months. They are considering signing a contract for preventive maintenance. With preventive maintenance, the system would be down on average only 0.5 per month. The monthly cost of preventive maintenance would be RM200 a month. **Table Q4(b)** shows numbers of breakdown and its frequency of occurrences.

**Table Q4(b): Number of Breakdowns**

Number of breakdowns	0	1	2	3	4
Monthly frequency	9	2	4	4	1

- (i) Calculate the expected numbers of breakdowns per month.  
(5 marks)
- (ii) Analyse the expected breakdown cost based on the data in **Table Q4(b)**. The cost per breakdown is RM400.  
(5 marks)
- (iii) Calculate the preventive maintenance cost per month.  
(5 marks)
- (iv) Propose to the organizations the best solution to overcome the breakdown.  
(5 marks)

TERBUKA

- END OF QUESTIONS -