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# UTHM
### Universiti Tun Hussein Onn Malaysia

# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

## FINAL EXAMINATION
## SEMESTER II
## SESSION 2021/2022

| | | |
|---|---|---|
| COURSE NAME | : | PRODUCTION PLANNING AND CONTROL |
| COURSE CODE | : | BPC 22103 |
| PROGRAMME CODE | : | BPB / BPP |
| EXAMINATION DATE | : | JULY 2022 |
| DURATION | : | 3 HOURS |
| INSTRUCTIONS | : | 1. ANSWER **ALL** QUESTIONS. |
| | | 2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK**. |
| | | 3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK. |

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

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**Q1    (a)**
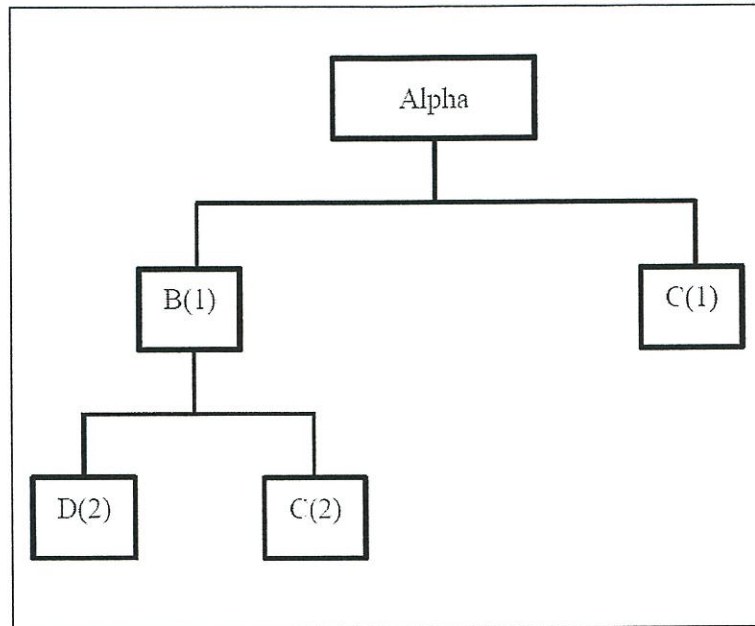


**Figure Q1: Product Structure**

Determine the low level coding of product structure in **Figure Q1**.

(4 marks)

(b)    Develop a net Material Requirement Planning (MRP) table for Alpha using the data provided in **Table Q1(a)** and **Table Q1(b)**. The lot size is equal to Lot for Lot.

**Table Q1(a): Lead time and Quantity on Hand**

| Item | Lead time | Quantity on Hand |
|------|-----------|------------------|
| Alpha | 1 | 10 |
| B | 2 | 20 |
| C | 3 | 0 |
| D | 1 | 100 |

**Table Q1(b): Master Production Schedule**

| Period | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|--------|---|---|---|---|----|----|----|----|
| Gross Requirements | | | 50 | | | 50 | | 100 |

(18 marks)

(c)    Prepare the planned order report for Product Alpha.

(8 marks)

**Q2** Three machines were used to produce Alpha and managed by three shop-floor operators working in two shifts. Each shop-floor operator works eight hours a day, five days a week and breaks 60 minutes for lunch or dinner. Since the machines are more than two decades old, their efficiency is estimated at 65%. **Table Q2** shows the setup time and runtime for each operation.

**Table Q2: Data for setup time and run time for each operation**

| Operation | Work Centre | Setup Time (hours) | Run Time (hours/unit) |
|-----------|-------------|--------------------|-----------------------|
| AA | 123 | 0.20 | 2.00 |
| BB | 345 | 0.10 | 2.50 |
| CC | 567 | 0.10 | 1.00 |
| DD | 789 | 0.15 | 2.00 |

(a) Calculate the rated capacity.

(5 marks)

(b) Calculate the total time required (load).

(7 marks)

(c) Analyse the load report by table-up the work centre load report.

(10 marks)

(d) Illustrate a graph load profile based on the answer in **Q2(c)**.

(6 marks)

**Q3** (a) Calculate the total manufacturing lead time for product Alpha. **Table Q3(a)** shows lead time data from work centre file.

**Table Q3(a): Lead time data from work centre file**

| Work Centre | Wait Time (hours) | Move Time (hours) |
|-------------|-------------------|-------------------|
| 123 | 1 | 10 |
| 345 | 2 | 20 |
| 567 | 3 | 0 |
| 789 | 1 | 100 |

(9 marks)

(b) Propose the suitable method to use for reducing manufacturing lead time in **Q3(a)**.

(2 marks)

(c)     **Table Q3(c)** shows the data needed for the Input/Output report.

### Table Q3(c): Data for Input/Output report

| Period | | 2 | 4 | 5 | 7 | 8 | 9 | 10 | 12 |
|---|---|---|---|---|---|---|---|---|---|
| Actual Input | | 90 | 100 | 120 | 150 | 150 | 150 | 110 | 110 |
| Actual Output | | 200 | 270 | 260 | 280 | 200 | 270 | 240 | 220 |
| Planned Backlog | 200 | | | | | | | | |
| Actual Backlog | 200 | | | | | | | | |

Develop the Input/Output Control for Product Alpha.

(19 marks)

**Q4**     (a)     Differentiate **THREE (3)** types sourcing the supplier.

(6 marks)

(b)     Explain **TWO (2)** types of description for the functional specification.

(6 marks)

– END OF QUESTIONS –