SULIT

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENGAJIAN TINGGI

JABATAN KEJURUTERAAN MEKANIKAL

PEPERIKSAAN AKHIR

SESI II : 2021/2022

DJJ6192: INDUSTRIAL MANAGEMENT

TARIKH : 08 JULAI 2022
MASA : 8.30 PAGI – 10.30 PAGI (2 JAM)

Kertas ini mengandungi **LAPAN (8)** halaman bercetak.
Struktur (4 soalan)
Dokumen sokongan yang disertakan : Formula

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

INSTRUCTION:
This section consists of **FOUR (4)** structured questions. Answer **ALL** questions.

ARAHAN:
*Bahagian ini mengandungi **EMPAT (4)** soalan struktur. Jawab **SEMUA** soalan.*

QUESTION 1
SOALAN 1

CLO1
C1

(a) State the tools and techniques used to improve productivity of an organization
Nyatakan alatan dan teknik yang digunakan untuk memperbaiki produktiviti sesuatu organisasi:

[5 marks]
[*5 markah*]

CLO2
C2

(b) Explain any types of plant layout
Terangkan mana-mana jenis pelan susunatur.

[5 marks]
[*5 markah*]

CLO2
C3

(c) Jas Dina Production assembly line is required to do 10 types of activities and the time required is shown in **Table 1(c)**. The production time is 420 minutes and the daily production rate is 60 units.
*Barisan Pengeluaran Jas Dina perlu membuat 10 aktiviti dan masa yang diperlukan adalah seperti di lampiran **Jadual 1(c)**. Masa pengeluaran ialah 420 minit dan kadar pengeluaran sehari ialah 60 unit.*

Table 1(c) / *Jadual 1(c)*

TASK	PERFORMANCE TIME(MINUTE)	TASK BEFORE
A	1	-
B	3	A
C	2	B
D	4	B
E	1	C,D
F	3	A
G	2	F
H	5	G
I	1	E,H
J	4	I

CLO2
C3

i. Draw the precedence diagram.
Lukiskan gambarajah keutamaan.

[3 marks]
[*3 markah*]

CLO2
C3

ii. Calculate the cycle time.
Kirakan masa kitaran.

[3 marks]
[*3 markah*]

CLO2
C3

iii. Calculate the minimum number of work stations.
Kirakan bilangan minimum stesen kerja.

[3 marks]
[*3 markah*]

CLO2
C3

iv. Organise the work stations based on the minimum number of work station
Strukturkan stesen kerja kepada bilangan minimum stesen kerja

[3 marks]
[*3 markah*]

CLO2
C3

v. Calculate the efficiency of the system
Kirakan kecekapan system ini

[3 marks]
[*3 markah*]

QUESTION 2
SOALAN 2

CLO2 C2

(a) Explain **TWO (2)** types of Inventory
*Jelaskan **DUA (2)** jenis inventori*

[5 marks]
[*5 markah*]

CLO2 C3

(b) Write the purposes of inventory control management
Tuliskan tujuan pengurusan kawalan inventori

[5 marks]
[*5 markah*]

CLO2 C4

(c) Asus Corporation purchased 8000 transistors each year as components in minicomputers. The unit cost of each transistor is $10, and the holding cost of one transistor in inventory for one year is $2. Ordering Cost is $30 per order. Assuming that Asus corporation operates on a 200 working day per year.

Syarikat Asus Corporation membeli 8000 unit transistor setiap tahun sebagai komponen di dalam computer mini. Kos unit bagi setiap transistor adalah $10 dan kos holding bagi satu unit transistor dalam setahun islah $3. Kos pesanan adalah $30 bagi setiap pesanan. Andaikan syarikat Asus Corporation beroperasi selama 200 hari dalam setahun.

CLO2 C4

i. Calculate the optimal number of units per order.
Kirakan bilangan optimum untuk satu pesanan.

[3 marks]
[*3 markah*]

CLO2 C4

ii. Calculate the numbers of order.
Kirakan bilangan pesanan.

[4 marks]
[*4 markah*]

CLO2
C4

iii. Calculate the time between orders.
Kirakan masa di antara pesanan

[3 marks]
[*3 markah*]

CLO2
C4

iv. Calculate the total inventory cost.
Kirakan jumlah kos inventori.

[5 marks]
[*5 markah*]

QUESTION 3
SOALAN 3

CLO2
C2

(a) Briefly explain the difference between the method of due date and shortest processing time
Terangkan secara ringkas perbezaan kaedah tarikh akhir dan masa pemprosesan terpendek

[5 marks]
[*5 markah*]

CLO2
C3

(b) Relate **FIVE (5)** benefits of scheduling management to effective cost
*Hubungkaitkan **LIMA (5)** kebaikan penjadualan kerja terhadap kos yang efektif*

[5 marks]
[*5 markah*]

CLO2
C4

(c) Based on the **Table 3(c)**, is shown task sequences according to the first come first serve (FCFS) law. By using a critical ratio (CR) law, solve the following problems:

*Berdasarkan kepada **jadual 3(c)**, ia menunujukkan jadual kerja first come first serve (FCFS). Dengan menggunkan hukum nisbah kritikal, selesaikan masalah berikut:*

Table 3(c) / *Jadual 3(c)*

Task	Processing Time (Day)	Due Date (day)
A	12	15
B	6	24
C	14	9
D	3	8
E	7	6

i. Calculate critical ratio (CR) for each job.
Kira nisbah kritikal bagi setiap kerja.

[5 marks]
[*5 markah*]

ii. Sequence the jobs referring to the critical ratio (CR) values obtained.
Susun turutan kerja-kerja tersebut dengan merujuk kepada nilai nisbah kritikal (CR) yang diperolehi

[2 marks]
[*2 markah*]

CLO2
C4

(d) MICH Logistic Sdn Bhd has three different types of trucks that can be used to ship the product from the customer to the designated place. Table 3(d) shows the shipping costs (MYR) for the three types of truck for each delivery location.

MICH Logistic Sdn Bhd mempunyai tiga jenis trak yang boleh digunakan untuk menghantar produk daripada pelanggan ke tempat yang ditetapkan. Jadual 3(d) menunjukkan kos penghantaran (RM) bagi tiga jenis trak untuk setiap lokasi penghantaran.

Table 3(d) / *Jadual 3 (d)*

	Ipoh	**Kuantan**	**J.Bahru**
Lorry 1	370	250	300
Lorry 2	350	200	500
Lorry 3	600	350	450

i. As a manager, assign each lorry in order to minimize the shipping cost.
Anda sebagai seorang pengurus, tugaskan setiap lori anda untuk mengurangkan kos penghantaran?

[6 marks]
[*6 markah*]

ii. Calculate the total cost for the delivery.
Kira jumlah kos bagi penghantaran tersebut.

[2 marks]
[*2 markah*]

QUESTION 4
SOALAN 4

CLO1
C1

(a) Identify **FIVE (5)** benefits of TQM implementation
*Kenalpasti **LIMA (5)** faedah pelaksanaan TQM*

[5 marks]
[*5 markah*]

CLO1
C2

(b) Explain any ***FIVE (5)*** elements in applying TQM concept in industry
*Jelaskan sebarang **LIMA (5)** element untuk mengamalkan konsep TQM dalam industri*

[10 marks]
[*10 markah*]

CLO1
C3

(c) Expose **FIVE (5)** differences of assumption in theory X and theory Y

*Dedahkan **LIMA (5)** perbezaan tanggapan dalam teori X dan teori Y*

[10 marks]

[*10 markah*]

SOALAN TAMAT

IMPORTANT FORMULA :

1. Line Balancing:

$$\text{Cycle time} = \frac{\text{Production time}}{\text{Production volume}}$$

$$\text{Minimum no. of work station} = \frac{\text{Sum of task times}}{\text{Cycle time}}$$

$$\text{Efficiency, } \eta_n = \frac{\text{Sum of task times x 100\%}}{\text{No.of workstations x Cycle time}}$$

Balance Delay = 1 – Assembly Line Efficiency

2. EOQ Equations:

$$Q_{OPT} = \sqrt{\frac{2DS}{H}}$$

Reorder Point, R = d . L

$$\text{No. of order, } N = \frac{\text{Demand}}{\text{Order Quantity}}$$

$$\text{Total Cost} = \frac{D}{Q}S + \frac{Q}{2}H$$

3. EPQ Equations:

$$\mathbf{EPQ} \quad \sqrt{\frac{\mathbf{2DS}}{\mathbf{H\left(1-\frac{d}{p}\right)}}}$$

$$\mathbf{I_{MAX} = Q\left(1-\frac{d}{p}\right)}$$

$$\mathbf{TC_{EPQ} = \left(\frac{D}{Q}S\right) + \left(\frac{I_{MAX}}{2}H\right)}$$

4. Quantity Discount Model:

$$\text{Total Cost} = \frac{D}{Q}S + \frac{Q}{2}H + PD$$

5. Priority Rule:

$$\text{Average completion time} = \frac{\text{flow time}}{\text{no. of job}}$$

$$\text{Average number of job at the work center} = \frac{\text{flow time}}{\text{processing time}}$$

$$\text{Average job lateness} = \frac{\text{late time}}{\text{no.of job}}$$

Critical ratio= due date/processing time
CR = time remaining / works day remaining