SULIT

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

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

JABATAN KEJURUTERAAN MEKANIKAL

PEPERIKSAAN AKHIR

SESI II : 2024/2025

DJJ42022 : INDUSTRIAL MANAGEMENT

TARIKH : 26 MEI 2025
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)

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

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

QUESTION 1

SOALAN 1

CLO1 (a) List **FIVE (5)** types of organization structures in Industrial Managemant.
*Senaraikan **LIMA (5)** jenis struktur organisasi dalam Pengurusan Industri.*

[5 marks]
[*5 markah*]

CLO1 (b) Explain **FIVE (5)** importance of Industrial Management.
*Terangkan **LIMA (5)** kepentingan Pengurusan Industri.*

[5 marks]
[*5 markah*]

CLO2 (c) CNC Sdn. Bhd. conducted an operation using five elements. Each element was observed three times, and the following Table 1(c) shows the recorded data. The allowance factor of 12% is taken as a fraction of the entire workday. Calculate:

CNC Sdn. Bhd. telah menjalankan operasi yang melibatkan lima elemen. Setiap elemen mempunyai tiga kali pemerhatian dan Jadual 1(c) menunjukkan data yang direkodkan. Faktor kelegaan sebanyak 12% diambilkira sebagai pecahan daripada keseluruhan hari bekerja berkenaan. Kirakan:

Table 1(c): Observation Data (in minutes)

Jadual 1(c): Data Pemerhatian (dalam minit)

Element	**Observation cycles (in minutes)**			**Performance Rating**
	1	**2**	**3**	
A	5	6	7	115%
B	3	4	4	110%
C	2	3	3	105%
D	6	7	8	120%
E	4	5	5	108%

i. The Total Normal Time for the operation.
Jumlah Masa Normal bagi operasi ini.

[12 marks]
[*12 markah*]

ii. The Standard Time for the operation.
Masa Standard bagi operasi ini.

[3 marks]
[*3 markah*]

QUESTION 2

SOALAN 2

CLO2 (a) Explain **FIVE (5)** objectives of inventory control and management.
*Terangkan **LIMA (5)** objektif kawalan dan pengurusan inventori.*

[5 marks]
[*5 markah*]

CLO2 (b) Sketch a graph of Annual Cost versus Order Quantity. The graph should include the Total Cost Curve, Holding Cost Line and Setup Cost Line.
Lakarkan graf Kos Tahunan melawan Kuantiti Pesanan. Graf tersebut hendaklah termasuk garisan lengkungan Jumlah Kos, Garisan Kos Pegangan dan Garisan Kos Persediaan.

[5 marks]
[*5 markah*]

CLO2 (c) The ABC Manufacturing Company offers deal to its customer as shown in Table 2(c). The ordering cost is RM60 per order, the annual demand is 6000 units, and the annual holding cost charge is 18%. Analyze the quantity and the price that gives the lowest total inventory cost.

Sebuah Syarikat Pembuatan ABC menawarkan tawaran pada pelanggannya seperti yang ditunjukkan dalam Jadual 2(c). Kos pesanan adalah sebanyak RM60 setiap pesanan, permintaan tahunan adalah 6000-unit dan caj kos pegangan tahunan adalah 18%. Analisa kuantiti dan harga yang memberikan jumlah kos inventori yang paling rendah.

Table 2(c)

Jadual 2(c)

Quantity	**Unit price (P)**
0 to 999	RM6.00
1000 to 2499	RM5.70
2500 to over	RM5.50

[15 marks]

[*15 markah*]

QUESTION 3

SOALAN 3

CLO2 (a) Outline **FIVE (5)** factors affecting Scheduling Management.
*Gariskan **LIMA (5)** faktor yang menpengaruhi Pengurusan Penjadualan.*

[5 marks]
[*5 markah*]

CLO2 (b) A group of six jobs will be processed through two machines in a workstation. The first operation involves cutting and the second operation involves assembly. Construct a sequence that will minimize the total completion time for this group of jobs. Processing time are given in a Table 3(b).
Sebuah kumpulan terdiri daripada enam kerja akan diproses melalui dua mesin dalam satu stesen kerja. Operasi pertama melibatkan kerja-kerja pemotongan, manakala operasi kedua melibatkan pemasangan. Bina satu susunan yang dapat meminimumkan jumlah masa siap keseluruhan bagi kumpulan kerja ini. Masa pemprosesan diberikan dalam Jadual 3(b).

Table 3(b): Processing Time for Two Workstations
Jadual 3(b): Masa Pemprosesan bagi Dua Stesen Kerja

Job	**Processing Time (hours)**	
	Workstation 1	**Workstation 2**
G	6	7
H	3	5
1	9	12
J	5	4
K	7	10
L	11	14

[8 marks]
[*8 markah*]

CLO2

(c) Five engine components are waiting for processed. The processing time has been estimated, and the expected completion time has been agreed upon with the customer. Table 3(c) shows the situations on Monday morning. The customer pick-up time is measured in business hours from Monday morning. By using the First-Come, First-Served (FCFS) rules, determine:

Lima komponen enjin sedang menunggu untuk diproses. Masa pemprosesan telah dianggarkan, dan jangkaan masa siap telah dipersetujui dengan pelanggan. Jadual 3(c) menunjukkan situasi pada pagi Isnin. Masa pengambilan pelanggan diukur dalam waktu perniagaan dari pagi Isnin. Dengan menggunakan peraturan First-Come, First-Served (FCFS), tentukan:

Table 3(c) : Job Processing Time and Due Date

Jadual 3(c) : Masa Pemprosesan dan Tarikh Akhir Pekerjaan

Job (Engine)	Job work (processing time) (days)	Job due date (Days) (customer pick up time)
P	5	9
Q	3	7
R	7	17
S	4	14
T	10	20

i. Average completion time.
Purata masa siap.

[4 marks]
[*4 markah*]

ii. Machine utilization rate.
Kadar penggunaan mesin

[4 marks]
[*4 markah*]

iii. Average number of jobs in the system.
Purata bilangan pekerjaan dalam sistem.

[4 marks]
[*4 markah*]

QUESTION 4

SOALAN 4

CLO1 (a) List **FIVE (5)** objectives of Total Quality Management (TQM)
*Senaraikan **LIMA (5)** objektif Pengurusan Kualiti Menyeluruh (TQM)*

[5 mark]
[*5 markah*]

CLO1 (b) Explain **FIVE (5)** differences between ISO 9000 Versus Total Quality Management (TQM)
*Terangkan **LIMA (5)** perbezaan di antara ISO 9000 dengan Pengurusan Kualiti Menyeluruh (TQM).*

[10 marks]
[*10 markah*]

CLO1 (c) Write **FIVE (5)** key activities included in Human Resource Management (HRM).
*Tuliskan **LIMA (5)** aktiviti penting yang terlibat dalam Pengurusan Sumber Manusia (HRM).*

[10 marks]
[*10 markah*]

SOALAN TAMAT

IMPORTANT FORMULA :

1. Work System Design:

Normal time = Observed time × rating factor

Standard time = Normal time / (1-Allowance)

@Standard Time = normal time x allowance factor

2. EOQ Equations:

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

Reorder Point, R = d . L

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

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

3. EPQ Equations:

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

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

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

4. Quantity Discount Model:

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

$Q^* = \sqrt{\frac{2DS}{IP}}$ or $Qopt = \sqrt{\frac{2DS}{H}}$

Annual product cost: P*D

Annual ordering cost: (D/Q)*S

Annual holding cost: (Q/2)*IP

5. Priority Rule:

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

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

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

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