

SULIT



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

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI I : 2022 / 2023

**DCB 30093 : REFRIGERATION PRINCIPLES AND AIR
CONDITIONING TECHNOLOGY**

TARIKH : 20 DISEMBER 2022

MASA : 2.30 PM – 4.30 PM (2 JAM)

Kertas ini mengandungi **LAPAN (8)** halaman bercetak.

Bahagian A: Esei (2 soalan)

Bahagian B: Esei (4 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A : 50 MARKS**BAHAGIAN A : 50 MARKAH****INSTRUCTION**

This section consists of **TWO (2)** essay questions. Answer **ALL** questions.

ARAHAN

Bahagian ini mengandungi DUA (2) soalan esei. Jawab SEMUA soalan.

QUESTION 1**SOALAN 1**CLO1
C2

- (a) Identify the relationship between a conventional and a non-conventional air conditioning technology

Kenalpasti perhubungan di antara konvensional dan bukan konvensional bagi teknologi penyamanan udara.

[6 marks]

[6 markah]

CLO1
C2

- (b) Compare the various types of environmental friendly refrigerants

Bandingkan perbezaan di antara bahan-bahan penyejuk mesra alam.

[9 marks]

[9 markah]

CLO1
C3

- (c) Explain the correlation between the types of refrigerant and Global Warming Potential.

Terangkan perhubungan di antara jenis bahan penyejuk dan potensi pemanasan global.

[10 marks]

[10 markah]

QUESTION 2

SOALAN 2

CLO3
C2

- (a) Explain the Potential of Global Warming.

Terangkan Potensi Pemanasan Global.

[6 marks]

[6 markah]

CLO3
C2

- (b) Explain the difference between an inverter air conditioning and a non – inverter air conditioning.

Bezakan antara sistem sonsang dan tidak sonsang dalam penyaman udara.

[9 marks]

[9 markah]

CLO3
C3

- (c) Interpret the correlation between the types of refrigerant and Global Warming.

Jelaskan hubungan antara jenis bahan penyejuk dan potensi Pemanasan Global.

[10 marks]

[10 markah]

SECTION B : 25 MARKS***BAHAGIAN B : 25 MARKAH*****INSTRUCTION:**

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

ARAHAN:

Bahagian ini mengandungi EMPAT (4) soalan esei. Jawab SEMUA soalan.

QUESTION 1***SOALAN 1***CLO1
C2

- (a) Explain **THREE (3)** methods of heat transfer.
Terangkan TIGA (3) kaedah perpindahan haba.

[6 marks]

[6 markah]

- (b) Sketch and label **THREE (3)** types of mechanical ventilation system below:
Lakar dan label TIGA (3) sistem pengudaraan mekanikal di bawah:

CLO1
C3

- i. Supply ventilation system.
Sistem pengudaraan masuk.
- ii. Extract ventilation system.
Sistem Pengudaraan keluar.
- iii. Balance ventilation system
sistem pengudaraan stabil.

[9 marks]

[9 markah]

- CLO1
C3
- (c) Explain the stack effect on a multi-storey building with the aid of a diagram;
Terangkan kesan stack terhadap bangunan bertingkat dengan bantuan diagram;

[10 marks]

[10 markah]

QUESTION 2**SOALAN 2**

- CLO1
C2
- (a) Explain the definition of Heat with its standard unit.
Huraikan takrifan haba beserta unit piawaiannya.

[6 marks]

[6 markah]

- (b) Sketch the following ventilation system:
Lakarkan sistem pengudaraan berikut:

CLO1
C3

- i. Natural Supply (inlet) and Mechanical extract system.
Kemasukan pengudaraan semuljadi dan keluar mekanikal.
- ii. Mechanical Supply (inlet) and Natural extract system.
Kemasukan pengudaraan mekanikal dan keluar semuljadi.
- iii. Mechanical Supply (inlet) and Mechanical extract system.
Kemasukan pengudaraan mekanikal dan keluar mekanikal.

[9 marks]

[9 markah]

- (c) Explain the components of vapour compression refrigerant system given below;

Terangkan komponen sistem penyejukan mampatan wap;

CLO1
C3

- i. Compressor / *Pemampat*
- ii. Condensor / *Pemelowap*
- iii. Expansion valve / *Injap pengembangan*
- iv. Evaporator / *Pencairwap*

[10 marks]

[10 markah]

QUESTION 3

SOALAN 3

- (a) Referring to Figure 3(a), identify **SIX (6)** elements found in the Reciprocating compressor.

*Merujuk gambarajah 3(a), Kenalpasti **ENAM (6)** element dalam pemampat salingan.*

CLO1
C2

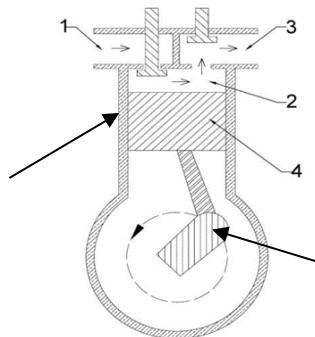


Figure 3(a)

[6 marks]

[6 markah]

CLO1
C3

- (b) Interpret with aided diagram the following water-cooled condenser with the aid of a diagram:

Jelaskan dengan bantuan gambarajah pemeluwap sejuk air berikut:

- i. Double tube condenser / *Tiub dalam tiub.*
- ii. Shell and coil / *Tiub dalam sangkar.*

[9 marks]

[9 markah]

- (c) Interpret the Air conditioning system based on the diagram below.

Tafsirkan sistem penyaman udara berdasarkan gambarajah di bawah.

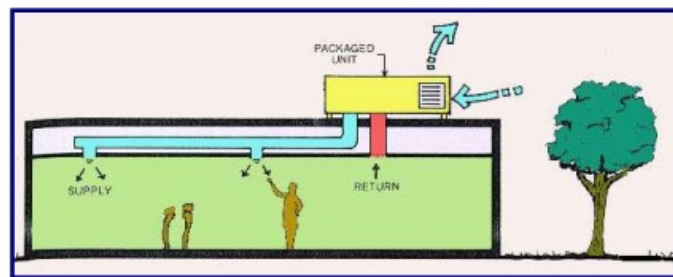
CLO1
C3

Figure 3(c)

[10 marks]

[10 markah]

QUESTION 4

SOALAN 4

CLO1
C2

- (a) Identify **THREE (3)** types of compressor
*Kenalpasti **TIGA (3)** jenis pemampat.*

[6 marks]

[6 markah]

CLO1
C3

- (b) Explain the functions of a condenser:
Terangkan fungsi pemeluwap

[9 marks]

[9 markah]

CLO1
C3

- (c) Explain the types of Air-Cooled Condensers and Water-Cooled Condensers with the aid of a diagram.

Terangkan jenis 'Air-Cooled Condensers' dan 'Water-Cooled Condensers' dengan bantuan diagram.

[10 marks]

[10 markah]

Notes

Assessment item for this course have covered elements of the Dublin Problem:

DP1, DP2, DP3, DP4 and DP5 as mentioned in FEIST.

SOALAN TAMAT