

SULIT



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENDIDIKAN MALAYSIA**

JABATAN KEJURUTERAAN AWAM

**PENILAIAN ALTERNATIF BERIKUTAN
PELAKSANAAN PERINTAH KAWALAN BERSYARAT**

SESI JUN 2020

DCB20053 : PLUMBING SERVICES

NAMA PENYELARAS KURSUS : ZARINA BINTI MAT SAPRI

KAEDAH PENILAIAN : PEPERIKSAAN ONLINE

JENIS PENILAIAN : SOALAN ESEI BERSTUKTUR (2 SOALAN)

TARIKH PENILAIAN : 29 JANUARI 2021

TEMPOH PENILAIAN : 1 JAM

LARANGAN TERHADAP PLAGIARISM (AKTA 174)

**PELAJAR TIDAK BOLEH MEMPLAGIAT APA-APA IDEA, PENULISAN, DATA
ATAU CIPTAAN ORANG LAIN. PLAGIAT ADALAH SALAH SATU
PENYELEWENGAN AKADEMIK. SEKIRANYA PELAJAR DIBUKTIKAN
MELAKUKAN PLAGIARISM, PENILAIAN BAGI KURSUS BERKENAAN AKAN
DIMANSUHKAN DAN DIBERI GRED F DENGAN NILAI MATA 0.**

**(RUJUK BUKU ARAHAN-ARAHAN PEPERIKSAAN DAN KAEDAH PENILAIAN (Diploma) EDISI 6, JUN 2019,
KLAUSA 17.3)**

INSTRUCTION:

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

ARAHAN:

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

QUESTION 1**SOALAN 1**CLO1
C1

- (a) With the aid of a diagram, describe the hydrology cycle
Dengan bantuan gambarajah, jelaskan kitaran hidrologi

[5 marks]
[5 markah]

CLO1
C2

- (b) Illustrate the layout of direct and indirect pipe for multistorey buildings.
Ilustrasikan susun atur paip bagi sistem secara langsung dan tidak langsung bagi bangunan bertingkat.

[10 marks]
[10 markah]

CLO1
C3

- (c) Explain the general requirements for sanitary pipework in building below.
Terangkan keperluan umum untuk kerja paip kebersihan dalam bangunan dibawah.
- i. Traps / *Perangkap*
 - ii. Tests / *Ujian*

[10 marks]
[10 markah]

QUESTION 2**SOALAN 2**CLO2
C3

(a) By using the tabulation method, calculate the diameter of the distribution pipe of galvanized steel from the details below:

- i. WC – 21 units, WB – 41 units, Sink – 6 units & Shower – 12 units.
- ii. Estimated pipe diameter = 50 mm
- iii. Measured pipe run = 45.74 m
- iv. Elbow – 2 units, Tee – 1 unit, Check valve – 1 unit.
- v. Head = 4.00 m

Dengan menggunakan kaedah tabular, anggarkan diameter bagi paip agihan besi bergalvani melalui butiran di bawah:

- i. WC – 21 unit, WB – 41 unit, Sinki – 6 unit & pancuran – 12 unit.
- ii. Anggaran diameter paip = 50mm
- iii. Panjang paip sebenar = 45.74 m
- iv. Sesiku – 2 unit, Tee – 1 unit, Injap periksa – 1 unit.
- v. Turus = 4.00m

[15 marks]

[15 markah]

CLO2
C3

(a) Based on the following data, calculate the size of the hot water storage tank and boiler power.

- i. 10 units Bath tab – 60 litre (use 2 times a day)
- ii. 20 units Wash hand basin – 3 litres (use 4 times a day)
- iii. 20 units sink – 12 litre (use 3 times a day)
- iv. Temperature rise – 50°C
- v. Boiler efficiency – 70 watt
- vi. Specific heat capacity of water – 4.2kj/kg
- vii. Time in seconds – 2 hours

Berdasarkan data berikut, kirakan saiz tangki air panas dan kuasa dandang.

- i. 10 unit Tab mandi – 60 liter (digunapakai 2 kali sehari)
- ii. 20 unit Basin basuh tangan – 3 liter (digunapakai 4 kali sehari)
- iii. 20 unit sinki – 12 liter (digunapakai 3 kali sehari)
- iv. Kenaikan suhu - 50°C
- v. Kecekapan dandang – 70 watt
- vi. Muatan haba tentu air - 4.2kj/kg
- vii. Masa dalam saat – 2 jam

[10 marks]

[10 markah]

SOALAN TAMAT

Table 1: Discharge unit values

Appliance	Application	Discharge unit value
WC	Domestic	7
	Commercial	14
	Congested/public	28
Basin	Domestic	1
	Commercial	3
	Congested/public	6
Bath	Domestic	7
	Commercial	18
Sink	Domestic	6
	Commercial	14
	Congested/public	27
Shower	Domestic	1
	Commercial	2
Urinal	-	0.3
Washing machine	-	4
1 group of WC, bath and basin	-	14

Table 2: Discharge unit and stack diameter

Nominal bore (mm)	Approximate no. of DUs.
50	10
65	60
75	200
100	750
125	2500
150	5500

Table 3: Discharge unit and branch discharge pipe

Nominal bore (mm)	Approximate no. of DUs.		
	Gradient		
	1/2° (9mm/m)	1/4° (22mm/m)	2/2° (45mm/m)
32	-	1	1
40	-	2	8
50	-	10	26
65	-	35	95
75	-	100	230
90	120	230	460
100	230	430	1050
125	780	1500	3000
150	2000	3500	7500

Table 4 : General guide for sizes of ventilating pipes

Branch or stack diameter (D)	Ventilating pipe min. diameter
Up to 75 mm bore	2/3 D (min. 25mm)
Over 75 mm bore	½ D

Table 5 : Discharge Flow Rate

Fitment	Capacity (l)	Discharge flow rate (l/s)
Basin	6	0.6
Basin – spray tap	-	0.06
Bath	80	1.1
Shower	-	0.1
Sink	23	0.9
Urinal	4.5	0.15
Washing machine	180	0.7
Water closet	6	2.3

Table 6

Manhole pipe size (mm) / saiz paip lurang	Slope / kecerunan	Manhole depth / kedalaman lurang
100	1:40	250
150	1:60	300
225	1:90	450
300	1:100	600

Table 7

Manhole depth (mm) / Kedalaman lurang	Manhole size / saiz lurang	
	Length (mm) / Panjang	Width (mm) / Lebar
<600mm	600	450
600 – 900mm	750	600
900 – 1500mm	750	750
1500 – 2400mm	900	1125

Table 1.1 gives the 'loading unit' rating for various appliances.

Table 1.1

	Loading unit rating
Dwellings and flats	
W.C. flushing cistern	2
Wash basin	1½
Bath	10
Sink	3–5
Offices	
W.C. flushing cistern	2
Wash basin (distributed use)	1½
Wash basin (concentrated use)	3
Schools and industrial buildings	
W.C. flushing cistern	2
Wash basin	3
Shower (with nozzle)	3
Public bath	22

Note: Certain sanitary appliances require a continuous flow of water throughout the whole of the time that they are being used. These include: ablution appliances fitted with spray taps, umbrella sprays, shower nozzles or similar fittings.

In buildings where high peak demands occur, a loading unit rating for such appliances is not applicable and 100 per cent of the flow rate for these appliances is required as shown in Table 1.2. The same applies to automatic flushing cisterns and for urinals.