

SULIT



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

JABATAN KEJURUTERAAN AWAM

PENILAIAN ALTERNATIF

SESI DIS 2020

DCB20042 : BUILDING ELECTRICAL SERVICES

NAMA PENYELARAS KURSUS : NAZRIZAM BINTI AB. WAHAB

KAEDAH PENILAIAN : PEPERIKSAAN ONLINE

**JENIS PENILAIAN : SOALAN ESEI BERSTRUKTUR
(2 SOALAN)**

TARIKH PENILAIAN : 8 JULAI 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)** essay structured questions. Answer ALL question.

ARAHAN:

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

QUESTION 1**SOALAN 1**CLO1
C3

- a) New electrical installations and extensions to the existing installations must be inspected and tested. An extension living area for a bungalow needs to be installed with six (6) units of 13A switch socket outlets. The electrical contractor decides to install all switch socket outlets in ring circuit. Sketch and label the procedure for the test.

Pemasangan baharu dan penambahan terhadap pemasangan sediaada mesti disemak dan diuji. Sebuah penambahan ruang tamu bagi sebuah banglow perlu dipasangkan enam unit soket alur keluar 13A. Kontraktor elektrik memutuskan untuk memasang semua soket alur keluar tersebut secara litar gelang. Lakarkan berserta label prosedur untuk melakukan ujian tersebut.

[15 marks]

[15 markah]

CLO1
C3

- b) As a trainee, record the testing procedure information (in question 1a) in your logbook:

- i. Purpose
- ii. Test equipment
- iii. Test methods

Sebagai seorang pelatih, rekodkan maklumat prosedur pengujian (pada soalan 1a) dalam buku log anda:

- i. Tujuan
- ii. Peralatan ujian
- iii. Kaedah ujian

[10 marks]

[10 markah]

QUESTION 2**SOALAN 2**CLO2
C3

- a) If the number of sheets and wire diameter of one cable is 7/0.64, calculate the cable size in mm². (Round up into nominal size.)

Jika bilangan lembaran dan diameter wayar bagi satu kabel adalah 7/0.64, kirakan saiz kabel dalam mm². (Bundarkan kepada saiz kabel nominal)

[5 marks]

[5 markah]

CLO2
C3

- b) Referring to Appendix 1, calculate the acceptable cable size for the following installation.

Merujuk kepada Appendix 1, kirakan saiz kabel yang boleh diterima untuk pemasangan berikut.

Loads/ <i>Beban</i>	=	5kW
Supply voltage/ <i>Voltan bekalan</i>	=	Single phase, 230V
Wiring type/ <i>Jenis pendawaian</i>	=	Surface
Cable length/ <i>Panjang kabel</i>	=	26m

[20 marks]

[20 markah]

SOALAN TAMAT

APPENDIX 1

TABLE 4D1A
Single-core pvc-insulated cables, non-armoured, with or without sheath
(COPPER CONDUCTORS)

BS 6004

BS 6231

Ambient temperature : 30 °C

CURRENT-CARRYING CAPACITY (amperes):

Conductor operating temperature : 70°C

Conductor cross-sectional area	Reference Method 4 (Enclosed in conduit in thermally insulating wall etc.)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc.)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray horizontal or vertical)		Reference Method 12 (free air)		
	2 cables, single-phase a.c or d.c	3 or 4 cables, three-phase a.c	2 cables, single-phase a.c or d.c	3 or 4 cables, three-phase a.c	2 cables, single-phase a.c or d.c flat and touching	3 or 4 cables, three-phase a.c flat and touching or trefoil	2 cables, single-phase a.c or d.c flat and touching	3 or 4 cables, three-phase a.c flat and touching or trefoil	Horizontal flat spaced	Vertical flat spaced	Trefoil
1	2	3	4	5	6	7	8	9	10	11	12
(mm ²)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
1	11	10.5	13.5	12	15.5	14	-	-	-	-	-
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	19.5	18	24	21	27	25	-	-	-	-	-
4	26	24	32	28	37	33	-	-	-	-	-
6	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	126	112	146	130	110
35	99	89	125	110	141	129	156	141	181	162	137
50	119	108	151	134	182	167	191	172	219	197	167
70	151	136	192	171	234	214	246	223	281	254	216
95	182	164	232	207	284	261	300	273	341	311	264

TABLE 4D1B
VOLTAGE DROP (per ampere per metre): Conductor operating temperature : 70°C

Conductor cross-sectional area	2 cables d.c		2 cables, single-phase a.c				3 or 4 cables, three-phase a.c			
	1	2	Reference Method 3 & 4 (Enclosed in a wall)	Reference Method 11 (clipped direct or on trays, touching)	Reference Method 1 & 12 (spaced*)	Reference Method 3 & 4 (Enclosed in conduit etc. in or on a wall)	Reference Method 1, 11 & 12 (in trefoil)	Reference Method 1 & 11 (flat and touching)	Reference Method 12 (spaced*)	
(mm ²)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	
1	44	44	44	44	44	38	38	38	38	
1.5	29	29	29	29	29	25	25	25	25	
2.5	18	18	18	18	18	15	15	15	15	
4	11	11	11	11	11	9.5	9.5	9.5	9.5	
6	7.3	7.3	7.3	7.3	7.3	6.4	6.4	6.4	6.4	
10	4.4	4.4	4.4	4.4	4.4	3.8	3.8	3.8	3.8	
16	2.8	2.8	2.8	2.8	2.8	2.4	2.4	2.4	2.4	
25	1.75	1.80	1.80	1.75	1.75	1.50	1.50	1.50	1.50	
35	1.25	1.30	1.30	1.25	1.25	1.10	1.10	1.10	1.10	
50	0.93	0.95	0.95	0.93	0.93	0.81	0.80	0.80	0.80	
70	0.63	0.65	0.65	0.63	0.63	0.56	0.55	0.55	0.55	
95	0.46	0.49	0.49	0.47	0.47	0.42	0.41	0.41	0.40	

Note : * Spacings larger than those specified in Method 12 (see Table 4A1) will result in larger voltage drop