B.E. (Elect.) VIII (Rev) 22/5/07

Design & Estimation of Elect. Sys.

Con/2746–07.

(REVISED COURSE)

(3 Hours)

ND–8228

[Total Marks : 100

MASTER

N.B. : (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.
(3) Assume **suitable** data wherever **required**.
(4) **Figures** to the **right** indicate **full** marks.

1. (a) Following are the details of connected electrical load for a particular plant :

Type of load	Efficiency	Power factor	Diversity factor	Load in kW
Heater	—	0.97	0.8	300
Induction motor	0.8	0.8	0.6	225
Power sockets	—	—	0.5	150
Miscellaneous	0.75	0.75	0.3	200.

For the above system :

(i) Draw the single line diagram showing location of loads metering devices and various protecting devices and their ratings. 6

(ii) Calculate KVA rating of transformer required for loads. 8

(iii) Suggest KVAR compensation required for any load and calculate the KVAR required for the compensation. 6

2. (a) Explain the tendering process in detail. 10

(b) Write a short notes on – 10

(i) Energy efficient motor

(ii) Cable Installation.

3. State the design considerations for lighting a reading room with dimension (50m (ℓ) + 20 m(b) + 5 m (h)). 8

Calculate the no. of lamps required. 8

Draw the lighting layout. 4

4. (a) Explain different drawings in Electrical system. 10

(b) Discuss the discrimination and coordination in protection. 10

5. (a) Write a detail note on type of batteries, sizing and selection criterian. 10

(b) Discuss the terms QAP, WBS and logistic with respect to project planning. 6

(c) Define the terms – 4

(i) Load factor and

(ii) Diversity factor.

6. (a) What are the different types of distribution system and their selection criteria. 10

(b) Explain the need of Energy Audit and its different types. 10

7. Write short notes on (any **three**) : 20

(a) SCADA

(b) Security system

(c) VPS

(d) Eleveters.

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[TURN OVER

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Design & Estimating & Electrical Syst.

Data for Illumination Design problems

Coefficient of Utilization Chart

K	Rc=0.7			Rc=0.5			Rc=0.3		
	Rw=0.5	Rw=0.3	Rw=0.1	Rw=0.5	Rw=0.3	Rw=0.1	Rw=0.5	Rw=0.3	Rw=0.1
0	0	0	0	0	0	0	0	0	0
0.6	0.43	0.39	0.36	0.42	0.38	0.36	0.41	0.38	0.36
0.8	0.45	0.41	0.38	0.44	0.40	0.38	0.43	0.40	0.38
1.00	0.51	0.47	0.44	0.55	0.47	0.44	0.49	0.46	0.40
1.25	0.55	0.51	0.49	0.53	0.50	0.48	0.52	0.50	0.48
1.50	0.57	0.54	0.52	0.56	0.53	0.51	0.54	0.52	0.50
2.00	0.61	0.58	0.56	0.59	0.57	0.55	0.57	0.56	0.54
2.50	0.63	0.61	0.59	0.61	0.59	0.57	0.59	0.58	0.56
3.00	0.65	0.63	0.61	0.63	0.61	0.59	0.61	0.59	0.58
4.00	0.67	0.65	0.63	0.64	0.63	0.62	0.62	0.61	0.59
5.00	0.68	0.67	0.65	0.65	0.64	0.63	0.63	0.62	0.61

Lamp Data

Sr.No	Type of Lamp	Wattage	Lumen output
1	GLS	25	230
		40	415
		60	710
		100	1340
		200	3000
2	Tungsten Halogen	50 (Miniature Dichroic)	900
		300	5100
		500	9000
		1000	22000
3	Fluorescent (T8/ T5)	18 (Halo phosphate)	1015
		36(Halo phosphate)	2450
		18 (82/84/86)	1300
		36(82/84/86)	3250
		28(T5)	2800
4	CFL	9	600
		11	760
		13	920
		18	1200

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TABLE 12
IEE-Table 9C

Correction factors for cables installed in enclosed trenches (installation methods L, M and N of Table 11)

The correction factors tabulated below relate to dispositions of cables illustrated in items L, M, and N of Table 11 and are applicable to current-carrying capacities and volt drops for installation methods J and K of Table 11

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Nominal Cross Sectional area of conductor cable	Correction factors									
	Type L of Table 11				Type M of Table 11			Type N of Table 11		
	Two Single-core cables, or one 3- or 4-core cables	Three single-core cables, or two twin cables	Four single-core cables, or two 3- or 4-core cables	Six single-core cables, four twin cables, or three 3- or 4 core cables	Six Single-core cables, four twin cables, or three 3-or4-core cables	Eight Single-core cables, of four 3- or 4-core cables	Twelve Single-core cables, eight twin cables or six 3- ro 4-core cables	Twelve Single-core cables, eight twin cables or six 3- or 4-core cables	Eighteen Single-core cables twelve twin cables, or nine 3- or 4-core cables	Twentyfour Single-core cables sixteen twin cables, or twelve 3- or 4- core cables
1	2	3	4	5	6	7	8	9	10	11
mm²										
4	0.93	0.90	0.87	0.82	0.86	0.83	0.76	0.81	0.74	0.69
6	0.92	0.89	0.86	0.81	0.86	0.82	0.75	0.80	0.73	0.68
10	0.91	0.88	0.85	0.80	0.85	0.80	0.74	0.78	0.72	0.66
16	0.91	0.87	0.84	0.78	0.83	0.78	0.71	0.76	0.70	0.64
25	0.90	0.86	0.82	0.76	0.81	0.76	0.69	0.74	0.67	0.62
35	0.89	0.85	0.81	0.75	0.80	0.74	0.68	0.72	0.66	0.60
50	0.88	0.84	0.79	0.74	0.78	0.73	0.66	0.71	0.64	0.59
70	0.87	0.82	0.78	0.72	0.77	0.72	0.64	0.70	0.62	0.57
95	0.86	0.81	0.76	0.70	0.75	0.70	0.63	0.68	0.60	0.55
120	0.85	0.80	0.75	0.69	0.73	0.68	0.61	0.66	0.58	0.53
150	0.84	0.78	0.74	0.67	0.72	0.67	0.59	0.64	0.57	0.51
185	0.83	0.77	0.73	0.65	0.70	0.65	0.58	0.63	0.55	0.49
240	0.82	0.76	0.71	0.63	0.69	0.63	0.56	0.61	0.53	0.48
300	0.81	0.74	0.69	0.62	0.68	0.62	0.54	0.59	0.52	0.46
400	0.80	0.73	0.67	0.59	0.66	0.60	0.52	0.57	0.50	0.44
500	0.78	0.72	0.66	0.58	0.64	0.58	0.51	0.56	0.48	0.43
630	0.77	0.71	0.65	0.56	0.63	0.57	0.49	0.54	0.47	0.41

TABLE 13
IEE-Table 9D1

Current-carrying capacities and associated voltage drops for single-core p.v.c.-insulated cables, non-armoured, with or without sheath (copper conductors)

Conductor operating temperature : 70°C

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conductor cross Sectional area	Installation methods A to C of Table 11 ('Enclosed')				Installation methods E to H of Table 11 ('Clipped direct')				Installation method J of Table 11 ('Defined conditions')					
	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		Flat or vertical (2 cables, single-phase a.c., or d.c. or 3 or 4 cables three-phase)				Trefoil (3 cables three-phase)	
	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre: Single-phase	Volt drop per ampere per metre: d.c.	Volt drop per ampere per metre: Three-phase	Current carrying capacity	Volt drop per ampere per metre
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
mm²	A	mV	A	mV	A	mV	A	mV	A	mV	mV	mV	A	mV
1.0	14	42	12	37	17	42	16	37	-	-	-	-	-	-
1.5	17	28	14	24	21	28	20	24	-	-	-	-	-	-
2.5	24	17	21	15	30	17	28	15	-	-	-	-	-	-
4	32	11	29	9.2	40	11	36	9.2	-	-	-	-	-	-
6	41	7.1	37	6.2	50	7.1	45	6.2	-	-	-	-	-	-
10	55	4.2	51	3.7	68	4.2	61	3.7	-	-	-	-	-	-
16	74	2.7	66	2.3	90	2.7	81	2.3	-	-	-	-	-	-
25	97	1.7	87	1.5	118	1.7	106	1.5	-	-	-	-	-	-
35	119	1.3	106	1.1	145	1.3	130	1.1	-	-	-	-	-	-
		a.c. / a.c.				a.c. / a.c.								
50	145	0.97 / 0.91	125	0.84	175	0.93 / 0.91	160	0.82	195	0.95	0.91	0.85	170	0.80
70	185	0.71 / 0.63	160	0.62	220	0.65 / 0.63	200	0.59	240	0.68	0.63	0.62	210	0.59
95	230	0.56 / 0.45	195	0.48	270	0.48 / 0.45	240	0.45	300	0.52	0.45	0.49	260	0.42
120	260	0.48 / 0.36	220	0.42	310	0.40 / 0.36	280	0.38	350	0.44	0.36	0.43	300	0.34
150	-	-	-	-	355	0.34 / 0.29	320	0.34	410	0.39	0.29	0.39	350	0.29
185	-	-	-	-	405	0.29 / 0.24	365	0.30	470	0.35	0.24	0.36	400	0.25
240	-	-	-	-	480	0.24 / 0.18	430	0.27	560	0.36	0.18	0.38	480	0.22
300	-	-	-	-	560	0.22 / 0.14	500	0.25	660	0.33	0.14	0.35	570	0.19
400	-	-	-	-	680	0.20 / 0.12	610	0.24	800	0.30	0.12	0.33	680	0.17
500	-	-	-	-	800	0.18 / 0.086	710	0.23	910	0.28	0.086	0.31	770	0.16
630	-	-	-	-	910	0.17 / 0.068	820	0.22	1040	0.26	0.068	0.30	880	0.15

CORRECTION FACTORS

FOR AMBIENT TEMPERATURE

Ambient temperature	25°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C
Correction factor	1.06	0.94	0.87	0.79	0.71	0.61	0.50	0.35

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TABLE 14
IEE-Table 9D2

Current-carrying capacities and associated voltage drops for twin and multicore p.v.c.-insulated cables, non-armoured (copper conductors)

Conductor operating temperature : 70°C

Conductor Cross sectional area	Installation methods A to C of Fig. 1 ('Enclosed')				Installation methods E to H of Fig. 1 ('Clipped direct')				Installation method K of Fig. 1 ('Defined conditions')			
	One twin cable With or without protective conductor single-phase a.c. or d.c.		One three-core cable with or without protective conductor or one four-core cable, three phase		One Twin cable With or without protective conductor single-phase a.c. or d.c.		One three-core cable with or without protective conductor or one four-core cable, three phase		One Twin cable With or without protective conductor single-phase a.c. or d.c.		One three-core cable with or without protective conductor or one four-core cable, three phase	
	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre
1	2	3	4	5	6	7	8	9	10	11	12	13
mm²	A	mV	A	mV	A	mV	A	mV	A	mV	A	mV
1.0	14	42	12	37	16	42	13	37	-	-	-	-
1.5	18	28	16	24	20	28	17	24	-	-	-	-
2.5	24	17	21	15	28	17	24	15	-	-	-	- FLAT
4	32	11	29	9.2	36	11	32	9.2	-	-	-	- CABLES
6	40	7.1	36	6.2	46	7.1	40	6.2	-	-	-	- ONLY
10	53	4.2	49	3.7	64	4.2	54	3.7	-	-	-	-
16	70	2.7	62	2.3	85	2.7	71	2.3	-	-	-	-
25	79	1.8	70	1.6	108	1.8	90	1.6	114	1.8	95	1.6
35	98	1.3	86	1.1	132	1.3	115	1.1	139	1.3	122	1.1
50	-	-	-	-	163	0.92	140	0.81	172	0.92	148	0.81
70	-	-	-	-	207	0.65 0.64	176	0.57	218	0.65 0.64	186	0.57
95	-	-	-	-	251	0.48 0.46	215	0.42	265	0.48 0.46	227	0.42
120	-	-	-	-	290	0.40 0.36	251	0.34	306	0.40 0.36	265	0.34
150	-	-	-	-	330	0.32 0.25	287	0.29	348	0.32 0.25	302	0.29
185	-	-	-	-	380	0.29 0.23	330	0.24	400	0.29 0.23	348	0.24
240	-	-	-	-	450	0.25 0.18	392	0.20	474	0.25 0.18	413	0.20
300	-	-	-	-	520	0.23 0.14	450	0.18	548	0.23 0.14	474	0.18
400	-	-	-	-	600	0.22 0.11	520	0.17	632	0.22 0.11	548	0.17

CORRECTION FACTORS

FOR AMBIENT TEMPERATURE	25°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C
Ambient temperature								
Correction factor	1.06	0.94	0.87	0.79	0.71	0.61	0.50	0.35

TABLE 15
IEE-Table 9D3

Current-carrying capacities and associated voltage drops for twin and multicore armoured p.v.c.-insulated cables (copper conductors).

Conductor operating temperature : 70°C

Conductor cross sectional area	Installation method E, F and G † of Table 11 ('Clipped direct')				Installation method K of Table 11 ('Defined conditions')			
	One twin cable single phase a.c. or d.c.		One three - or four core cable three-phase		One twin cable single phase a.c. or d.c.		One three - or four core cable three-phase	
	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre
1	2	3	4	5	6	7	8	9
mm²	A	mV	A	mV	A	mV	A	mV
1.5	20	29	18	25	-	-	-	-
2.5	29	18	24	16	-	-	-	-
4	37	12	31	9.6	-	-	-	-
6	46	7.4	41	6.3	50	7.3	42	6.3
10	66	4.3	56	3.8	69	4.3	58	3.8
16	86	2.7	73	2.3	90	2.7	77	2.3
25	115	1.8	97	1.6	121	1.8	102	1.6
35	142	1.3	119	1.1	149	1.3	125	1.1
50	168	0.92	147	0.81	180	0.92	155	0.81
		a.c. d.c.				a.c. d.c.		
70	209	0.65 0.64	180	0.57	220	0.65 0.64	190	0.57
95	257	0.48 0.46	219	0.42	270	0.48 0.46	230	0.42
120	295	0.40 0.36	257	0.34	310	0.40 0.36	270	0.34
150	337	0.32 0.25	295	0.29	355	0.32 0.25	310	0.29
185	390	0.29 0.23	333	0.24	410	0.29 0.23	350	0.24
240	461	0.25 0.18	399	0.20	485	0.25 0.18	420	0.20
300	523	0.23 0.14	451	0.18	550	0.23 0.14	475	0.18
400	599	0.22 0.11	523	0.17	620	0.22 0.11	550	0.17

CORRECTION FACTORS

FOR AMBIENT TEMPERATURE	25°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C
Ambient temperature								
Correction factor	1.06	0.94	0.87	0.79	0.71	0.61	0.50	0.35

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TABLE 18
IEE-Table 9H2

Current-carrying capacities and associated volt drops for 85°C or 150°C rubber-insulated flexible cables.

Conductor operating temperature : 75°C

Nominal cross sectional area of conductor	Maximum diameter of wires forming conductor	Current-carrying capacity: d.c. or single-phase a.c. (one twin cable, with or without earth-continuity conductor, or two single-core cables bunched)	Current-carrying capacity: Three-phase a.c. (one three, four, or five core cable	Volts drop per ampere per metre: d.c.	Volts drop per ampere per metre: Single-phase a.c.	Volts drop per ampere per metre: Three-phase a.c.
1	2	3	4	5	6	7
mm²	mm	A	A	mV	mV	mV
4	0.31	40	34	13.0	13.0	11.5
6	0.31	51	44	7.9	7.9	7.2
10	0.41	70	60	4.6	4.6	4.2
16	0.41	93	81	2.9	2.9	2.6
25	0.41	120	105	1.9	1.9	1.7
35	0.41	145	125	1.3	1.3	1.2
50	0.41	185	160	0.93	0.95	0.85
70	0.51	225	195	0.65	0.68	0.61
95	0.51	270	235	0.49	0.53	0.47
120	0.51	305	270	0.38	0.43	0.38
150	0.51	355	305	0.31	0.36	0.31
185	0.51	405	350	0.26	0.32	0.27
240	0.51	465	405	0.20	0.27	0.22
300	0.51	530	470	0.16	0.24	0.19
400	0.51	630	-	0.12	0.21	-
500	0.61	720	-	0.10	0.20	-
630	0.61	830	-	0.08	0.19	-

CORRECTION FACTOR FOR AMBIENT TEMPERATURE

85°C rubber-insulated cables Ambient temperature	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
Correction factor	0.93	0.86	0.80	0.72	0.63	0.54	0.44	0.31

150°C rubber-insulated cables Ambient temperature	35°C to 95°C	100°C	105°C	110°C	115°C	120°C	125°C	130°C	135°C	140°C
Correction factor	1.0	0.94	0.88	0.82	0.77	0.71	0.64	0.56	0.48	0.39

Note - BS 6007 does not include 150°C rubber-insulated cables above 16mm² nominal cross-sectional area

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TABLE 19
IEE-Table 9J3

Current-carrying capacities and associated volt drops for heavy duty mineral-insulated cables (copper conductors and sheath) (BS 6207, Part 1) exposed to touch or having an overall covering of p.v.c.

Sheath operating temperature : 70°C

Nominal Cross sectional area of conductor	Two single-core cables, single-phase a.c., or d.c.		Three or four single-core cables, three phase a.c.		One twin cable, single-phase a.c., or d.c.		One three-core, cable, three-phase a.c.		One four-core cable, three-phase a.c.		One seven-core cable, all cores fully loaded		
	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	Current carrying capacity	Volt drop per ampere per metre	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
mm²	A	mV	A	mV	A	mV	A	mV	A	mV	A	mV	mV
1.0	23	42	20	36	19	42	16	36	18	36	11	42	36
1.5	29	28	26	24	24	28	20	24	20	24	14	28	24
2.5	39	17	34	14	32	17	26	14	27	14	19	17	14
4	50	10	44	9.0	41	10	34	9.0	35	9.0	24	10	9.0
6	63	6.9	56	6.0	53	6.9	44	6.0	45	6.0	-	-	-
10	85	4.2	75	3.6	71	4.2	59	3.6	61	3.6	-	-	-
16	110	2.6	99	2.3	94	2.6	78	2.3	81	2.3	-	-	-
25	150	1.7	130	1.4	124	1.7	105	1.4	110	1.4	-	-	-
35	180	1.2	160	1.0	-	-	-	-	-	-	-	-	-
50	225	0.83	200	0.72	-	-	-	-	-	-	-	-	-
70	275	0.59	240	0.51	-	-	-	-	-	-	-	1 ph.	3 ph.
95	330	0.44	290	0.38	-	-	-	-	-	-	-	a.c., or	a.c.
120	380	0.35	335	0.30	-	-	-	-	-	-	-	d.c.	-
150	440	0.28	385	0.24	-	-	-	-	-	-	-		

CORRECTION FACTORS

FOR AMBIENT TEMPERATURE

Ambient temperature	25°C	35°C	40°C	50°C	60°C
Correction factor for cables exposed to touch	1.06	1.0	0.85	0.68	0.46
Correction factor for cables having overall p.v.c. covering	1.15	1.1	0.94	0.75	0.51

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TABLE 20
IEE-Table 9K1

Current-carrying capacities and associated voltage drops for single-core p.v.c.-insulated cables, non-armoured, with sheath (Aluminium conductors)

Conductor operating temperature : 70°C

Cross sectional area of conductor	Installation methods A to C of Table 11 ('Enclosed') — 2 Cables, single-phase a.c., or d.c. — Current carrying capacity	Volt drop per ampere per metre a.c.	Volt drop per ampere per metre d.c.	3 or 4 cables three-phase a.c. — Current carrying capacity	Volt drop per ampere per metre	Installation methods E to H of Table 11 ('Clipped direct') — 2 Cables, single-phase a.c., or d.c. — Current carrying capacity	Volt drop per ampere per metre a.c.	Volt drop per ampere per metre d.c.	3 or 4 cables three-phase a.c. — Current carrying capacity	Volt drop per ampere per metre	Installation method J of Table 11 ('Defined conditions') — Flat or vertical (2 cables, single-phase a.c., or d.c. or 3 or 4 cables three-phase) — Current carrying capacity	Volt drop per ampere per metre 1 ph	Volt drop per ampere per metre d.c.	Volt drop per ampere per metre 3 ph.	Trefoil (3 cables three-phase) — Current carrying capacity	Volt drop per ampere per metre
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
mm²	A	mV	mV	A	mV	A	mV	mV	A	mV	A	mV	mV	mV	A	mV
16	60	4.5	4.5	52	3.9	72	4.5	4.5	65	3.9	-	-	-	-	-	-
25	78	2.9	2.8	67	2.5	94	2.8	2.8	85	2.5	-	-	-	-	-	-
35	96	2.1	2.0	83	1.8	115	2.1	2.0	105	1.8	-	-	-	-	-	-
50	120	1.6	1.5	100	1.4	143	1.5	1.5	123	1.3	155	1.5	1.5	1.34	140	1.3
70	150	1.2	1.0	125	1.0	181	1.1	1.0	156	0.93	190	1.1	1.0	0.95	170	0.90
95	175	0.93	0.75	150	0.80	223	0.77	0.75	193	0.69	235	0.80	0.75	0.72	205	0.67
120	205	0.80	0.60	175	0.70	261	0.62	0.60	225	0.56	275	0.65	0.60	0.60	235	0.54
150	235	0.73	0.49	200	0.64	298	0.51	0.49	259	0.48	320	0.55	0.49	0.51	270	0.45
185	-	-	-	-	-	345	0.42	0.39	290	0.40	370	0.46	0.39	0.45	310	0.37
240	-	-	-	-	-	411	0.34	0.29	351	0.34	440	0.43	0.29	0.43	370	0.30
300	-	-	-	-	-	476	0.29	0.23	419	0.30	510	0.38	0.23	0.39	435	0.25
380	-	-	-	-	-	554	0.26	0.19	465	0.28	584	0.35	0.19	0.37	490	0.22
480	-	-	-	-	-	643	0.23	0.15	541	0.26	677	0.32	0.15	0.34	570	0.20
600	-	-	-	-	-	737	0.21	0.12	616	0.24	776	0.30	0.12	0.33	648	0.18

CORRECTION FACTORS

FOR AMBIENT TEMPERATURE

Ambient temperature	25°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C
Correction factor	1.06	0.94	0.87	0.79	0.71	0.61	0.50	0.35

TABLE 21
IEE-Table 9K2

Current-carrying capacities and associated voltage drops for twin and multicore armoured p.v.c.-insulated cables, non-armoured (Aluminium conductors)

Conductor operating temperature : 70°C

Conductor cross sectional area	Installation method E, to H † of Table 11 (Clipped direct) — One twin cable single phase a.c. or d.c. — Current carrying capacity	Volt drop per ampere per metre	One three-or-Four core cable, three-phase — Current carrying capacity	Volt drop per ampere per metre	Installation method K of Table 11 ('Defined conditions') — One twin cable, single phase a.c. or d.c. — Current carrying capacity	Volt drop per ampere per metre	One three-or-four core cable, three-phase — Current carrying capacity	Volt drop per ampere per metre
1	2	3	4	5	6	7	8	9
mm²	A	mV	A	mV	A	mV	A	mV
16	62	4.5	53	3.9	65	4.5	55	3.9
25	82	2.9	70	2.5	86	2.9	74	2.5
35	102	2.1	86	1.8	107	2.1	91	1.8
50	120	1.5	106	1.3	125	1.5	110	1.3
70	150	1.1	133	0.93	158	1.1	139	0.93
95	185	0.79	163	0.68	195	0.79	172	0.68
120	-	-	190	0.54	-	-	200	0.54
150	-	-	217	0.45	-	-	227	0.45
185	-	-	247	0.37	-	-	260	0.37
240	-	-	296	0.29	-	-	311	0.29
300	-	-	340	0.25	-	-	358	0.25

CORRECTION FACTORS

FOR AMBIENT TEMPERATURE

Ambient temperature	25°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C
Correction factor	1.06	0.94	0.87	0.79	0.71	0.61	0.50	0.35