

Table of Contents

CHAPTER 4—EQUIPMENT FOR GENERAL USE

ARTICLE 400—FLEXIBLE CORDS AND FLEXIBLE CABLES

400.1	Scope	405
400.3	Suitability	405
400.4	Types of Flexible Cords and Flexible Cables	405
400.5	Ampacity of Flexible Cords and Flexible Cables	405
400.7	Uses Permitted	406
400.8	Uses Not Permitted	407
400.10	Pull at Joints and Terminals	408
400.13	Overcurrent Protection	408
400.14	Protection from Damage	409
400.22	Neutral Conductor Identification	409
400.23	Equipment Grounding Conductor Identification	409
	Article 400—Practice Questions	410

ARTICLE 402—FIXTURE WIRES

402.1	Scope	411
402.3	Types	411
402.5	Allowable Ampacity of Fixture Wires	411
402.6	Minimum Size	411
402.7	Raceway Size	411
402.8	Neutral Conductor	412
402.10	Uses Permitted	412
402.11	Uses Not Permitted	412
402.12	Overcurrent Protection	412
	Article 402—Practice Questions	413

ARTICLE 404—SWITCHES

404.1	Scope	414
404.2	Switch Connections	414
404.3	Switch Enclosures	415
404.4	Damp or Wet Locations	415
404.6	Position of Knife Switches	416
404.7	Indicating	416
404.8	Accessibility and Grouping	416
404.9	Switch Faceplates	418
404.10	Mounting Snap Switches	419
404.11	Circuit Breakers Used as Switches	419
404.12	Grounding of Enclosures	419
404.14	Rating and Use of Snap Switches	419
404.15	Switch Marking	420
	Article 404—Practice Questions	421

ARTICLE 406—RECEPTACLES, CORD CONNECTORS, AND ATTACHMENT PLUGS (CAPS)

406.1	Scope	422
406.2	Receptacle Rating and Type	422
406.3	General Installation Requirements	423

406.4	Receptacle Mounting	425
406.5	Receptacle Faceplates	427
406.6	Attachment Plugs, Cord Connectors, and Flanged Surface Devices	427
406.8	Receptacles in Damp or Wet Locations	427
406.10	Connecting Receptacle Grounding Terminal to Equipment Grounding Conductor	429
406.11	Tamper-Resistant Receptacles in Dwelling Units	429
	Article 406—Practice Questions	430

ARTICLE 408—SWITCHBOARDS AND PANELBOARDS

Part I. General	431	
408.1	Scope	431
408.3	Arrangement of Busbars and Conductors	431
408.4	Circuit Directory or Circuit Identification	432
408.5	Clearance for Conductors Entering Bus Enclosures	433
408.7	Unused Openings	433
Part III. Panelboards	433	
408.36	Overcurrent Protection of Panelboards	433
408.37	Panelboards in Damp or Wet Locations	434
408.40	Equipment Grounding Conductor	434
408.41	Neutral Conductor Terminations	436
408.54	Maximum Number of Overcurrent Devices	436
	Article 408—Practice Questions	437

ARTICLE 410—LUMINAIRES, LAMPHOLDERS, AND LAMPS

Part I. General	438	
410.1	Scope	438
410.2	Definitions	439
410.6	Listing Required	439
Part II. Luminaire Locations	439	
410.10	Luminaires in Specific Locations	439
410.11	Luminaires Near Combustible Material	441
410.16	Clothes Closets	441
410.18	Space for Cove Lighting	442
Part III. Luminaire Outlet Boxes and Covers	442	
410.22	Outlet Boxes to be Covered	442
410.24	Connection of Electric-Discharge Luminaires	443
Part IV. Luminaire Supports	443	
410.30	Supports	443
410.36	Means of Support	445
Part V. Grounding (Bonding)	445	
410.42	Exposed Luminaire Parts	445
410.46	Methods of Grounding	446
Part VI. Wiring of Luminaires	446	
410.50	Polarization of Luminaires	446
410.62	Cord-Connected Luminaires	446
410.64	Luminaires Used as a Raceway	447

Table of Contents

410.65	Luminaires Connected Together	447	424.44	Installation of Cables in Concrete or Poured Masonry Floors	467
410.68	Branch-Circuit Conductors and Ballasts.....	447	Part VI. Duct Heaters	467	
Part VIII. Lampholders	447		424.65	Disconnect for Electric Duct Heater Controllers.....	467
410.90	Screw-Shell Lampholders.....	447		Article 424—Practice Questions.....	468
Part XI. Recessed Luminaires	448		ARTICLE 430—MOTORS, MOTOR CIRCUITS, AND CONTROLLERS	469	
410.115	Thermally Protected.....	448	Part I. General	469	
410.116	Recessed Luminaire Clearances	448	430.1	Scope	469
410.117	Wiring.....	448	430.2	Definitions	470
Part XIII. Electric-Discharge Lighting	449		430.6	Table FLC Versus Motor Nameplate Current Rating... 471	
410.130	General	449	430.8	Marking on Controllers	471
410.136	Luminaire Mounting.....	449	430.9	Motor Controller Terminal Requirements	472
Part XV. Track Lighting	450		430.14	Location of Motors	472
410.151	Installation.....	450	430.17	The Highest Rated Motor	472
410.154	Fastening.....	451	Part II. Conductor Size	472	
	Article 410—Practice Questions.....	452	430.22	Single Motor Conductor Size.....	472
ARTICLE 411—LIGHTING SYSTEMS OPERATING AT 30V OR LESS	454		430.24	Several Motors—Conductor Size.....	473
411.1	Scope	454	430.28	Motor Feeder Taps.....	474
411.2	Definition.....	454	Part III. Overload Protection	474	
411.3	Listing Required.....	454	430.31	Overload	474
411.4	Specific Location Requirements	455	430.32	Overload Sizing for Continuous-Duty Motors.....	474
411.5	Secondary Circuits	455	430.36	Use of Fuses for Overload Protection	475
	Article 411—Practice Questions.....	456	430.37	Number of Overload Devices.....	475
ARTICLE 422—APPLIANCES	457		Part IV. Branch-Circuit Short-Circuit and Ground-Fault Protection	475	
Part I. General	457		430.51	General	475
422.1	Scope	457	430.52	Branch-Circuit Short-Circuit and Ground-Fault Protection	476
422.3	Other Articles.....	457	430.55	Single Overcurrent Device.....	477
Part II. Branch-Circuit Requirements	457		Part V. Feeder Short-Circuit and Ground-Fault Protection	477	
422.10	Branch-Circuit Rating.....	457	430.62	Feeder Protection	477
422.11	Overcurrent Protection.....	458	Part VI. Motor Control Circuits	478	
422.12	Central Heating Equipment (Furnaces)	459	430.72	Overcurrent Protection for Control Circuits.....	478
422.13	Storage Water Heaters.....	459	430.73	Protection of Conductors from Physical Damage	479
422.15	Central Vacuums.....	459	430.75	Disconnect for Control Circuits	479
422.16	Flexible Cords.....	460	Part VII. Motor Controllers	479	
422.18	Support of Ceiling Paddle Fans	461	430.83	Controller Rating.....	479
Part III. Disconnect	461		430.84	Need Not Open All Conductors of the Circuit	479
422.31	Permanently Connected Appliance Disconnects	461	430.87	Controller for Each Motor.....	479
422.33	Cord-and-Plug-Connected Appliance Disconnects	461	Part IX. Disconnecting Means	480	
422.34	Unit Switches as Disconnects.....	462	430.102	Disconnect Requirement	480
422.51	Cord-and-Plug-Connected Vending Machines.....	462	430.103	Operation of Disconnect.....	481
422.52	Electric Drinking Fountains.....	463	430.104	Marking and Mounting	481
	Article 422—Practice Questions.....	464	430.107	Readily Accessible.....	481
ARTICLE 424—FIXED ELECTRIC SPACE-HEATING EQUIPMENT	465		430.109	Disconnecting Means Rating	481
Part I. General	465		430.111	Combination Controller and Disconnect	482
424.1	Scope	465	Part XIV. Tables	482	
424.3	Branch Circuits	465		Article 430—Practice Questions.....	483
424.9	Permanently Installed Electric Baseboard Heaters with Receptacles.....	466	Part III. Electric Space-Heating Equipment	466	
Part III. Electric Space-Heating Equipment	466		424.19	Disconnecting Means.....	466
Part V. Electric Space-Heating Cables	467				

ARTICLE 440—AIR-CONDITIONING AND REFRIGERATION EQUIPMENT	485
Part I. General	485
440.1 Scope	485
440.2 Definitions	485
440.3 Other Articles.....	485
440.6 Ampacity and Rating	485
Part II. Disconnecting Means	486
440.14 Location.....	486
Part III. Overcurrent Protection	487
440.21 General	487
440.22 Short-Circuit and Ground-Fault Overcurrent Device Size	487
Part IV. Conductor Sizing	487
440.32 Conductor Size for Single Motor-Compressors.....	487
440.33 Conductor Size for Several Motor-Compressors.....	488
Part VII. Room Air Conditioners	488
440.62 Branch-Circuit Requirements.....	488
440.63 Disconnecting Means.....	488
440.64 Supply Cords	489
440.65 Leakage Current Detector-Interrupter and Arc-Fault Circuit Interrupter	489
Article 440—Practice Questions.....	490
ARTICLE 450—TRANSFORMERS	491
Part I. General	491
450.1 Scope	491
450.3 Overcurrent Protection.....	491
450.9 Ventilation.....	492
450.11 Marking	492
450.13 Transformer Accessibility.....	492
Article 450—Practice Questions.....	494