NATIONAL ELECTRICAL CODE 2011

SECTION 1 SCOPE OF THE NATIONAL ELECTRICAL CODE

1 SCOPE

This Part 1/Section 1 of the Code describes the scope of the National Electrical Code.

2 REFERENCES

The National Electrical Code takes into account the stipulations in several Indian Standards dealing with the various aspects relating to electrical installation practice. Several product standards also exist, and compliance with relevant Indian Standards is desirable. It is therefore recommended that individual Parts/Sections of the Code should be read in conjunction with the relevant Indian Standards. List of such Indian Standards is given at relevant Part/ Section of the Code.

At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

SECTION 2 DEFINITIONS

1 SCOPE

This Part 1/Section 2 of the Code covers definitions of terms.

2 REFERENCES

A list of Indian Standards on electrotechnical vocabulary relevant for the purpose of the Code is given at Annex A.

ANNEX A

(*Clause* 2)

LIST OF INDIAN STANDARDS ON ELECTROTECHNICAL VOCABULARY

IS No.	*Title*
1885	Electrotechnical vocabulary:
(Part 1) : 1961	Fundamental definitions
(Part 8) : 1986	Secondary cells and batteries (*first revision*)

(Part 9) : 1992/	Electrical relays (*second revision*)
IEC 60050 (446) : 1983	
1983 (Part 10) : 1993/	Power system protection (*first revision*)
1986 (Part 11) : 1966	Electrical measurements
(Part 14) : 1967	Nuclear power plants
(Part 15) : 2003/	(Part 15) : 2003/ Primary cells and batteries (*first revision*)
1996	Lighting, Section 1 General aspects
(Part 16/Sec 1) : 1968	
(Part 16/Sec 2) : 1968	Lighting, Section 2 General
	illumination, lighting fittings and lighting for traffic and signalling
(Part 16/Sec 3) : 1967	Lighting, Section 3 Lamps and
(Part 17) : 1979	Switchgear and controlgear (*first revision)*
(Part 27) : 1993/	Power electronics (*second revision*)
1982 (Part 28) : 1993/	Instrument transformers (*first revision*)
1986 (Part 29) : 1971	Mining terms
(Part 30) : 1971	Overhead transmission and distribution of electrical energy
(Part 32) : 1993/	Electric cables (first revision)
IEC 60050 (461) :	
1984 (Part 34) : 1972	Cinematography
(Part 35) : 1993/	Rotating machinery (first revision)
IEC 60050 (411)	
1996 (Part 37) : 1993/	Part 37 Tariffs for electricity (first revision)
IEC 60050 (691) 1973	
(Part 38) : 1993/	Power transformers and reacto (second revision)
IEC 60050 (421) :	
1990	
(Part 43) : 1977	Electrical equipment used in medical
(Part 51) : 1993/	Industrial electro-heating
IEC 60050 (841) : 1983	
(Part 53) : 1980	Mica
(Part 54) : 1993/	Insulators (first revision)
IEC 60050 (471) : 1984	

(Part 55) : 1981	Electric fans
(Part 57) : 1993/ IEC 60050 (131) 1978	Electric and magnetic circuits (first : revision)
(Part 60) : 1993/ IEC 60050 (426) : 1990	Electrical apparatus for explosive atmospheres (first revision)
(Part 61) : 1985	Nuclear medical instruments
(Part 62) : 1993/ IEC 60050 (212) : 1990	Solid insulating materials (first revision)
(Part 69) : 1993/ IEC 60050 (602) : 1993	tribution of electricity — Generation
(Part 70) : 1993/ IEC 60050 (604) 1987	Generation, transmission and distribution of electricity —Operation
(Part 71) : 1993/ IEC 60050 (605) 1983	Generation, transmission and distribution of electricity Substations
(Part 72) : 1993/ IEC 60050 (101) : 1977	Mathematics
(Part 73/Sec 1) : 993/ IEC60050 (111-1) : 1984	Physics and chemistry, Section 1 physical concepts
(Part 73/Sec 2) : 1993/ IEC 60050 2 (111-2) : 1984	Physics and chemistry — Section 2 Electrotechnical concepts
(Part 73/Sec 3) : 1993/ IEC 60050 : (111-3) : 1977	Physics and chemistry — Section 3 Concepts related to quantities and unit
(Part 74) : 1993/ IEC 60050 (151) 1975	Electrical and magnetic devices
(Part 75) : 1993/ IEC 60050 (351) : 1975	Automatic control
(Part 77) : 1993/ IEC 60050 (466) : 1990	Overhead lines
(Part 78) : 1993/ IEC 60050 (601) : 1985	Generation, transmission and distribution of electricity —General
(Part 79) : 1993/ IEC 60050 (603) : 1986	Generation, transmission and transmission and distribution of electricity — Power system planning and management
(Part 80) : 1994/ IEC 60050 (301) 1983	General terms on measurements : in electricity
(Part 81) : 1993/ IEC 60050 (302) : 1983	Electrical measuring instruments

SECTION 3 GRAPHICAL SYMBOLS FOR DIAGRAMS, LETTER SYMBOLS AND SIGNS

1 SCOPE

This Part 1/Section 3 of the Code covers graphical symbols for diagrams, letter symbols and signs which may be referred to for further details.

2 REFERENCES

A list of relevant Indian Standards on graphical symbols is given at Annex A.

ANNEX A

(Clause 2)

LIST OF INDIAN STANDARDS ON GRAPHICAL SYMBOLS

IS No.	*Title*
2032	Graphical symbols used in electrotechnology:
(Part 15) : 1976	Aircraft electrical symbols
(Part 19) : 1977	Electrical equipment used in medical practice
(Part 25) : 1980	Electrical installations in ships
3722	Letter symbols and signs used in electrical technology
(Part 1) : 1983	General guidelines on symbols and subscripts
(Part 2) : 1983	Reference tables for symbols and subscripts
10381 : 1982	Terms (and their Hindi equivalents) commonly used for name plates and similar data of electrical power equipment
11353 : 1985	Guide for uniform system of marking and identification of conductors and apparatus terminals
12032 (Part 1): 1987/ IEC 60617-1 (1985)	Graphical symbols for diagrams in the field of electrotechnology: Part 1 General information, general index, cross reference table
12032 (Part 2): 1987/ IEC 60617-2 (1983	Graphical symbols for diagrams in the field of electrotechnology: Part 2 Symbols elements, qualifying symbols and other symbols having general Application
12032 (Part 3) :	Graphical symbols for diagrams in the field of electrotechnology: Part 3 Conductors and connecting devices
12032 (Part 4) : 1987/ IEC 60617-4 (1984)	Graphical symbols for diagrams in the field of electrotechnology: Part 4Passive components
12032 (Part 6) : 1987/ IEC 60617-6 (1983)	Graphical symbols for diagrams in the field of electrotechnology: Part 6 Production and conversion of electrical energy
12032 (Part 7) : 1987/ IEC 60617-7 (1983)	Graphical symbols for diagrams in the field of electrotechnology: Part 7 Switchgear, controlgear and protective
12032 (Part 8) : 1987/ IEC Part 8 60617-8 (1983)	Graphical symbols for diagrams in the field of electrotechnology: Measuring instruments, lamps and signalling devices
12032 (Part 11) : 1987/ IEC 60617-11 (1983)	Graphical symbols for diagrams in the field of electrotechnology: Part 11 Architectural and topographical installation plans and diagrams

SECTION 4 GUIDE FOR PREPARATION OF DIAGRAMS, CHARTS, TABLES AND MARKING

1 SCOPE

This Part 1/Section 4 of the Code covers guidelines for preparation of diagrams, charts and tables in electrotechnology and for marking of conductors.

2 REFERENCES

A list of Indian Standards on general guidelines on various types of diagrams and charts is given at Annex A.

ANNEX A

(*Clause* 2)

LIST OF INDIAN STANDARDS ON DIAGRAMS, CHARTS, TABLES AND MARKING

IS No.	*Title*
1064 : 1980	Specification for paper standard sizes
2032	Graphical symbols used in electrotechnology:
(Part 15) : 1976	Aircraft electrical symbols
(Part 19) : 1977	Electrical equipment used in medical practice
(Part 25) : 1980	Electrical installations in ships
5578 : 1984	Guide for marking of insulated conductors
8270	Guide for the preparation of diagrams, charts and tables for electrotechnology:
(Part 1) : 1976	Definitions and classification
(Part 2) : 1976	Item designation
(Part 3) : 1977	General requirements for diagrams
(Part 4) : 1977	Circuit diagram
(Part 5) : 1976	Interconnection diagrams and tables
(Part 6) : 1983	Unit wiring diagrams and tables

SECTION 5 UNITS AND SYSTEMS OF MEASUREMENT

1 SCOPE

This Part 1/Section 5 of the Code covers units and systems of measurement in electrotechnology.

2 REFERENCE

The following Indian Standard may be referred for further information:

‘IS 10005 : 1994/ISO 1000 : 1992 SI units and recommendations for the use of their multiples and of certain other units’.

SECTION 6 STANDARD VALUES

1 SCOPE

This Part 1/Section 6 of the Code covers standard values of ac and dc distribution voltages, preferred values of current ratings and standard system frequency.

2 REFERENCES

This Part 1/Section 6 of the Code may be read in conjunction with the following Indian Standards:

IS No.	*Title*
1076 (Part 1) : 1985/ ISO 3 : 1973	Preferred numbers: Part 1 Series of preferred numbers
12360 : 1988	Voltage bands for electrical installations including preferred voltages and frequency

SECTION 7 FUNDAMENTAL PRINCIPLES

1 SCOPE

This Part 1/Section 7 of the Code enumerates the fundamental principles of design and execution of electrical installations.

2 REFERENCE

Reference has been made to the following Indian Standard:

IS No.	*Title*
IS 3792 : 1978	Guide for heat insulation of non-industrial buildings

SECTION 8 ASSESSMENT OF GENERAL CHARACTERISTICS OF BUILDINGS

1 SCOPE

This Part 1/Section 8 of the Code covers guidelines for assessing the characteristics of buildings and the electrical installation therein.

SECTION 9 WIRING INSTALLATIONS

1 SCOPE

This Section 9 of the Code covers the essential design and constructional requirements for electrical wiring installations.

2 REFERENCES

A list of relevant Indian Standards on electrical wiring is given at Annex A.

ANNEX A

(*Clause* 2)

LIST OF INDIAN STANDARDS RELATED TO INSTALLATION

IS No.	*Title*
371 : 1999	Ceiling roses — Specification
732 : 1989	Code of practice for electrical wiring installations
1255 : 1983	Code of practice for installation and maintenance of power cables upto and including 33 kV rating
1293 : 2005	Plugs and socket-outlets of rated voltages up to and including 250 V and rated current up to and including 16 A — Specification
1646 : 1997	Code of practice for fire safety of buildings (general): Electrical Installations
2412 : 1975	Link clips for electrical wiring
2667 : 1988	Fittings for rigid steel conduits for electrical wiring
3043 : 1987	Code of practice for earthing
3419 : 1988	Fittings for rigid non-metallic conduits
3480 : 1966	Flexible steel conduits for electrical wiring
3808 : 1979	Method of test for non-combustibility of building materials
3837 : 1976	Accessories for rigid steel conduits for electrical wiring
3854 : 1997	Switches for domestic and similar purposes
3961	Recommended current ratings for cables:
(Part 1) : 1967	Paper insulated lead sheathed cables
(Part 2) : 1967	PVC insulated and PVC sheathed heavy duty cables
(Part 3) : 1968	Rubber insulated cables
(Part 5) : 1968	PVC insulated light duty cables
4289	Specification for flexible cables for lifts and other flexible connections
(Part 1) : 1984	Elastomer insulated cables
(Part 2) : 2000	PVC insulated circular cables
4649 : 1968	Adaptors for flexible steel conduits
5571 : 2000	Guide for selection of electrical equipment for hazardous areas
5572 : 1994	Classification of hazardous areas (other than mines) having flammable gases and vapours for electrical installation
6946 : 1990	PVC insulated cables for working voltages upto and including 1100 V
8130 : 1984	Conductors for insulated electric cables and flexible cords
8623	Specification for low-voltage switchgear and controlgear assemblies:
(Part 1) : 1993/ IEC 60439-1 : 1985	Requirements for type-tested and partially type-tested assemblies
(Part 2): 1993/ EC 60439-2 : 1987	Particular requirements for busbar trunking systems (busway)
(Part 3) : 1993/ IEC 60439-3 1990	Particular requirements for : equipment where unskilled persons have access for their use

9537	Conduits for electrical installations
(Part 2) : 1981	Rigid steel conduits
(Part 3) : 1983	Rigid plain conduits of insulating materials
(Part 4) : 1983	Pliable self-recovering conduits of insulating materials
(Part 5) : 2000	Pliable conduits of insulating material
(Part 6) : 2000	Pliable conduits of metal or composite materials
(Part 8) : 2003	Rigid non-threadable conduits of aluminium alloy
11000 (Part2/ Sec1) : 1984 / IEC 695-2-1 : 1980	Fire hazard testing: Part 2 Test methods, Section 1 Glow-wire test and guidance
11353 : 1985	Guide for uniform system of marking and identification of conductors and apparatus terminals
13703 (Part 1) : 1993 /IEC 269- 1 : 1986	LV Fuses for voltages not exceeding 1000 V ac or 1500 V dc: Part 1
14255 : 1995	Aerial bunched cables for working voltages upto and including 1 100 V — Specification
14763 : 2000	Conduits for electrical purposes — Outside diameters of conduits for electrical installation and threads for conduits and fittings — Specification
14768 (Part 1) : 2000	Conduit fittings for electrical installations — Specification: Part 1 General requirements
14772 : 2000	General requirements for enclosures of accessories for household and similar fixed electrical installations — Specifications for an accessory or luminaries
14927	Cable trunking and ducting systems for electrical installations:
(Part 1) : 2001	General requirements
(Part 2) : 2001	Cable trunking and ducting systems intended for mounting on walls or Ceilings
14930	Conduit systems for electrical installations:
(Part 1) : 2001	General requirements
(Part 2) : 2001	Particular requirements — Conduit systems buried underground
SP 69 : 2000	Banking and related financial services — Information security guidelines

SECTION 10 SHORT-CIRCUIT CALCULATIONS

1 SCOPE

This Part 1/Section 10 covers guidelines and general requirements associated with circuit calculations, namely, short circuit calculations and voltage drop calculations for cables and flexible cords.

2 REFERENCES

The following Indian Standards have been referred in this Section:

IS No	*Title*
2086 : 1993	Carriers and bases used in rewirable type electric fuses for voltages upto 650V

9926 : 1981	Fuse wires used in rewirable type electric fuses upto 650 V
13703 (Part 2/ Sec 1) : 1993/ IEC 60269-2 : 1986	Specification for low-voltage fuses for voltages not exceeding 1 000 V ac or 1 500 V dc : Part 2 Fuses for use by authorized persons, Section 1 Supplementary requirements
13703 (Part 2/ Sec 2) : 1993/ IEC: 60269-2 : 1987	LV fuses for voltages not exceeding 1000 V ac or 1500 V dc Part 2 Fuses for use by authorized persons, Section 2 Examples of standardized fuses
IS/IEC 60898-1 : 2002	Electrical accessories—Circuit breakers for over protection for household and similar installations: Part 1 Circuit breakers for ac operation

SECTION 11 ELECTRICAL ASPECTS OF BUILDING SERVICES

1 SCOPE

This Part 1/Section 11 of the Code covers requirements for installation work relating to building services that use electric power.

NOTE — SP 7 ‘National Building Code of India’ should be referred for non-electrical aspects of building services.

2 REFERENCES

A list of Indian Standards related to building services is given at Annex A.

ANNEX A

(*Clause* 2)

LIST OF INDIAN STANDARDS RELATED TO BUILDING SERVICES

IS No	*Title*
1881 : 1998	Code of practice for indoor installation of public address systems
1882 : 1993	Code of practice for outdoor installation of public address system
2175 : 1988	Specification for heat sensitive fire detectors for use in automatic fire alarm system
2440 : 1975	Guide for daylighting of buildings
3103 : 1975	Code of practice for industrial ventilation
3043 : 1987	Code of practice for earthing
3362 : 1977	Code of practice for natural ventilation of residential buildings
3646 (Part 1): 1992	Code of practice for interior illumination: Part 1 General requirements and recommendations for welding interiors
7662 (Part 1): 1974	Recommendations for orientation of buildings: Part 1 Non-industrial buildings
8884 : 1978	Code of practice for the installation of electric bells and call system
8969 : 1978	Code of practice for installation and maintenance of impulse and electronic master and slave electric clock systems
14665 (Part 2/ Sec 1) : 2000	Electric traction lifts: Part 2 Code of practice for installation, operation and maintenance, Section 1 Passenger and goods lifts

14665 (Part 2/ Sec 2) : 2000	Electric traction lifts: Part 2 Code of practice for installation, operation and maintenance, Section 2 Service lifts
14665 (Part 3/ Sec 1) : 2000	Electric traction lifts: Part 3 Safety rules, Section 1 Passenger and goods lifts
14665 (Part 3/ Sec 2) : 2000	Electric traction lifts: Part 3 Safety rules, Section 2 Service lifts
SP 7 : 2005	National Building Code of India
SP 72 : 2010	National Lighting Code

SECTION 12 SELECTION OF EQUIPMENT

1 SCOPE

This Part 1/Section 12 of the Code covers general criteria for selection of equipment.

NOTE — This Part 1/Section 12 shall be read in conjunction with the Indian Standard/Codes on individual equipment.

SECTION 13 ERECTION AND PRE-COMISSIONING TESTING OF INSTALLATION

1 SCOPE

This Part 1/Section 13 of the Code covers general principles of erection of installation and guidelines on initial testing before commissioning.

2 REFERENCES

A list of relevant Indian Standards is given at Annex A.

ANNEX A

(*Clause* 2)

LIST OF INDIAN STANDARDS ON INSTALLATION

IS No.	*Title*
732 : 1989	Code of practice for electrical wiring installations
1255 : 1983	Code of practice for installation and maintenance of power cables upto and including 33 kV rating
1646 : 1997	Code of practice for fire safety of buildings (general): Electrical Installations
3043 : 1987	Code of practice for earthing
4051 : 1967	Code of practice for installation and maintenance of electrical equipment in mines
5571 : 2000	Guide for selection of electrical equipment for hazardous areas
8623 (Part 1) : 1993/ IEC 60439-1 : 1985	Specification for low-voltage switchgear and controlgear assemblies: Part 1 Requirements for type-tested and partially type-tested assemblies
10028 (Part 2) : 1981	Code of practice for selection, installation and maintenance of transformers:

	Part 2 Installation
14927 (Part 1) : 2001	Cable trunking and ducting systems for electrical installations : General requirements Cable trunking and ducting
(Part 2) : 2001	Cable trunking and ducting systems intended for mounting on walls or ceilings
14930	Conduit systems for electrical installations:
(Part 1) : 2001	General requirements
(Part 2) : 2001	Particular requirements — Conduit systems buried underground
15707 : 2006	Testing, evaluation, installation and maintenance of ac electricity meters — Code of practice

SECTION 14 EARTHING

1 SCOPE

This Part 1/Section 14 of the Code covers general requirements associated with earthing in electrical installations. Specific requirements for earthing in individual installations are covered in respective Parts of the Code.

NOTES

1 This Section shall be read in conjunction with the provisions of IS 3043.
2 Additional rules applying to earth leakage circuit-breaker systems are covered in Annex A.

2 REFERENCES

For further details, the following standards may be referred:

IS No	*Title*
732 : 1989	Code of practice for electrical wiring installations (*third revision*)
3043 : 1987	3043 : 1987 Code of practice for earthing (*first revision*)
IS 8437(Part 1) : 1993	Guide on effects of current passing through human body: Part 1 General aspects
IS 8437(Part 2) : 1993	Guide on effects of current passing through human body: Part 2 Special aspects
IS/IEC 60947-2 : 2006	Low voltage switchgear and controlgear: Part 2 Circuit breakers
IS/IEC 60947-4-1: 2002	Low-voltage switchgear and controlgear: Part 4 Contactors and motor-starters, Section 1 Electromechanical contactors and motorstarters

SECTION 15 LIGHTNING PROTECTION

1 SCOPE

1.1 This (Part 1/Section 15) of the Code covers guidelines on the basic electrical aspects of lightning protective systems for buildings and the electrical installation forming part of the system.

1.2 Additional guidelines if any, for specific occupancies from the point of lightning protection are covered in respective sections of the Code.

2 REFERENCES

The following Indian Standards on lightning protection may be referred for further details:

IS No.	*Title*
IS 2309 : 1989	Code of practice for the protection of buildings and allied structures against lightning (*second revision*)
IS 15086 : Part 5/ IEC 60099-5 : 1996	Surge arresters : Part 5 Selection and application recommendations

SECTION 16 PROTECTION AGAINST VOLTAGE SURGES

1 SCOPE

1.1 This Part 1/Section 16 covers the protection requirements in low voltage electrical installation of buildings.

1.2 This part does not cover the primary protection against lightning which is covered under Part 1/ Section 15.

2 REFERENCES

A list of Indian Standards relevant to protection against voltage surges is given at Annex A.

ANNEX A

(*Clause* 2)

LIST OF INDIAN STANDARDS RELEVENT TO PROTECTION AGAINST VOLTAGE SURGES

IS No	*Title*
732 : 1989	Code of practice for electrical wiring installations
2309 : 1989	Code of practice for the protection of buildings and allied structures against lightning
11548 : 1986	Capacitors for surge protection for use in voltage system above 650 V and up to 33 kV
15086 (Part 1) : 2001	Surge arresters: Part 1 Non-linear resistor type gapped surge arresters for ac systems
15086 (Part 3) : 2003/ IEC 60099-3 : 1990	Surge arresters: Part 3 Artificial pollution testing of surge arresters
15086 (Part 5) 2001/ IEC 60099-5 : 1996	: Surge arresters: Part 5 Selection and application recommendations
QC 420100 : 1994 /IEC QC 420100 : 1991	Varistors for use in electronic equipment — Sectional specification for surge suppression varistors
QC 420101 : 1994 /IEC QC 420101 : 1991	Varistors for use in electronic equipment specification for silicon carbide surge suppression varistors assessment level E
QC 420102 : 1993 /IEC QC 420102 : 1991	Varistors for use in electronic equipment — Blank detail specification for zinc oxide surge suppression varistors — Assessment level E

SECTION 17 GUIDELINES FOR POWER-FACTOR IMPROVEMENT

1 SCOPE

This Part 1/Section 17 of the Code covers causes for low power factor and guidelines for use of capacitors to improve the same in consumer installations.

1.2 Specific guidelines, if any, for individual installation on improvement of power factor are covered in the respective sections of the Code.

2 REFERENCE

The following Indian Standard on power factor improvement may be referred for details:

IS 7752 (Part 1) : 1975	Guide for the improvement of power factor in consumer installations: Part 1 Low and medium supply voltages

SECTION 18 ENERGY EFFICIENCY ASPECTS

1 SCOPE

This Part 1/Section 18 of the Code covers the aspects to be considered for selection of equipment from energy conservation point of view and guidance on energy audit.

2 REFERENCE

The following Indian Standard has been referred to in this Section:

IS No	*Title*
IS 12615 : 2004	Energy efficient induction motors — Three phase squirrel cage

SECTION 19 SAFETY IN ELECTRICAL WORK

1 SCOPE

This Part 1/Section 19 of the Code covers guidelines on safety procedures and practices in electrical work.

2 REFERENCES

A list of Indian Standards on safety in electrical work are as follows:

IS No.	*Title*
2551 : 1982	Specification for danger notice plates
IS 5216 (Part 1) : 1982	Recommendations on safety procedures and practices in electrical work: Part 1 General
IS 5216 (Part 2) : 1982	Recommendations on safety procedures and practices in electrical work: Part 2 Life saving techniques
8923 : 1978	Warning symbol for dangerous voltages
SP 31 : 1986	Method of treatment of electric shock

SECTION 20

1 SCOPE

This Part 1/Section 20 gives frequently referrred tables in electrical engineering work.

2 REFERENCES

The following Indian Standards may be referred for further details:

IS No.	*Title*
3961	Recommended current ratings for cables:
(Part 1) : 1967	Paper insulated lead sheathed cables
(Part 2) : 1967	PVC insulated and PVC sheathed heavy duty cables
(Part 3) : 1968	Rubber insulated cables
(Part 4) : 1968	Polyethylene insulated cables
IS 11955 : 1987	Preferred current ratings

NATIONAL ELECTRICAL CODE
PART 3

SECTION 1 DOMESTIC DWELLINGS

1 SCOPE

This Part 3/Section 1 of the Code covers requirements for electrical installations in domestic dwellings.

2 REFERENCES

This Part 3/Section 1 of the Code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
3646 (Part 2) : 1966	Code of practice for interior illumination: Part 2 Schedule for values of illumination and glare index
7689 : 1989	Guide for the control of undesirable static electricity
8061 : 1976	Code of practice for design, installation and maintenance of service lines up to and including 650 V

SECTION 2 OFFICE BUILDINGS, SHOPPING AND COMMERCIAL CENTRES AND INSTITUTIONS

1 SCOPE

This Part 3/Section 2 of this Code covers requirements for electrical installations in office buildings, shopping and commercial centres and educational and similar institutional buildings.

2 REFERENCES

This Part 3/Section 2 of the Code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
3646 (Part 2) : 1966	Code of practice for interior illumination: Part 2 Schedule for values of illumination and glare index
8061 : 1976	Code of practice for design, installation and maintenance of service lines up to and including 650 V
15707 : 2006	Testing, evaluation, installation and maintenance of ac electricity meters — Code of practice

SECTION 3 RECREATIONAL, ASSEMBLY BUILDING

1 SCOPE

1.1 This Part 3/Section 3 of the Code covers requirements for electrical installation in buildings, such as those meant for recreational and assembly purposes.

1.2 This Part 3/Section 3 does not cover sports buildings.

2 REFERENCES

This Part 3/Section 1 of the Code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
8061 : 1976	Code of practice for design, installation and maintenance of service lines up to and including 650 V
SP 72 : 2010	National Lighting Code

SECTION 4 MEDICAL ESTABLISHMENTS

1 SCOPE

This Part 3/Section 4 of this Code applies to the electrical installations in medical establishments. This Section is also applicable to rooms for veterinary medicine and dental practice.

2 REFERENCES

This Part 3/Section 4 of the code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
3646 (Part 2) : 1966	Code of practice for interior 1966 illumination : Part 2 Schedule for values of illumination and glare index
7689 : 1989	Guide for the control of undesirable static electricity
8061 : 1976	Code of practice for design, installation and maintenance of service lines up to and including 650 V
13450 (Part 1) : 1994 /IEC Part 1 60601-1 : 1988	Medical electrical equipment : General requirements for safety
14665 (Part 1) :	Electric traction lifts : Part 1 2000 Guidelines for outline dimensions of passenger, goods, service and hospital lifts
SP 7 : 2005	National Building Code of India
SP 72 : 2010	National Lighting Code

SECTION 5 HOTELS

1 SCOPE

This Section 5 of the Code covers requirements for electrical installations in buildings such as hotels and lodging houses.

2 REFERENCES

This Part 3/Section 5 of the Code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
3646 (Part 2) : 1966	Code of practice for interior illumination: Part 2 Schedule for values of illumination and glare index
8061 : 1976	Code of practice for design, installation and maintenance of service lines up to and including 650 V
IS/IEC 60309-1 :	Plugs, socket-outlets and couplers 2002 for industrial purposes: Part 1 General requirements (*first revision*)
IS/IEC 60309-2 :	Plugs, socket-outlets and couplers 2002 for industrial purposes: Part 2 Dimensional interchangeability requirements for pin and contact tube accessories (*first revision*)
SP 7 : 2005	National Building Code of India
SP 72 : 2010	National Lighting Code

SECTION 6 SPORTS BUILDINGS

1 SCOPE

This Part 3/Section 6 of the Code covers requirements for electrical installations in sports buildings and stadia, indoor and outdoor.

SECTION 7 SPECIFIC REQUIREMENTS FOR ELECTRICAL INSTALLATIONS IN MULTISTORIED BUILDINGS

1 SCOPE

1.1 This Part 3/ Section 7 is intended to cover specific requirements for electrical installations in multistoried buildings.

1.2 The requirements specified here are in addition to those specified in respective sections of the Code, and are specifically applicable for buildings more than 15 m in height.

2 REFERENCES

This Part 3/Section 7 of the Code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
SP 7 : 2005	National Building Code of India
2309 : 1989	Code of practice for the protection of buildings and allied structures against lightning
10028 (Part 2) :	Code of practice for selection, 1981 installation and maintenance of transformers: Part 2 Installation

NATIONAL ELECTRICAL CODE
PART 4

PART 4 ELECTRICAL INSTALLATIONS IN INDUSTRIAL BUILDINGS

1 SCOPE

1.1 This Part 4 of the Code covers the guidelines for design and construction of electrical installations in industrial buildings.

1.2 This Part 4 does not cover specific areas in industrial sites, such as office buildings, workers rest rooms, medical facilities, canteen annex e, etc, for which requirements stipulated in the relevant sections of Part 3 of the Code apply.

1.3 This Part 4 also does not cover locations in industrial sites that are by nature hazardous for which the provisions of Part 7 of the Code apply.

2 REFERENCES

This Part 4 should be read in conjunction with the Indian Standards listed at Annex A.

ANNEX A

(*Clause* 2)

IS No.	*Title*
732 : 1989	Code of practice for electrical wiring installations
1646 : 1997	Code of practice for fire safety of buildings (general): Electrical installations
2726 : 1988	Code of practice for fire safety of industrial buildings: Cotton ginning and pressing (including cotton seed delintering) factories
3058 : 1990	Code of practice for fire safety of industrial buildings: Viscose rayon yarn and/or staple fibre plants
3079 : 1990	Code of practice for fire safety of industrial buildings: Cotton textile Mills
3594 : 1991	Code of practice for fire safety of industrial buildings: General storage and warehousing including cold storage
3595 : 2002	Code of practice for fire safety of industrial buildings : Coal pulverizers and associated equipments
3836 : 2000	Fire safety of industrial buildings — Jute mills — Code of practice
4226 : 1988	Code of practice for fire safety of industrial building: Aluminium/ Magnesium powder factories
4886 : 1991	Code of practice for fire safety of industrial buildings: Tea factories
6329 : 2000	Code of practice for fire safety of industrial buildings — Saw mills and wood works
6665 : 1972	Code of practice for industrial lighting
7689 : 1989	Guide for the control of undesirable static electricity
9109 : 2000	Fire safety of industrial buildings — Pradio frequency paint and varnish factories — Code of practice
9080 (Part 2/ Sec 2) : 1980	Safety requirements in electro- heat installations: Part 2 Particular requirements for resistance heating equipment, Section 2 Protection in indirect resistance heating installations
9080 (Part 2/ Sec 4) : 1981	Safety requirements in electro- heat installations: Part 2 Particular requirements for resistance heating equipment, Section 4 Protection in installations used for drying varnishes and other similar products
IS/IEC 60519-1 : 1984	Safety in electroheat installation: Part 1 General requirements
IS/IEC 60519-3 :1988	Safety in electroheat installations Part 3 Particular requirements for induction and conduction heating and induction melting installations
IS/IEC 60519-5 :1980	Safety in electroheat installation Part 5 Specification for safety in plasma installation
IS/IEC 60519-9 : 1987	Safety in electroheat installations: Part 9 Particular requirements for high-frequency dielectric heating installations
IS/IEC 60947-1 : 2004	Specification for low-voltage switchgear and controlgear: Part 1 General rules
SP 7 : 2005	National Building Code of India
SP 72 : 2010	National Lighting Code

NATIONAL ELECTRICAL CODE
PART 5

SECTION 1 PUBLIC LIGHTING INSTALLATIONS

1 SCOPE

1.1 This Part 5/Section 1of the Code covers requirements of public lighting installations in order to provide guidance to those concerned with the preparation of public lighting schemes, their installation and maintenance (*see also* SP 72).

1.2 This Section deals only with electric lighting sources and does not include gas or other types of lighting.

1.3 This Section also does not cover exterior lighting installations, such as those which apply for parks, shopping enclaves, flood lighting of routes and structures of architectural importance, etc.

2 REFERENCES

This Part 5/Section 1 of the Code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
SP 72 : 2010	National Lighting Code
1885 (Part 16/ Sec 2) : 1968 16	Electrotechnical vocabulary : Part Lighting, Section 2 General illumination lighting fittings and lighting for traffic and signalling
1944 (Parts 1 and 2) : 1970	Code of practice for lighting of public thoroughfares: Part 1 General principles; Part 2 Lighting of main roads (*first revision*)

SECTION 2 TEMPORARY OUTDOOR INSTALLATIONS

1 SCOPE

This Part 5/Section 2 of the Code covers the requirements for outdoor electrical installations of temporary use.

2 REFERENCES

This Part 5/Section 2 of the code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
5613 (Part 1/ Sec1)1985	Code of practice for design, installation and maintenance of overhead power lines: Part 1 Lines up to and including 11 kV, Section 1 Design

5613 (Part 1/ Sec 2)1985	Code of practice for design, installation and maintenance of overhead power lines: Part 1 Lines up to and including 11 kV, Section 2 Installation and maintenance
SP 7 : 2005	National Building Code of India

SECTION 3 PERMANENT OUTDOOR INSTALLATIONS

1 SCOPE

1.1 This Part 5/Section 3 of this Code covers requirements for permanent outdoor installations, for operations of equipment and machinery therein used for the purposes such as:

a) Winning, stacking and primary processing;
b) Secondary processing;
c) Transport conveying;
d) Associated pumping and water supply systems;
e) Haulage trucks;
f) Power generating and distribution systems;
g) Control, signal supervisory and communication system; and
h) Ancillaries.

1.2 This Section does not cover temporary and provisional places of work of durations less than 6 months for which reference shall be made to Part 5/ Section 2 of this Code.

NOTE — However this Section shall be applicable to building sites and earth-moving sites as far as the equipment used therein are similar to those used in surface mining application.

2 REFERENCES

This Part 5/Section 3 of this Code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
1255 : 1983	Code of practice for installation and maintenance of paper insulated power cables (up to and including 33 kV)
10028 (Part 2) : 1981	Code of practice for selection, installation and maintenance of transformers : Part 2 Installation
IS/IEC 60947(Part 1)	Specification for low voltage chgear and controlgear: Part 1 General rules

NATIONAL ELECTRICAL CODE
PART 6

PART 6 ELECTRICAL INSTALLATIONS IN AGRICULTURAL PREMISES

1 SCOPE

1.1 This Part 6 of the Code covers requirements for the fixed electrical installations in agricultural premises excluding dwellings or similar locations situated in these premises.

1.2 This Part applies to premises where livestock are present.

NOTE — Examples of such premises are stables, cow houses, sheepfolds, stalls, hen-houses, piggeries, etc.

NATIONAL ELECTRICAL CODE
PART 7

PART 7 ELECTRICAL INSTALLATIONS IN HAZARDOUS AREAS

1 SCOPE

1.1 This Part 7 of the Code covers recommendations for electrical installations in chemical industries, petroleum refineries and other similar areas where hazards of explosion due to gases and vapours exist, and in which flammable gases and volatile liquids are processed, stored, loaded, unloaded or otherwise handled.

1.2 In addition to the recommendations given in this Part 7, the electrical installations in hazardous areas shall comply, with the requirements for industrial installation in non-hazardous areas laid down in Part 4 of this Code.

1.3 This Part does not apply to installations in hazardous areas having ignitable dusts and fibres. As distinct from the hazardous areas on the surface, environmental conditions in mines demand special consideration. This Part of the Code does not include provisions for installations in underground mines.

1.4 In any plant installation, irrespective of size, there may be numerous sources of ignition apart from those associated with electrical apparatus. Precautions may be necessary to ensure safety but guidance on this aspect is outside the scope of this Part.

NOTE — Some examples of industrial locations which require application of the guidelines in this Part are given in Annex A.

2 REFERENCES

A list of standards for electrical equipment for explosive atmospheres is given at Annex B. Some of these standards deal with particular construction techniques, others with aspects of standardization which are relevant to more than one technique.

ANNEX B

(*Clause* 2)

INDIAN STANDARDS FOR ELECTRICAL EQUIPMENT FOR USE IN EXPLOSIVE ATMOSPHERES

IS No	*Title*
1554 (Part 1) : 1988	PVC insulated (heavy duty) electric cables: Part 1 For working voltages up to and including 1 100 V
1646 : 1997	Code of practice for fire safety of buildings (general): Electrical Installations
2309 : 1989	Code of practice for the protection of buildings and allied structures against lightning
5571 : 2009	Guide for selection and installation of electrical equipment for hazardous areas
5572 : 2009	Classification of hazardous areas (other than mines) having flammable gases and vapours for electrical installation
7689 : 1989	Guide for the control of undesirable static electricity
7724 : 2004/ IEC 60079-5	Electrical apparatus for explosive gas atmoshperes — Powder filling “q”
7820 : 2004/ IEC 60079-4	Electrical apparatus for explosive gas atmospheres — Method of test for ignition temperature
9570 : 1980/ IEC 60079-12 : 1978	Classification of flammable gases or vapours with air according to their maximum experimental safe gaps and minimum igniting currents
9735 : 2003/ IEC 60079-1-1 : 2002	Electrical apparatus for explosive gas atmospheres — Flameproof enclosures “d” — Method of test for ascertainment of maximum experimental safe gap
IS/IEC 60079-0 : 2004	Explosive atmospheres: Part 0 General requirements
IS/IEC 60079-1 : 2007	Explosive atmospheres: Part 1 Equipment protection by flameproof enclosures “d”
IS/IEC 60079-2 2007	: Explosive atmoshperes: Part 2 Equipment protection by pressurized enclosures “p”
IS/IEC 60079-6 : 2007	Explosive atmospheres : Part 6 Equipment protection by oilimmersed “o”
IS/IEC 60079-7 : 2006	Explosive atmoshpheres : Part 7 Equipment protection by increased safety ‘e’
IS/IEC 60079-11: 2006	Explosive atmospheres : Part 11 Equipment protection by intrinsic safety “i”
IS/IEC 60079-15: 2005	Explosive atmospheres: Part 15 Construction, test and marking of type of protection “n” electrical apparatus
IS/IEC 60079-18 : 2004	Explosive atmospheres: Part 18 Construction, test and marking of type of protection encapsulation “m” electrical apparatus

NATIONAL ELECTRICAL CODE
PART 8

PART 8 SOLAR PHOTOVOLTAIC (PV) POWER SUPPLY SYSTEMS

1 SCOPE

This Part 8 of the Code covers essential requirements for electrical installations for power supply system based on the solar photovoltaic energy including systems with ac modules.

2 REFERENCES

This Part 8 of the code should be read in conjunction with the following Indian Standards:

IS No.	*Title*
2309 : 1989	Code of practice for the protection of buildings and allied structures against lightning
3034 : 1993	Fire safety of industrial buildings: Electrical generating and distribution stations — Code of practice
3043 : 1987	Code of practice for earthing
8623 (Part 1) : 1993	Specification for low voltage switchgear and controlgear assemblies: Part 1 Requirements for type-tested and partially type tested assemblies
8623 (Part 2) : 1993	Specification for low voltage switchgear and controlgear assemblies: Part 2 Particular requirements for busbar trunking systems (bus ways)
8623 (Part 3) : 1993	Specification for low voltage switchgear and controlgear assemblies: Part 3 Particular requirements for equipment where unskilled persons have access for their use
IS 14153 : 1994	Guide for general description of photovoltaic(PV) power generating Systems