ELECTRICITY RULES, 1956

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S.R.O. 1455, dated 26th June, 1956 1.- In exercise of the powers conferred by Sec. 37 of the Indian Electricity Act, 1910 (IX of 1910), the Central Electricity Boardhereby makes the following rules, the same having been previously published, as required by sub-section (1) of Section 38 of the said Act, namely:

CHAPTER 1 PRELIMINARY

1. Short title and commencement :-

(1) These rules may be called the Indian Electricity Rules. 1956.
(2) They shall come into force at once.

2. Definitions :-

(1) In these rules, unless the context otherwise requires,-
(a) "the Act" means the Indian Electricity Act. 1910;
(aa) "lightning arrestor" means a device which has the property of diverting to earth any electrical surge of excessively high amplitude applied to its terminals and is capable of inter rupting follow current if present and restoring itself thereaf ter to its original operating conditions :
(aaa) "linked switch" means a switch with all the poles mechani- cally linked so as to operate simultaneously :
(ab) "live" means electrically charged ;
(ac) "metallic covering" means mechanically strong metal cover- ing surrounding one or more conductors ;
[1](aca) meter means a set of integrating instruments used lo measure the amount of electrical energy supplied or the quantity of electrical energy contained in the supply, in a given time, which include whole current meter and metering equipment such as current transformer, capacitor voltage transformer or potential or voltage transformer with necessary wiring and accessories.
(ad) "neutral conductor" means that conductor of a multi-wire system, the voltage of which is normally intermediate be- tween the voltages of the other conductors of the system and shall also include return-wire of the single-phase system :
(ae) "non-licensee" means a person generating, supplying, trans- mitting or using energy to whom any of the provisions of Part 3 of the Act apply ;
(af) "occupier" means the owner or person in occupation of the premises where energy is used or proposed to be used ;
(aff) "officer appointed to assist the Inspector" means an officer appointed under rule 4A,
(ag) "ohm" means a unit of electric resistance and is the resis- tance offered to an unvarying electric current by a column of mercury at the temperature of melting ice 14.4521 grammes in mass of an uniform cross-sectional area and of a length of 106.3 centimetres : the aforesaid unit represented by the resistance between the terminals of the instrument marked "Government of India Ohm Standard Verified" to the passage of an electric current when the coil of wire, forming part of the aforesaid instrument and connected to the afore- said terminals is in all parts at the temperature of 30C;
(ah) open sparking" means sparking which owing to the lack of adequate provisions for preventing the ignition of inflamma- ble gas external to the apparatus would ignite such

inflam- mable gas:
(ai) "overhead line" means any electric supply-line which is placed above ground and in the open [air] but excluding live rails of a traction system ;
(aj) "owner", "agent" and "manager" of a mine have the same meanings as are assigned to them in Mines Act, 1952:
(ak) "portable apparatus" means an apparatus which is so de- signed to be capable of being moved while in operation :]
(al) "portable hand lamp" means a portable light-fitting provided with suitable handle, guard and flexible cord connected to a Plug.
(am) "section" means a section of the Act :
(an) "span" means the horizontal distance between two adjacent, upporting points of an overhead conductor:
(ao) "street box" means a totally enclosed structure either above or below ground containing apparatus for transforming, switching, controlling or otherwise regulating energy ;
(ap) "supplier" means a licensee, a non-licensee or any other supplier of energy [including the Government]:
(aq) "switch" means a manually-operated device for opening and closing or for changing the connection of a circuit;
[(aqa) "switch board" means an assembly including the switchgear for the control of electrical circuits, electric connections and the supporting frame:]
(ar) "switchgear" shall denote switches, circuit breakers, cut- outs and other apparatus used for the operation, regulation and control of circuits ;
(as) "system" means an electrical system in which all the con- ductors and apparatus are electrically connected to a com- mon source of electric supply :
(at) "transportable apparatus" means apparatus which Is oper- ated in a fixed position but which is so designed as to be capable of being moved readily from one place to another;
(au) "volt" means a unit of electro-motive force and is the electric pressure which, when steadily applied to a conductor, the resistance of which is one ohm, will produce a current of one ampere;
(av) "voltage" means the difference of electric potential measured in volts between any two conductors or between any part of either conductor and the earth as measured by a suitable voltmeter and is said to be- "low" where the voltage does not exceed 250 volts under normal conditions subject, however, to the percentage variation allowed by these rules ; "medium" where the voltage does not exceed 650 volts under normal conditions subject, however, to the per- centage variation allowed by these rules ; "high" where the voltage does not exceed 33,000 volts under normal conditions subject, however, to the per- centage variation allowed by these rules ; "extra high" where the voltage exceeds 33,000 volts under normal conditions subject, however, to the per- centage variation allowed by these rules.
(b) "accessible" means within physical reach without the use of any appliance or special effort ;
(c) "ampere" means a unit of electric current and is the unvary- ing electric current which when passed through a solution of nitrate of silver in water, in accordance with the specifi- cation set out in Annexure I, deposits silver at the rate of 0.001118 of a gramme per second ; the aforesaid unit is equivalent to the current which, in passing through the suspended coil of wire forming part of the instrument marked "Government of India Ampere Standard Verified", when the suspended coil is in its sighted position, exerts a force, which is exactly balanced by the force exerted by gravity in Calcutta on the counter- balancing iridioplatinum weight of the said instrument:
(d) "annexure" means an annexure to these rules :
(e) "apparatus" means electrical apparatus and includes all machines, fittings, accessories and appliances in which conductors are used:
2[(ee) "authorized person" means a person authorized under rule 3;]

(f) "bare" means not covered with insulating material;
(g) "cable" means a length of insulated single conductor (solid or standard) or of two or more such conductors each pro- vided with its own insulation, which are laid up together. Such insulated conductor or conductors may or may not be provided with an overall mechanical protective covering ;
(g-i) "flexible cable" means cable consisting of one or more cores each formed of a group of wires, the diameter and the physical properties of the wires and the insulating material being such as to afford flexibility ;
(h) "circuit" means an arrangement of conductor or conductors for purpose of conveying energy and forming a system or a branch of a system ;
(i) "circuit breaker" means a device, capable of making and breaking the circuit under all conditions, and unless other- wise specified, so designed as to break the current automat- ically under abnormal condition;
(j) "concentric cable" means a composite cable comprising an inner conductor which is insulated and one or more outer conductors which are insulated from one another and are disposed over the insulation, of, and more or less around, the inner conductor;
(k) "conductor" means any wire, cable, bar, rail or plate used for conducting energy and so arranged as to be electrically connected to a system :
(l) "conduit" means rigid or flexible metallic tubing or mechan- ically strong and fire-resisting non-metallic tubing into
(m) "covered with insulating material" means adequately covered with insulating material of such quality and thickness as to prevent danger:
(n) "cut-out" means any appliance for automatically interrupt- ing the transmission of energy through any conductor when the current rises above a pre-determined amount, and shall also include fusible cut-out -,
(o) "danger" means danger to health or danger to life or any part of body from shock, burn, or other injury to person, or property, or from fire or explosion, attendant upon the generation, transmission, transformation, conversion, dis- tribution or use of energy ;
(p) "dead" means at or about earth potential and disconnected from any live system : Provided that apparatus separated from a live conductor by a spark gap shall not be deemed to be "dead";
(q) "earthed" or "connected with earth" means connected with the general mass of earth in such manner as to ensure at all times an immediate discharge of energy without danger ;
(r) "earthing system" means an electrical system in which all the conductors are earthed;
3[(s)* * *]
(t) "enclosed sub-section" means any premises or enclosure or part thereof, being large enough to admit the entrance of a person after the apparatus therein is in position, containing apparatus for transforming or converting energy to or from a voltage at or above medium voltage, (other than transform- ing or converting solely for the operation of switchgear or instruments) with or without any other apparatus for switching, controlling or otherwise regulating the energy. and includes the apparatus therein;
(u) "enclosed switch station" means any premises or enclosure or part thereof, being large enough to admit the entrance of a person after the apparatus therein is in position, contain- ing apparatus for switching, controlling or otherwise regu- lating energy at or above medium voltage but not for transforming or converting energy (other than for transform- ing or converting solely for the operation of switchgear or instruments), and includes the apparatus therein ;
4[(uu) "Flameproof Enclosure" means an enclosure for electrical machinery or apparatus that will withstand, when the covers or other access doors are properly secured, an internal
(v) "guarded" means covered, shielded, fenced or otherwise protected by means of suitable casings, barrier, rails or metal screens to remove the possibility of dangerous contact or approach by persons or objects to a point of danger ;
5[(vv) "hand-held portable apparatus" means an apparatus which is so designed as to be capable of being held in the hands and moved while connected to supply of electricity :]

(w) "Inspector" means an electrical inspector appointed under Section 36:
(x) "Inspector of Mines means an inspector appointed under Mines Act, 1952;
(y) "installation" means any composite electrical unit used for the purpose of generating, transforming, transmitting, con- verting, distributing or utilizing energy :
(z) "intrinsically safe" as applied to apparatus or associated circuits shall denote that any sparking that may occur in normal working is incapable of causing explosion of inflam- mable gas or vapour;
[6] (zz) Increased safety type e means a method of protection by which additional measures are applied so as to give increased security against the possibility of excessive temperatures and of occurrence of arcs and sparks in apparatus which does not produce arcs or sparks in normal service.
(2) All other words and expressions used herein and not defined shall have the meanings respectively assigned to them in the Act.

1. In Rule 2, sub-rule (1), clause (aca) shall be inserted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazetteof India, Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

2. Inserted by G.S.R. 1723. dated 21st November, 1977 (w.e.f. 31st December, 1977).

3. Omitted by G.S.R. 523. dated 28th March. 1966, published in the Gazette of India, Pt. II. Sec. 3 (i), dated 9th April, 1966

4. Inserted by G.S.R. 45, dated 1st January, 1993.

5. Inserted by G.S.R. 336. dated 28th March, 1988.

6. In Rule 2 sub-rule (1) clause (zz) shall be inserted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazetteof India, Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

3. Authorization :-

(1) A supplier or consumer, or the owner, agent or manager of a mine, or the agent of any company operating in an oilfield or the owner of drilled well in an oilfield or a contractor for the time being under contract with supplier or a consumer to carry out duties incidental to the generation, transformation, transmission, conversion, distribution or use of energy may authorize any person for the purpose of any or all of the following, namely, sub-rule (2) of rule 36, Cl. (a) of sub-rule (1) of rule 51, Cl. (a) of sub-rule (1) [and [[1]"clauses (h) and (i) of sub-rule (2) of Rule 64"] sub-rule (2) of rule 110, sub-rules (1) and (4) of rule 121, sub-rule (4) of rule 123, rule 124 and sub-rule (8) of rule 125.
[2][(2) No persons shall be authorised under sub-rule (1) unless he is competent to perform the duties assigned to him and possesses either an appropriate certificate of competency or permit to work.]
[3][(2-A)
(a) No person shall be authorized to operate or undertake maintenance of any part [4][or whole] of a generating station of capacity 100 MW and above together with the associated sub-station unless he is adequately qualified and has successfully undergone the type of training in Annexure XIV: Provided that the provisions contained in this sub-rule shall have effect in respect of the persons already authorized to operate or undertake [5][6 years 2 months] from the date this rule comes into force.
(b) The appropriate Government may. on the recommendations of the owner of such generating station, relax the conditions stipulated in Cl. (a) of this sub-rule for any engineer and such other persons who have already sufficient experience in the operation and maintenance of a generating station.
(c) The owner of generating station, in consultation with Central Electricity Authority, may alter the duration and manner of training in respect of those persons who have been

already engaged in the operation and maintenance of a generating station or a sub-scation.
[6][(2-B) The provisions contained in rule 3 (2-A) will also be applicable in respect of other sub-stations of 132 KV and above from a date to be specified by the appropriate Government but such a date shall not be later than 3 years from which this rule comes into force].
(3) No person shall be deemed to be authorized under sub-rule (1) unless his name has been entered in a list maintained at the office or premises of the person authorizing him. and giving the purposes for which such person is authorized and the entry has been attested by the authorized person and the person authorizing him.
(4) Every list maintained under sub-rule (3) shall be produced before an Inspector [7][or any officer of a special rank and class appointed to assist the Inspector] when required.
[8][(5) An Inspector may cancel or amend, in such manner as he considers necessary, any authorization made under sub-rule (1).]
[(6) In every registered factory where more than 250 KW of electrical load is connected, there shall be a person authorised by the management of the factory for ensuring the observance of the safety provisions laid under the Act and the rules made thereunder, who shall periodically inspect such installation, get them tested and keep a record thereof and such records shall be made available to the Inspector [7][or any officer of a specified rank and class appointed to assist the Inspector], if and when required].
[10] (7) All suppliers of electricity including generating companies, transmission companies and distribution companies shall appoint a safety officer for proper observance of safety measures in their organisation in construction operation and maintenance of power station, sub-stations, transmission and distribution lines.

1. Substituted for "Clause (e) and (f) of sub-rule (2) of rule 64", by the "Indian Electricity (Amendment-1) Rules, 2000".

2. Substituted by G.S.R. 358. dated 30th April, 1987.

3. Inserted by G.S.R. 461, dated 24th April, 1981. published in the Gazette of India Pt. II. Sec. 3 (i). dated 9th May, 1981.

4. For the words "of whole" read "or whole" by G.S.R. 836. dated 28th August, 1981, published in the Gazette of India, Pt. II, Sec. 3 (i). dated 12th September. 1981.

5. Substituted by G.S.R. 481. dated 10th June. 1987 (w.e.f. 20th June, 1987), for the figure and word "5 years".

6. Inserted by G. S. R. 730, dated 7th September, 1989 tw.e.f. 30th September. 1989).

7. Inserted by G.S.R. 466, dated 18th July, 1991 (w.e.f. 17th August. 1991).

8. Inserted by G.S.R. 523, dated 28th March, 1966 (w.e.f. 9th April, 1966).

10. In Rule 3, sub-rule (7), shall be inserted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazette of India, Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

CHAPTER 2 INSPECTORS

4. Qualifications of Inspectors :-

[[1] No person shall be appointed to be an Inspector unless-
(a) he possesses a degree in electrical engineering or its equiv- alent from a recognised University or Institution: and
(b) he has been regularly engaged for a period of at least eight years in the practice of electrical engineering, of which not less than two years have been spent in an electrical or mechanical engineering workshop; or in generation or trans- mission or distribution of electricity, or in the administration of the Act and these rules, in a position of responsibility

: Provided that the appropriate Government may, for a period of seven years commencing on the date the Indian Electricity (Amendment-4) Rules, 1986 are brought into force, also appoint a person possessing recognised Diploma in Electrical Engineering and having prescribed experience to be an Inspector in respect of low and medium voltage installations only.]

1. Substituted by G.S.R. 772, dated 5th September, 1986 (w.e.f. 20th September, 1986). for the rule as amended vide G.S.R. 1723, dated 21st November, 1977.

4A. Appointment of officers to assist Inspectors :-

[[12][(1)] The appropriate Government may, by notification In the official Gazette appoint as many officers as it thinks fit to assist an Inspector.
[3][(2) The appropriate Government may, by a separate notification in the official Gazette, authorize certain officers appointed under sub-rule (1), for the purposes of [4][sub-rules (4) and (6) of rule 3,] sub-rules (3) and (4) of rule 5, rule 9 and rule 10?, Cl. (c) of sub-rule (1) of rule 32, Cl; (b) of sub-rule (1) and Cl. (c) of sub-rule (2) of rule 46[5][sub-rule (1) of rule 49, [4] [sub-rule (3) of rule 51, sub-rule (3) of rule 59,] sub-rule (6) of rule 61 and Cl. (b) of sub-rule (5) of rule 67.]

1. Inserted by G.S.R. 523. dated 28th March. 1966, published in the Gazette of India, Pt. II Sec. 3 (i). dated 5th April, 1966.

2. Re-numbered by G.S.R. 1723. dated 21st November. 1977.

3. Inserted by 1977

4. Inserted by G.S.R. 466, dated 18th July. 1991 (w.e.f. 17th August, 1991).

5. Substituted by G.S.R. 29, dated 24th December, 1983, published in Gazette of India. Pt. II. Sec. 3 (i). No. 2. dated 14th January, 1984, for the words, brackets, figures and letters "sub-rule (1) of rule 49 and sub-rule (6) of rule 61".

4B. Qualifications of officers appointed to assist the Inspec- tors :-

[[12][(1)] No person shall be appointed as an officer to assist an Inspec- tor, unless,-
(a)
(i) he possesses a Degree in Electrical Engineering or its equiv- alent from a recognised University or Institution ; and
(ii) he has been regularly engaged for a period of at least three years in the practice of electrical engineering, of which not less than one year has been spent in an electrical or mechan- ical engineering workshop or in generation or transmission or distribution of electricity or in the administration of the Act and these rules, in a position of responsibility.]
(b)
(i) he possesses a diploma in electrical engineering or its equiv- alent from a recognised institution ; and
(ii) he has been regularly engaged for a period of at least six years in the practice of electrical engineering, of which not less than two years have been spent in an electrical or mechanical engineering workshop or in generation or trans- mission or distribution of electricity or in the administration of the Act and these rules, in a position of responsibility.]
: Provided that the appropriate Government may relax the requirements of experience in case of officers otherwise well qualified.
[3][(2) [4]The persons appointed under rule 4A shall undergo such training as the appropriate Government may consider it necessary for the purpose and such training shall be completed to the satisfaction of the appropriate Government.]
[5] [(3) The appropriate Government may relax requirements of practical experience in case of officers otherwise found suitable but a notification under sub-rule (2) of rule 4A in case

of such officers shall be issued only after they have acquired the experience as required by sub-rule (1)].

1. Substituted by G.S.R. 772, dated 5th September. 1986 (w.e.f. 20th September. 1986). for the rule as amended by G.S.R. 527, published in the Gazette of India. Pt. II.Sec 3 (0 dated 31st December, 1975.

2. Original C1s. (a) and (b) re-numbered as Cls. (a) and (b) of sub-rule (1) vide G.S.R. 730 dated 7th September. 1989 (w.e.f. 30th September. 1989).

3. Cl. (c) ins. by G.S.R. 358, dated 30th April. 1987.

4. Cl. (c) re-numbered as sub-rule (2) by G.S.R. 730. dated 7th September. 1989 (w.e.f. 30th September, 1989).

5. Inserted by G.S.R. 730. (w.e.f. 30th September. 1989).

5. Entry and inspection :-

(1) Any Inspector or any officer appointed to assist an Inspector may enter, inspect and examine any place, carriage or vessel in which he has reason to believe that there is any appliance or apparatus used in the generation, transmission, transformation, conver- sion, distribution or use of energy and may carry out tests therein.
(2) Every supplier, consumer, owner and occupier shall afford at all times reasonable facilities to any such Inspector or officer to make such examinations and tests as may be necessary to satisfy himself as to the due observance of the provisions of the Act, the terms of the licence (if any) and these rules.
(3) Every supplier and every owner of a generating station or of a high or extra-high voltage installation shall if required so to do by an Inspector [1][or any officer appointed to assist the Inspector and [2][authorized under rule 4A]] provide reasonable means for carrying out all tests. prescribed by or under the Act, of the appliances or apparatus used for the supply or use of energy by him, as the case may be.
(4) An Inspector, or any officer appointed to assist an Inspector and [3][authorized under sub-rule (2) of rule 4A], may serve an order in the form set out in Annexure IX, upon any supplier, consumer, owner or occupier, calling upon him to comply with any specified rule and the person so served shall thereupon comply with the order within the period named therein, and shall report in writing to the Inspector [4] [or the officer serving the order, as the case may be, when the order is complied with:] Provided that, if within the period specified in the aforesaid order an appeal is filed against the order, the appellate authority may suspend its operation pending the decision of the appeal.

1. Inserted by G.S.R. 522, dated 17th March, 1970.

2. Substituted by G.S.R. 1723, dated 21st November. 1977.

3. Substituted by G.S.R. 1723, dated 21st November, 1977.

4. Inserted by G.S.R. 523, dated 28th March, 1966, published in Gazette of India, Pt. II. Sec. 3 (i). dated 5th April, 1966.

6. Appeals :-

[1][(1) An appeal against an order served under these rules shall lie-
(a) if the order is served by an officer appointed to assist an Inspector and authorized under sub-rule (2) of rule 4A, to the Inspector:
(b) if the order is served by an Inspector, to the Central Govern- ment or the State Government, as the case may be.]
(2) In the case of an order of an Inspector or an appeal preferred to him under Cl. (a) of

sub-rule (1), a further appeal shall lie to the Central Government or the State Government, as the case may be.

[1] [(3) Every appeal made under sub-rule (1) shall be in writing, shall be accompanied by a copy of the order appealed against and shall be presented within three months of the date on which such order has been served or delivered or is deemed to have been served or delivered, as the case may be.]

1. Substituted by G.S.R. 1723, dated 21st November, 1977.

7. Amount of fees :-

(1) The fees set out in Annexure II shall be payable in respect of the services therein mentioned where the tests are carried out by comparison with the Government of India Standards referred to in sub-rule (1) of rule 2.

(2) The Central Government or the State Governments, as the case may be, may levy such fees for testing and inspection and generally for the service of Inspectors, [1] [or any officers appointed to assist the Inspectors,] as it may from time to time, by general or special order, direct ; and may, if it thinks fit, remit any fee or any portion thereof.

1. Inserted by G.S.R. 522, dated 17th March, 1970.

8. Incidence of fees recoverable in the cases of dispute :-

Where an Inspector is called in to decide any difference or dispute and where a fee for such service is recoverable, the Inspector shall decide by whom such fee shall be payable.

9. Submission of records :-

An Inspector [1][or any officer appointed to assist the inspector] and [2][authorized under sub-rule (2) of rule 4A]] may require a supplier or an owner to submit to him for examination any records of tests made in connection with his works and he shall comply with such requisition. Similarly, a supplier or an owner may require the Inspector [1][or any officer appointed to assist the Inspector and holding gazetted rank] to submit to him for examination any records of tests made by the Inspector [1][or any officer appointed to assist the Inspector and holding gazetted rank] in connection with his works and the Inspector [1] [or any officer appointed to assist the Inspector and holding gazetted rank] shall comply with such requisition.

1. Inserted by G.S.R. 522, dated 17th March, 1970.

2. Substituted by G.S.R. 1723. dated 21st November, 1977.

10. List of consumers :-

[[1]An Inspector [2][or any officer appointed to assist the Inspector and [3] [authorized under sub-rule (2) of rule 4A] may require a supplier to submit to him a list of all persons supplied with energy by him, the addresses at which such energy is supplied, the month of connecting services, the voltage of supply, the connected load, the purpose of supply and the name of contractor carrying out the installation work and the supplier shall comply with such requisition.]

1. Substituted by G.S.R. 795, published in the Gazette of India. Pt. II. Sec. 3 (i), dated 15th June, 1965.

2. Inserted by G.S.R. 522, dated 17th March, 1970.

3. Substituted by G.S.R. 1723. dated 21st November, 1977.

CHAPTER 3 LICENCE

11. Application for licence :-

(1) Every application for a licence shall be signed by or on behalf of the applicant and addressed to such officer as the State Government may designate in this behalf and it shall be accom- panied by-
(a.) six copies, in print, of the draft licence as proposed by the applicant with the name and address of the applicant and his agent (if any), printed on the outside of the draft ;
(b) three copies each, signed by the applicant, of maps of the proposed area of supply and of the streets or roads in which the supply of energy is to be compulsory, which shall be so marked or coloured as to define any portion of such area and streets or roads which are under the administrative control of any local authority and shall be on a scale-
(i) of not less than 10 cm. to a km, or
(ii) if no such maps are available, not less than that of the largest scale ordinance maps available, or
(iii) on such other scales as may be approved by the State Government;
(c) a list of any local authorities invested with the administra- tion of any portion of the area of supply ;
(d) an approximate statement describing any lands which the applicant proposes to acquire for the purposes of the licence under the provisions of Land Acquisition Act, 1894;
(e) an approximate statement of the capital proposed to be expended in connection with the undertaking and such other particulars as the State Government may require :
(f) if the applicant is a company which is registered under any of the enactments relating to companies for the time being in force in India or is a corporation by an Act of the Parliament, a copy of the memorandum and articles of association: and
(g) a treasury receipt for such fee not exceeding fifteen hundred rupees, as the State Government may require, paid into a Government treasury in the States concerned, unless such fee is remitted, wholly or in part, by general or special order of the State Government.
(2) If the application for a licence is rejected or if a licence is revoked under sub-section (2) of Section 4 as to the whole or any part of the area of supply, the State Government may at its discretion refund, wholly or in part, the fee referred to in Cl. (g) of sub-rule (1).

12. Copies of maps and draft licence for public inspection :-

-The applicant shall deposit at his own office and of his agent (if any) and at the office of every local authority invested with the administration of any portion of the proposed area of supply-
(a) copies of the maps referred to in Cl. (b) of sub-rule (1) of Rule 11 for public inspection : and
(b) a sufficient number of copies of the draft licence to be furnished to all persons applying for them at a price not exceeding twenty-five paise per copy.

13. Contents of draft licence :-

The draft licence shall contain the following particulars:
(a) a short title descriptive of the proposed undertaking together with the address and description of the applicant, or in the case of a firm, the names of all the directors or partners of the firm:
(b) a statement of the boundaries of the proposed area of supply;
(c) if the generating station is situated or is to be situated outside the area of supply or if any intervening area not included in the area of supply is to be crossed, a list of the streets not included in area of supply along or across which electric supply lines are to be laid

down or placed :
(d) the proposed limits within which and the conditions under which the supply of energy is to be compulsory or permissive, the nature and amount of the supply (if limited) and the like ;
(e) a list of the streets (if any) which are repairable neither by the Central or the State Governments nor by a local authority and of the railways and tramways (if any), the soil or pavement of which the applicant seeks powers to open or break up, and the name of the persons or designations of authorities by whom such streets are repairable or who are for the time being entitled to work such railways or tram- ways :
(f) the proposed periods after which the right to purchase is to take effect:
(g) a statement of any special terms of purchase or orders proposed to be made under Section 10 : and
(h) any proposed modification of the Schedule to the Act to be made under Cl. (f) of sub-section (2) of Section 3.

14. Form of draft licence :-

The form of draft licence contained in Annexure III may. with such variation as the circumstances of each case require, be used for the purposes of rule 11 and rule 13 if used, shall be sufficient.

15. Advertisement of application and contents thereof :-

(1) The applicant shall, within fourteen days from the submission of the application under rule 11, publish notice of his application by public advertisement and such advertisement shall publish such particulars as the State Gov- ernment may specify.
(2) The advertisement shall be headed by a short title corresponding to that given at the head of the draft licence and shall give the addresses of the offices at which, under rule 12, copies of maps therein referred to may be inspected and the copies of draft licence perused or purchased and shall state that every local authority, company or person, desirous of making any representation with reference to the application to the State Government, may do so by letter addressed to such officer as the State Government may designate in this behalf, within three months of the date of issue of the first advertisement
.
(3) The advertisement shall be inserted by the applicant in at least two successive issues of such newspaper as the State Government, having regard to its circulation among persons likely to be inserted, may direct, and in the absence of any such direction, in at least two successive issues of any newspaper published within the proposed area of supply or if there is no such newspaper, in any newspaper published within the State.
(4) The applicant shall send a copy of each of the two successive issues of the newspaper containing the advertisement to such officer as the State Government may designate in this behalf as soon as the second issue has appeared and the State Government shall publish the advertisement at least once in the official Gazette within six weeks from the date of first advertise- ment published under sub-rule (3) : Provided that any failure or delay on the part of the State Government in publishing the advertisement shall not of itself preclude the grant of a licence

16. Amendment of draft licence :-

Any person who desires to have any amendment made in draft licence shall deliver a statement of the amendment to the applicant and to such officers as the State Government may designate in this behalf within the time allowed under sub-rule (2) of rule 15 for the submission of representations referring to the application.

17. Local inquiries :-

If any person locally interested objects the grant of licence applied for under the Act the State Government shall, if either the applicant or the objector so desires, cause a local inquiry to be held of which the notice in writing shall be given to both the applicant and the objector : Provided that the State Government may refuse such an inquiry if in its opinion the objection is of a trifling or vexatious nature.

18. Approval of draft licence :-

When the State Government has ap- proved a draft licence, either in its original form or in a modified form, such officer as the State Government may designate in this behalf shall Inform the applicant of such approval and of the form in which it is proposed to grant the licence.

19. Notification of grant of licence :-

On receiving an intimation in writing from the applicant that he is willing to accept a licence in the form approved by the State Government, the State Government shall publish the licence within two months by a notification in the official Gazette, together with a statement that it has been granted.

20. Date of commencement of licence :-

The date of a notification under rule 19 shall be deemed to be the date of commencement of the licence.

21. Deposit of maps :-

When a licence has been granted, three sets of maps showing, as regards such licence, the particulars specified in Cl. (b) of sub-rule (1) of rule 11 shall be signed and dated to correspond with the date of the notification of the grant of the licence by such officer as the State Government may designate in this behalf. One set of such maps shall be retained as the deposited maps by the said officer and of the remaining two sets, one shall be furnished to the State Electricity Board constituted under S.5 of the Electricity (Supply) Act, 1948, and the other to the licensee.

22. Deposit of printed copies :-

..-
(1) Every person who is granted a licence, shall, within thirty days of the grant thereof,-
(a) have adequate number of copies of the licence printed;
(b) have adequate number of maps prepared showing the area of supply and the compulsory areas specified in the licence
(c) arrange to exhibit a copy of such licence and maps for public inspection at all reasonable times at his head office, his local offices (if any), and at the office of every local authority within the area of supply.
(2) Every such licensee shall, within the aforesaid period of thirty days; supply free of charge one copy of the licence and the relevant maps to every local authority within the area of supply and shall also make necessary arrangements for the sale of printed copies of the licence to all persons applying for the same at a price not exceeding twenty-five paise per copy.

23. Application for written consent of State Government in cer- tain cases :-

if a licensee desires the written consent of the State Govern- ment under sub-section (5) of Sec: 12 to enable him to open or break up the soil or pavement of any street (which is repairable neither by the Central or the State Government nor by a local authority, or any

railway), or tramway, he shall apply for such consent in writing to such officer as the State Government may designate in this behalf and shall describe accu- rately the street, railway, or tramway, which he seeks power to open or break up and the names of the persons or designations of the authorities by whom such street is repairable or who are for the time being entitled to work such railway or tramway; and the extent to which he proposes to open or break up the same.

24. Amendment of licence :-

(1) If a licensee desires that any alter- ations or amendments should be made in the terms and conditions of his licence under [1] [sub-section (1) of Section 4A] he shall submit a written application to the officer designated by the State Government under Rule 11 and shall, within fourteen days from the submission of the application, publish notice of his application by public advertisement, and the provis- ions of sub-rules (2), (3) and (4) of rule 15 apply to such publication

.

(2) The State Government shall, within six months of the date of submission of the application, either approve of the alteration, or amend- ments in the form proposed by the licensee or in any other modified form which he accepts or rejects them. When the State Government has approved of the alterations or amendments either in the form proposed by the licensee or in any other modified form which he accepts, it shall notify the alterations or amendments so approved, in the official Gazette.

1. Substituted by G.S.R. 422, dated 7th April, 1960.

25. Sale of plans :-

Copies of plans or sections such as are referred to in Cl. XVI of the Schedule to the Act shall be supplied by the licensee to every applicant at a price not exceeding one rupee per [1] [1,000 sq. cm.].

1. Substituted by G.S.R. 522, dated 17th March, 1970 (w.e.f. 9th April, 1970).

26. Preparation and submission of accounts :-

(1) Every licensee, unless exempted under Section 11, shall cause the accounts of his undertaking to be made up to the thirty-first day of March each year

.

(2} Such licensee shall prepare and render an annual statement of his accounts in accordance with the provisions of Section 11 within a period of six months from the aforesaid date, or such extended period as the State Government may authorize after it is satisfied that the time allowed is insufficient owing to any cause beyond the control of the licensee and the statement shall be rendered in quadruplicate if the State Government so desires.

(3) The accounts shall be made up in the prescribed forms set out in Annexures IV and V and shall be rendered in Indian currency. [1] [All the forms shall be signed by the licensee or his accredited agent or manager.]

(4) The State Government may, by special or general order, direct that in addition to the submission of the annual statements of accounts in the forms prescribed in sub-rule (3), a licensee shall submit to the State Government or such other authority as it may appoint in this behalf such additional information as it may require for the purpose.

1. Inserted by G.S.R. 523, published in the Gazette of India. Pt. II, Sec. 3 (i). dated 9th April, 1966.

27. Model conditions of supply :-

(1) Without prejudice to the pow- ers conferred by Section 21 on the State Government in this behalf the model conditions of supply contained in Annexure VI may, with such variations as the circumstances of each case require, be adopted by the licensee for the purpose of sub-section (2) of that section with the previous sanction of the State Government.

[1][(2) The licensee shall always keep in his office an adequate number of printed copies of the sanctioned conditions of supply and shall, on demand, [2] ["sell such copies to any applicant at a price - fixed, on cost basis, from time to time"].]

1. Inserted by G.S.R. 523, published in the Gazette of India. Pt. II, Sec. 3 (i). dated 9th April. 1966.

2. Substituted for "sell such copies to any applicant at a price not exceeding 50 paise per copy", by the "Indian Electricity (Amendment-1) Rules, 2000".

28. Forms of requisitions :-

Requisitions under sub-clause (4) of Cl. V or sub-clause (5) of Cl. VI, as the case may be, of the Schedule to the Act shall be made in the form set out in Annexure VII or Annexure VIII.

CHAPTER 4 GENERAL SAFETY REQUIREMENTS

29. Construction, installation, protection, operation and mainte- nance of electric supply-lines and apparatus :-

[1][(1) All electric supply- lines and apparatus shall be of sufficient ratings for powers, insulation and estimated fault current and of sufficient mechanical strength, for the duty which they may be required to perform under the environmental conditions of installation, and shall be constructed, installed, protected, worked and maintained in such a manner as to ensure safety of [2][human beings, animals and property.]

[3][(2) Save as otherwise provided in these rules, the relevant Code of Practice of the [4][Bureau of Indian Standards] [1][including National Electrical Code] if any, may be followed to carry out the purposes of this rule and in the event of any inconsistency, the provisions of these rules shall prevail.]

[6][(3) The material and apparatus used shall conform to the relevant specifications of the [4] [Bureau of Indian Standards] where such specifica- tions have already been laid down.]

1. Substituted by G.S.R. 358, dated 30th April. 1987.

2. Substituted by G.S.R. 45, dated 1st January, 1993.

3. Inserted by G.S.R. 522. dated 17th March, 1970.

4. Substituted by G.S.R. 466. dated 18th July. 1991.

6. Substituted by G.S.R. 170, dated 15th January, 1979.

30. Service-lines and apparatus on consumers premises :-

(1) The supplier shall ensure that all electric supply-lines, wires, fittings and apparatus belonging to him or under his control, which are on a consumers premises, are in a safe condition and in all respects fit for supplying energy and the supplier shall take due precautions to avoid danger arising on such premises from such supply-lines, wires, fittings and apparatus.

(2) Service-lines placed by the supplier on the premises of a consumer which are underground or which are accessible shall be so insulated and protected by the supplier as to be secured under all ordinary conditions against electrical, mechanical, chemical or other injury to the insulation.
(3) The consumer shall, as far as circumstances permit, take precau- tions tor the safe custody of the equipment on his premises belonging to the supplier.
(4) The consumer shall also ensure that the installation under his control is maintained in safe condition.

31. Cut-out on consumers premises :-

(1) The supplier shall pro- vide a suitable cut-out in each conductor of every service-line other than an earthed or earthed neutral conductor or the earthed external conductor of a concentric cable within a consumers premises, in an accessible position. Such cut-out shall be contained within an adequately enclosed fire-proof receptacle. Where more than one consumer is supplied through a common service-line, each such consumer shall be provided with an independent cut-out at the point of junction to the common service,
[1][(2) Every electric supply-line other than the earthed or earthed neutral conductor of any system or the earthed external conductor of a concentric cable shall be protected by a suitable cut-out by its owner.]
[2] [(3) * * *]

1. Substituted by G.S.R. 170, dated 15th January, 1979.

2. Omitted by G.S.R. 358, dated 30th April, 1987.

32. Identification of earthed and earthed neutral conductors and position of switches and cut-outs therein :-

Where the conductors in- clude an earthed conductor of a two-wire system or an earthed neutral conductor of a multi-wire system or a conductor which is to be connected thereto, the following conditions shall be complied with :
(1) An indication of a permanent nature shall be provided by the owner of the earthed or earthed neutral conductor, or the conductor which is to be connected thereto, to enable such conductor to be distinguished from any live conductor. Such indication shall be provided-
(a) where the earthed or earthed neutral conductor is the property of the supplier, at or near the point of commence- ment of supply ;
(b) where a conductor forming part of a consumers system is to be connected to the supplier is earthed or earthed neutral conductor at the point where such connection is to be made:
(c) in all other cases, at a point corresponding to the point of commencement of supply or at such other point as may be approved by an Inspector [1][or any officer appointed to assist the Inspector and [2] [authorized under sub-rule (2) of Rule 4A]]..
(2) No cut-out, link or switch other than a linked switch arranged to operate simultaneously on the earthed or earthed neutral conductor and live conductors shall be inserted or remain inserted in any earthed or earthed neutral conductor of a two-wire system or in any earthed or earthed neutral conductor of a multi-wire system or in any conductor connected thereto with the following exceptions :
(a) a link for testing purposes, or
(b) a switch for use in controlling a generator or transformer.

1. Inserted by G.S.R. 522, dated the 17th March, 1970 (w.e.f. 9th April, 1970).

2. Substituted by G.S.R, 1723, dated 21st November, 1977.

33. Earthed terminal on consumers premises :-

.-(1) The supplier shall provide and maintain on the consumers premises for the consumers use a suitable earthed terminal in an accessible position at or near the point of commencement of supply as defined under rule 58 : Provided that in the case of medium, high or extra-high voltage installation, the consumer shall, in addition to the aforementioned earthing arrangement, provide his own earthing system with an independent elec- trode [1][and maintain the same]: Provided further that the supplier may not provide any earthed terminal in the case of installations already connected to his system [2][on or before the 30th June, 1966] if he is satisfied that the consumers earthing arrangement is efficient.

(2) The consumer shall take all reasonable precautions to prevent mechanical damage to the earthed terminal and its lead belonging to the supplier.

[3] [(3) The supplier may recover from the consumer the cost of installa- tion on the basis of schedule of charges notified in advance, and where such schedule of charges is not notified, the procedure prescribed in sub-rule (5) of rule 82 will apply.]

1. Inserted by G.S.R. 523, dated 28th March. 1966, published in the Gazette of India, Pt. II Sec. 3 (i), dated 9th April, 1966.

2. Substituted by G.S.R. 523.

3. Substituted by G.S.R. 1074, dated 5th November, 1985 (w.e.f. 16th November, 1985), for sub-rule (3).

34. Accessibility of bare conductors :-

Where bare conductors are used in a building, the owner of such conductors shall-

(a) ensure that they are inaccessible ;

(b) provide in readily accessible position switches for rendering them dead whenever necessary ; and

(c) take such other safety measures as are considered necessary by the Inspector.

35. [Danger] notices :-

[1]The owner of every medium, high and extra- high voltage installation shall affix permanently in a conspicuous position a [1][danger] notice in Hindi or English and the local language of the district, with a sign of skull and bones, [3][of a design as per the relevant ISS No. 2551 on]:

(a) every motor, generator, transformer and other electrical plant and equipment together with apparatus used for con- trolling or regulating the same ;

[4][(b) all supports of high and extra-high voltage overhead lines which can be easily climbed upon without the aid of ladder

(c) luminous tube signs requiring high voltage supply. X-ray and similar high-frequency installations : Provided that where it is not possible to affix such notices on any generator, motor, transformer or other apparatus, they shall be affixed as near as possible thereto [5] [or the word "danger" and the voltage of the apparatus concerned shall be permanently painted on it]: Provided further that where the generator, motor, transformer or other apparatus is within an enclosure, one notice affixed to the said enclosure shall be sufficient for the purposes of this rule.

1. Substituted by G.S.R. 523, dated 28th March, 1966, published in the Gazette of India Pt II Sec. 3 (i), dated 9th April, 1966.

3. Substituted by G.S.R. 512. dated 29th June, 1983 (w.e.f. 16th July. 1983), for the words "and of a type approved by the Inspector on".

4. Substituted by G.S.R. 1723, dated 21st November, 1977.

5. Inserted by G.S.R. 523, dated 28th March, 1966, published in the Gazette of India, Pt. II, Sec. 3 (i). dated 9th April, 1966.

36. Handling of electric supply-lines and apparatus :-

(1) Before any conductor or apparatus is handled adequate precautions shall be taken, by earthing or other suitable means, to discharge electrically such conductor or apparatus, and any adjacent conductor or apparatus if there is danger therefrom, and to prevent any conductor or apparatus from being accidentally or inadvertently electrically charged when persons are working thereon. [1][Every person who is working on an electric supply-line or apparatus or both shall be provided with tools and devices, such as, gloves, rubber shoes, safety belts, ladders, earthing devices, helmets, line testers, hand lines and the like for protecting him from mechanical or electrical injury. Such tools and devices shall always be maintained in sound and efficient working conditions:] [2] [* * *]
(2) No person shall work on any live electric supply-line or apparatus and no person shall assist such person on such work, unless he is authorized in that behalf, and takes the safety measures approved by the Inspector.
(3) Every tele-communication line on supports carrying a high or extra-high voltage line shall, for the purpose of working thereon, be deemed to be a high voltage line.

1. Inserted by G.S.R. 1723. dated 21st November. 1977.

2. Omitted by G.S.R. 358, dated 30th April, 1987.

37. Supply to vehicles, cranes, etc :-

Every person owning a vehi- cle, travelling crane or the like to which energy is supplied from an external source shall ensure that it is efficiently controlled by a suitable switch enabling all voltage to be cut-off in one operation and, where such vehicle, travelling crane or the like runs on metal rails the owner shall ensure that the rails are electrically continuous and earthed.

38. Cables for portable or transportable apparatus :-

(1) Flexible cables shall not be used for portable or transportable motors, generators. transformers, rectifiers, electric drills, electric sprays, welding sets or any other portable or transportable apparatus unless they are heavily insulated and adequately protected from mechanical injury.
(2) Where the protection is by means of metallic covering, the covering shall be in metallic connection with the frame of any such apparatus and earth.
[1] [(3) The cables shall be three-core type and four-core type for portable and transportable apparatus working on single phase and three-phase supply respectively and the wire meant to be used for ground connection shall be easily identifiable.]

1. Inserted by G.S.R. 1723, dated 21st November, 1977.

39. Cables protected by bituminous materials :-

(1) Where the sup- plier or the owner has brought into use an electric supply-line (other than an overhead line) which is not completely enclosed in a continuous metallic covering connected with earth, and is insulated or protected in situ by composition or material of a bituminous character-
(i) any pipe, conduit or the like into which such electric sup- ply-line may have been drawn

or placed shall, unless other arrangements are approved by the Inspector in any particular case be effectively sealed at its point of entry into any street box so as to prevent any flow of gas to or from the street box: and
(ii) such electric supply-line shall be periodically inspected and tested where accessible, and the result of each such inspec- tion and test shall be duly recorded by the supplier or the owner.
(2) It shall not be permissible for the supplier or the owner after the coming into force of these rules, to bring into use any further electric supply-line as aforesaid which is insulated or protected in situ by any composition or material known to be liable to produce noxious or explosive gases on excessive heating.

40. Street boxes :-

(1) Street boxes shall not contain gas pipes, and precautions shall be taken to prevent as far as reasonably possible any influx of water or gas.
(2) Where electric supply-lines forming part of different systems pass through the same street box, they shall be readily distinguishable from one another and all electric supply-lines at high or extra-high voltage in street boxes shall be adequately supported and protected so as to prevent risk of damage to or danger from adjacent electric supply-lines.
(3) All street boxes shall be regularly inspected for the purpose of detecting the presence of gas and if any influx or accumulation is discov- ered, the owner shall give immediate notice to any authority or company who have gas mains in the neighbourhood of the street box and in cases where a street box is large enough to admit the entrance of a person after
(a) to ensure that any gas which may by accident have obtained access to the box shall escape before a person is allowed to enter, and
(b) for the prevention of danger from sparking.
(4) The owners of all street boxes or pillars containing circuits or apparatus shall ensure that their covers and doors are so provided that they can be opened only by means of a key or a special appliance.

41. Distinction of different circuits :-

[1]The owner of every gen- erating station, sub-station junction-box or pillar in which there are any circuits or apparatus, [2] [whether intended for operation at different voltages or at the same voltage] shall ensure by means of indication of a permanent nature that the respective circuits are readily distinguishable from one another.

1. Substituted by G.S.R. 170, dated 15th January, 1979 as corrected vide G.S.R. 335, dated 16th February, 1979.

2. Substituted by G.S.R. 170, dated 15th January, 1979.

41A. Distinction of the installations having more than one feed :-

[[1] The owner of the every installation including sub-station, double pole structure, four pole structure or any other structure having more than one feed, shall ensure by means of indication of a permanent nature, that the installation is readily distinguishable from other installations.]

1. Inserted by G.S.R. 529, dated 19th July, 1986, published in the Gazette of India, Pt. II, Sec. 3 (i), dated 19th July, 1986.

42. Accidental charge :-

The owners of all circuits and apparatus shall so arrange them that there shall be no

danger of any part thereof becoming accidentally charged to any voltage beyond the limits of voltage for which they are intended. Where A.C. and D.C. circuits are installed on the same support they shall be so arranged and protected that they shall not come into contact with each other when live.

43. Provisions applicable to protective equipment :-

(1) Fire buckets filled with clean dry sand ready for immediate use for extinguishing fires, in addition to fire extinguishers suitable for dealing with electric fires, shall be conspicuously marked and kept in all generating stations, enclosed sub-stations and switch stations in convenient situations. [1][The fire extinguishers shall be tested for satisfactory operation at least once a year and record of such tests shall be maintained.]
(2) First-aid boxes or cupboards, conspicuously marked and equipped with such contents as the State Government may specify, shall be provided and maintained in every generating station, enclosed sub-station and enclosed switch-station so as to be readily accessible during all working hours. All such boxes and cupboards shall, except in the case of unattended sub-stations and switch-stations, be kept in charge of responsible persons who are trained in first-aid treatment and one of such persons shall be available during working hours.
[2] (3) Two or more gas masks shall be provided conspicuously and installed and maintained at accessible places in every generating station

1. Inserted by G.S.R. 1723, dated 21st November. 1977.

2. Inserted by G.S.R. 466, dated 18th July. 1991 (w.e.f. 17th August, 1991).

44. Instructions for restoration of persons suffering from electric shock :-

(1) Instruction in [1][English or Hindi and the local language of the district and where Hindi is the local language, in English and Hindi] for the restoration of persons suffering from electric shock shall be affixed by the owner in a conspicuous place in every generating station, enclosed sub-sta- tion, enclosed switch-station and in every factory as defined in Cl. (m) of S.2 of the Factories Act, 1948, in which electricity is used and in such other premises where electricity is issued as the Inspector [2][or any officer appointed to assist the Inspector] may, by notice inwriting served on the owner, direct.
(2) Copies of the instructions shall be supplied on demand by an officer or officers appointed by the Central or the State Government in this behalf at a price to be fixed by the Central or the State Government.
(3) The owner of every generating station, enclosed sub-station, en- closed switch-station, and every factory or other premises to which this rule applies shall ensure that all authorized persons employed by him are acquainted with and are competent to apply the instructions referred to in sub-rule (1).
[3] [(4) In every manned high voltage or extra-high voltage generating station, sub-station or switch-station, an artificial respirator shall be provided and kept in good working condition.]

1. Inserted by G.S.R. 1723, dated 21st November, 1977.

2. Inserted by G.S.R. 522, dated 17th March, 1970.

3. Inserted by G.S.R. 170, dated 15th January, 1979.

44A. Intimation of accident :-

[[1] If any accident occurs in connec- tion with the generation, transmission, supply or use of energy in or in connection with, any part of the electric supply-lines or other works of any

person and the accident results in or is likely to have resulted in loss of human or animal life or in any injury to a human being or an animal, such person or any authorised person of the State Electricity Board/Supplier, not below the rank of a Junior Engineer or equivalent shall send to the Inspector a telegraphic report within 24 hours of the knowledge of the occurrence of the fatal accident and a written report in the form set out in Annexure XIII within 48 hours of the knowledge of occurrence of fatal and all other accidents. Where practicable a telephonic message should also be given to the Inspector immediately the accident comes to the knowledge of the authorized of ficer of the State Electricity Board/Supplier or other person concerned.]

1. Substituted by G.S.R. 1049, dated 17th October, 1985 (w.e.f. 9th November, 1985), for the rule inserted by G.S.R. 522, dated 17th March. 1970.

45. Precautions to be adopted by consumers, 1 [owners, occupiers,] electrical contractors, electrical workmen and suppliers :-

(1) No elec- trical installation work including additions, alterations, repairs and adjust- ments to existing installations, except such replacement of lamps, fans, fuses, switches, low voltage domestic appliances and fittings as in no way alters its capacity or character, shall be carried out upon the premises of or on behalf of any [1][consumer, owner or occupier] for the purpose of supply to such consumer, owner, [2][or occupier] except by an electrical contractor licensed in this behalf by the State Government and under the direct supervision of a person holding a certificate of [3][competency and by a person holding a permit] issued or recognized by the State Government : Provided that in the case of works executed for or on behalf of the Central Government and in the case of installations in mines, oil-fields and railways, the Central Government and in other cases the State Government may, by notification in the official Gazette, exempt, on such conditions as it may impose, any such work described therein either generally or in the case of any specified class of consumers, suppliers, owners or occupiers from so much of this sub-rule as requires such work to be carried out by an electrical contractor licensed by the State Government in this behalf.

[4][(2) No electrical installation work which has been carried out in contravention of sub-rule (1) shall either be energised or connected to the works of any supplier.]

[5] [(3) * * *]

1. Substituted by G.S.R. 45, dated 1st January, 1993.

2. Substituted by G.S.R. 529, dated 11th July, 1986 for the words "owners" (w.e.f. 19th July 1986).

3. Substituted by G.S.R. 886. dated 15th June, 1979, published in the Gazette of India, Pt. II, Sec. 3 (i), dated 30th June, 1979.

4. Substituted by G.S.R. 529, dated 11th July, 1986 (w.e.f. 19th July, 1986).

5. Omitted by G.S.R. 844, dated 31st July, 1985 (w.e.f. 7th September, 1985).

46. Periodical inspection and testing of consumers installation :-

(1)

(a) Where an installation is already connected to the supply system of the supplier, every such installation shall be periodically inspected and tested at intervals not exceeding five years either by the Inspector [1][or any officer appointed to assist the Inspector] or by the supplier as may be directed by the State Government in this behalf or [2][in the case of installa- tions belonging to, or under the control of the Central Government, and] in the case of installations in mines, oilfields and railways, the Central Government.

(b) Where the supplier is directed by the Central or the State Govern- ment, as the case

may be. to inspect and test the installation he shall report on the condition the installation to the consumer concerned in a form approved by the Inspector and shall submit a copy of such report to the Inspector [3][or to any officer appointed to assist the Inspector and authorized under sub-rule (2) of rule 4A].

[3][(c) Subject to the approval of the Inspector the forms of inspection report contained in Annexure IX-A may. with such variations as the circumstances of each case require, be used for the purpose of this sub-rule.]

(2)

(a) The fees for such inspection and test shall be determined by the Central or the State Government, as the case may be, in the case of each class of consumers and shall be payable by the consumer in advance.

(b) In the event of the failure of any consumer to pay the fees on or before the date specified in the fee notice, supply to the Installation of such consumer shall be liable to be disconnected under the direction of the Inspector. Such disconnection, however, shall not be made by the supplier without giving to the consumer seven clear days notice in writing of his intention so to do.

[5][(c) In the event of the failure of the owner of any installation to rectify the defects in his installation pointed out by the Inspector or by any officer appointed to assist him and authorized under sub-rule (2) of rule 4A in [6] [under the directions of the Inspector] after serving the owner of such installation with a notice : Provided that the installation shall not be disconnected in case an appeal is made under rule 6 and the appellate authority has stayed the orders of disconnection: Provided further that the time indicated in the notice shall not be less than forty-eight hours in any case : Provided also that nothing contained in this clause shall have any effect on the application of rule 49.]

(3) Notwithstanding the provisions of this rule, the consumer shall at all times be solely responsible for the maintenance of his installation in such condition as to be free from danger.

1. Inserted by G.S.R. 522, dated 17th March, 1970 (w.e.f. 4th April, 1970)

2. Inserted by G.S.R. 1254, dated 8th August, 1967 (w.e.f. 26th August, 1967).

3. Inserted by G.S.R. 1723, dated 21st November, 1977 (w.e.f. 31st December, 1977).

5. Inserted by G.S.R. .522, dated 17th March. 1970 (w.e.f. 4th April. 1970).

6. Substituted by G.S.R. 29, dated 24th December, 1983, for the words "under his direction" (w.e.f. 14th January, 1984).

CHAPTER 5 GENERAL CONDITIONS RELATING TO SUPPLY AND USE OF ENERGY

47. Testing of consumers installation :-

(1) Upon receipt of an ap- plication for a new or additional supply of energy and before connecting the supply or re-connecting the same after a period of six months, the supplier shall inspect and test the applicants installation. The supplier shall maintain a record of test results obtained at each supply point to a consumer, in a form to be approved by the Inspector.

(2) If as a result of such inspection and test, the supplier is satisfied that the installation is likely to constitute danger, he shall serve on the applicant a notice in writing requiring him to make such modifications as are necessary to render the installation safe. The supplier may refuse to connect or re-connect the supply until the required modifications have been completed and he has been notified by the applicant.

47A. Installation and testing of Generating Units :-

[[1] Where any consumer or occupier installs a generating plant, he shall give a thirty days notice of his intention to commission the plant to the supplier as well as the Inspector: Provided that no consumer or occupier shall commission his generat- ing plant of a capacity exceeding 10 KW without the approval in writing of the Inspector].

1. Inserted by G.S.R. 218 dated 18th April, 1995 published in the Gazette of India Pt. II, Sec. 3(i), dated 29th April, 1995 (w.e.f. 29th April, 1995).

48. Precautions against leakage before connection :-

[1][(1) The supplier shall not connect with his works of the installation or apparatus on the premises of any applicant for supply unless he is reasonably satisfied that the connection will not, at the time of making the connection, cause a leakage from that installation or apparatus of a magnitude detrimental to safety. Compliance with this rule shall be checked by measuring the insulation resistance as provided below :
(i) High Voltage Equipments/Installations :
(a) High Voltage Equipments shall have the IR value as
(b) At a pressure of 1000 V applied between each live conductor and earth for a period of one minute the insulation resistance of HV installations shall be at least 1 Megohm or as specified by the [2][Bureau of Indian Standards] from time to time.
(ii) Medium and Low Voltage Installations.-At a pressure of 500 V applied between each live conductor and earth for a period of one minute, the insulation resistance of medium and low voltage installations shall be at least 1 Megohm or as spec- ified by the [2] [Bureau of Indian Standards] from time to time.]
(2) If the supplier declines to make a connection under the provisions of sub-rule (1), he shall serve upon the applicant a notice in writing stating his reason for so declining.

1. Substituted by G.S.R. 529, dated 11th July, 1986 (w.e.f. 19th July, 1986).

2. Substituted by G.S.R. 466, dated 18th July, 1991.

49. Leakage on consumers premises :-

(1) If the Inspector [1][or any officer appointed to assist the Inspector] and [2]authorized under sub-rule (2) of rule 4A] or the supplier has reason to believe that there is in the system of a consumer leakage which is likely to affect injuriously the use of energy by the supplier or by other persons, or which is likely to cause danger, he may give the consumer reasonable notice in writing that he desires to inspect and test the consumers installation.
(2) If, on such notice being given-
(a) the consumer does not give all reasonable facilities for inspection and testing of his installation, or
[3] [(b) when an insulation resistance at the consumers installation is so low as to prevent safe use of energy the supplier may. and if directed so to do by the Inspector shall, discontinue the supply of energy to the installation but only after giving to the consumer 48 hours notice in writing of disconnection of supply and shall not re-commence the supply until he or the Inspector is satisfied that the cause of the leakage has been removed.]

1. Inserted by G.S.R. 522, dated 17th March, 1970.

2. Substituted by G.S.R. 1723, dated 21st November, 1977.

3. Substituted by G.S.R. 529, dated 11th July, 1986 (w.e.f. 19th July. 1986).

50. Supply and use of energy :-

[[1](1) The energy shall not be sup- plied, transformed, converted or used or continued to

be supplied, trans- formed, converted or used unless provisions as set outbelow are observed :

(a) The following controls of requisite capacity to carry and break the current [2]["are placed"] after the point of com- mencement of supply as defined in rule 58, so as to be readily accessible and capable of being easily operated to completely isolate the supply to the installation, such equipment being

(i) a linked switch with fuse(s) or a circuit breaker by low and medium voltage consumers;

(ii) a linked switch fuse(s) or a circuit by HV consumers having aggregate installed transformer/apparatus ca- pacity upto 1000 KVA to be supplied at voltage upto 11 KV and 2500 KVA at higher voltages (above 11 KV and not exceeding 33 KV).

(iii) a circuit breaker by HV consumers having an aggregate installed transformer/apparatus capacity above 1000 KVA supplied at 11 KV and above 2500 KVA supplied at higher voltages (above 11 KV and not exceeding 33 KV):

(iv) a circuit breaker by EHV consumer : Provided that where the point of commencement of supply and the consumer apparatus are near each other, one linked switch with fuse(s) or circuit breaker near the point of commencement of supply as required by this clause shall be considered sufficient for the purpose of this rule,

(b) in case of every transformer the following shall be provided-

(i) on primary side for transformers a linked switch with fuse(s) or circuit breaker of adequate capacity : Provided that the linked switch on the primary side of the transformer may be of such capacity as to carry the full load current and to break only the magnetising current of the trans- former: [3]["Provided further that for all transfomers:- (A) having a capacity of 5000 KVA and above and installed before the commencement of the Indian Electricity (Amendment-1) Rules, 2000, and (B) having a capacity of 1000 KVA and above and installed on or after the commencement of the Indian Electricity (Amendment-1) Rules, 2000 a circuit breaker shall be provided.".] Provided further that the provision of linked switch on the primary side of the transformer shall not apply to the unit auxiliary transform- ers of the generator,

(ii)[4]["In respect of all transformers installed on or after the commencement of the Indian Electricity (Amendment-1) Rules, 2000, on the secondary side of all transformers transforming HV to EHV, MV or LV a circuit breaker of adequate rating shall be installed: Provided that for suppliers transformers of capacity up to 630 KVA, a linked switch with fuse or circuit breaker of adequate rating shall be installed on secondary side.".]

(c) except in the case of composite control gear designed as a unit every distinct circuit protected against excess energy by means of suitable cut-out or a circuit breaker of adequate Beaking capacity suitably located and so constructed as to prevent danger from overheating, arcing or scattering of hot metal when it comes into operation and to permit for ready renewal of the fusible metal of the cut-out without danger :

(d) the supply of energy to each motor or a group of motors or other apparatus meant for operating one particular machine is controlled by a suitable linked switch or a circuit breaker or an emergency tripping device with manual reset of requi- site capacity placed in such a position as to be adjacent to the motor or a group of motors or other apparatus readily accessible to and easily operated by the person incharge and so connected in the circuit that by its means all supply of energy can be cut off from the motor or group of motors or apparatus and from any regulating switch resistance of other device associated therewith :

(e) all insulating materials are chosen with special regard to the circumstances of its proposed use and their mechanical strength is sufficient for its purpose and so far as is practi- cable of such a character or so protected as to maintain adequately its insulating property under all working condi- tions in respect of temperature and moisture : and

(f) adequate precautions shall be taken to ensure that no live parts are so exposed as to cause danger.

(2) Where energy is being supplied, transformed, converted or used, the [5] ["consumer, supplier or the owner"] of the concerned installation shall be responsible for the continuous

observance of the provisions of sub-rule (1) in respect of his installations.

(3) Every consumer shall use all reasonable means to ensure that where energy is supplied by a supplier no person other than the supplier shall interfere with the service-lines and apparatus placed by the supplier on the premises of the consumer.]

1. Substituted by G.S.R. 117, dated 21st January, 1986 (w.e.f. 8th February, 1986), for the rule as amended by G.S.R. 522. dated 17th March, 1970 and G.S.R. 1494, dated 7th December, 1970.

2. Substituted by G.S.R. 218, daed 18th April, 1995, for the words "are placed as near as possible to but", published in the Gazette of India. Pt. II. Sec. 3(i), dated 29th April, 1995 (w.e.f. 29th April, 1995).

3. Substituted for "Provided further that for transformers of capac- ity 5000 KVA and above a circuit breaker shall be provided:", by the "Indian Electricity (Amendment-1) Rules, 2000".

4. Substituted for "(ii) on the secondary side of transformers of capacity 100 KVA and above transforming HV to MV or LV, a linked switch with fuse(s) or circuit breaker of adequate ca- pacity capable of carrying and breaking full load cur- rent and for transformers transforming HV to EHV, as the case may be, a circuit breaker : Provided that where the transformer capacity exceeds 630 KVA a circuit breaker of adequate capacity shall be installed on the secondary side,", by the "Indian Electricity (Amendment-1) Rules, 2000".

5. Substituted by G.S.R. 218, dated 18th April, 1995. for the words "consumer or the owner". published in the Gazette of India. Pt. II, Sec. 3 (i), 29th April, 1995 (w.e.f. 29th April, 1995).

50A. Additional provisions for supply and use of energy in multi-storeyed buildings (more than 15 metres in height) :-

[[1] (1) Before making an application for commencement of supply or re-commencement of supply after an installation has been disconnected for a period of six months or more the owner/occupier of a multi-storeyed building shall give not less than 30 days notice in writing to the Inspector together with particulars. The supply of energy shall not be commenced or re-commenced within this period, without the approval or otherwise in writing of the Inspector.

(2) The supplier/owner of the installation shall provide at the point of commencement of supply a suitable isolation device with cut-out or breaker to operate on all phases except neutral in the 3 phase 4 wire circuit and fixed in a conspicuous position at not more than 2.75 metres above the

(3) The owner/occupier of a multi-storeyed building shall ensure that electrical installations/works inside the building are carried out and maintained in such a manner as to prevent danger due to shock and fire hazards, and the installation is carried out in accordance with the relevant codes of practices.

(4) No other service pipes shall be taken along the ducts provided for laying power cables. All ducts provided for power cables and other services shall be provided with fire-barrier at each floor crossing.]

1. Inserted by G.S.R. 358, dated 30th April, 1987.

51. Provisions applicable to medium, high or extra-high voltage installations :-

The following provisions shall be observed where energy at medium, high or extra-high voltage is supplied, converted, transformed or used:

(1)

(a) All conductors (other than those of overhead lines) shall be completely enclosed in mechanically strong metal casing or metallic cover- ing which is electrically and

mechanically continuous and adequately protected against mechanical damage unless the said conductors are accessible only to an authorized person or are installed and protected to the satisfaction of the Inspector so as to prevent danger : [1][Provided that non-metallic conduits conforming to the relevant Indian Standard Specifications may be used for medium voltage installa- tions, subject to such conditions as the Inspector or officer appointed to assist an Inspector may think fit to impose.]

[2][(b) All metal works, enclosing, supporting or associated with the installation, other than that designed to serve as a conductor shall be connected with an earthing system as per standards laid down in the Indian Standards in this regard and also in accordance with rule 61 (4).]

(c) Every [3][* * *] switchboard shall comply with the following provis- ions, namely:

(i) A clear space of not less than 0.914 metre (3 feet) in width shall be provided in front of the switchboard :

(ii) if there are any attachments or bare connection at the back of the switchboard, the space (if any) behind the switchboard shall be either less than 0.229 metre (9 inches), or more than 0.762 metres (30 inches) in width; measured from the farthest outstanding part of any attachment or conductors;

(iii) if the space behind the switchboard exceeds 0.762 metre (30 inches) in width, there shall be a passage-way from either end of the switchboard clear to a height of 1.829 metres (6 feet).

[4][(d) In case of installations provided in premises where inflammable materials including gases and/or chemicals are produced, handled or stored, the electrical installations, equipment and apparatus shall comply with the requirements of flame-proof, dust tight, totally enclosed or any other suitable type of electrical fittings depending upon the hazardous zones as per the relevant Indian Standard Specifications.]

[5][(2) Where an application has been made to a supplier for supply of energy to any installation, he shall not commence the supply where the supply has been discontinued for a period of one year and above, re-com- mence the supply unless he is satisfied that the consumer has complied with, in all respects, the conditions of supply set out in sub-rule (1) of this rule. rule 50, rule 63 and rule 64.]

(3) Where a supplier proposes to supply or use energy at medium voltage or to re-commence supply after it has been discontinued for a period of six months he shall, before connecting or re-connecting the supply, give notice in writing of such intention to the Inspector [6][or any officer of specified rank and class appointed to assist the Inspector.]

[7] [(4) If at any time after connecting the supply, the supplier is satisfied that any provision of sub-rule (1) of this rule or of rule 50 and rule 64, is not being observed he shall give notice of the same in writing to the consumer and the Inspector, specifying how the provision has not been observed and to rectify such defects in a reasonable time and if the consumer fails to rectify such defects pointed out, he may discontinue the supply after giving the consumer a reasonable opportunity of being heard and recording reasons in writing, unless the Inspector directs otherwise. The supply shall be discontinued only on written orders of an officer duly notified by the supplier in this behalf. The supply shall be restored with all possible speed after such defects are rectified by the consumer to the satisfaction of the supplier.]

1. Substituted by G.S.R. 336, dated 28th March, 1988.

2. Substituted by G.S.R. 358. dated 30th April, 1987.

3. The word "main" omitted by G.S.R. 170, dated 15th January, 1979.

4. Inserted by G.S.R. 529. dated 11th July, 1986 (w.e.f. 19th July, 1986).

5. Substituted by G.S.R. 256, dated 28th February, 1983, Sec. 6.

6. Inserted by G.S.R. 466, dated 18th July, 1991 (w.e.f. 17th August, 1991).

7. Substituted by G.S.R. 732, dated 18th June, 1985 (w.e.f. 3rd August, 1985).

52. Appeal to Inspector in regard to defects :-

(1)any applicant for a supply or a consumer is dissatisfied with the action of the supplier in declining to commence, to continue or to re-commence the supply of energy
(2) Any test for which application has been made under the provision of sub-rule (1) shall be carried out within seven days after the receipt of such application.
(3) This rule shall be endorsed on every notice given under the provisions of rule 47, rule 48 and rule 49.

53. Cost of inspection and test of consumers installation :-

(1) The cost of the first inspection and test of a consumers installation carried out in pursuance of the provisions of rule 47 shall be borne by the supplier and the cost of every subsequent inspection and test shall be borne by the consumer, unless in the appeal under rule 52, the Inspector directs otherwise.
(2) The cost of any inspection and test made by Inspector [1] [or any officer appointed to assist the Inspector] at the request of the consumer or other interested party, shall be borne by the consumer or other interested party unless the Inspector directs otherwise.
(3) The cost of each and every such inspection and test by whomsoever borne shall be calculated in accordance with the scale specified by the Central or the State Government, as the case may be, in this behalf.

1. Inserted by G.S.R. 522, dated 17th March, 1970 (w.e.f. 4th April, 1970).

54. Declared voltage of supply to consumer :-

Except with the written consent of the consumer or with the previous sanction of the State Government a supplier shall not permit the voltage at the point of com- mencement of supply as defined under rule 58 to vary from the declared voltage-
[1][(i) in the case of low or medium voltage, by more than 6 per cent.; or
(ii) in the case of high voltage, by more than 6 per cent. on the higher side or by more than 9 per cent. on the lower side ; or
[2] [(iii) in the case of extra-high voltage, by more than 10 per cent. on the higher side or by more than 12.5 per cent, on the lower side]: Provided that in the case of high voltage, the voltage variation limit of 12.5 per cent. may continue till the 31st March, 1974].

1. Inserted by G.S.R. 522, dated 17th March, 1970 (w.e.f. 4th April, 1970).

2. Substituted by G.S.R. 1723, dated 21st November, 1977 (w.e.f. 31st December, 1977).

55. Declared frequency of supply to consumer :-

Except with the written consent of the consumer or with the previous sanction of the State Government a supplier shall not permit the frequency of an alternating current supply to vary from the declared frequency by more than 3 per cent.

56. Sealing of meters and cut-outs :-

(1) A supplier may affix one or more seals to any cut-out and any meter, maximum demand indicator, or other apparatus placed upon a consumers premises in accordance with Section 26. and no person other than the supplier shall break any such seal.
(2) The consumer shall use all reasonable means in his power to ensure that no such seal is broken otherwise than by the supplier.

(3) [1] [* * *]

1. Omitted by G.S.R. 1640, dated 16th September, 1963.

57. Meters, maximum demand indicators and other apparatus on consumers premises :-

(1) Any meter or maximum demand indicator or other apparatus, placed upon a consumers premises in accordance with Section 26 shall be of appropriate capacity and shall be deemed to be correct if its limits of error [1][are within the limit specified in the relevant Indian Standard Specification and where no such specification exists, the limits of error] do not exceed 3 per cent. above or below absolute accuracy at all loads in excess of one-tenth of full load and up to full load. [2][Provided that for extra high voltage for consumers the limit of error shall be 1 percent.]
(2) No meter shall register at no load.
(3) Every supplier shall provide and maintain in proper condition such suitable apparatus as may he prescribed or approved by the Inspector for the examination, testing and regulation of meters used or intended to be used in connection with the supply of energy : Provided that the supplier may with the approval of the Inspector and shall, if required by the Inspector, enter into a Joint arrangement with any other supplier for the purpose aforesaid.
(4) Every supplier shall examine, test and regulate all meters, maxi- mum demand indicators and other apparatus for ascertaining the amount of energy supplied before their first installation at the consumers premises and at such other intervals as may be directed by the State Government in this behalf.
(5) Every supplier shall maintain a register of meters showing the date of the last test, the error recorded at the time of the test, the limit of accuracy after adjustment and final test. the date of installation, withdrawal, re-in- stallation, etc. for the examination of the Inspector or his authorized representative.
[3] [(6) Where the supplier has failed to examine, test and regulate the meters and keep records thereof as aforesaid, the Inspector may cause such meters to be tested and sealed at the cost of the owner of the meters in case it is found defective.]

1. Substituted by G.S.R. 1723. dated 21st November, 1977 (w.e.f. 31st December, 1977).

2. Added by G.S.R. 218, dated 18th April, 1995, published in the Gazette of India, Pt. II, Sec. 3 (i), dated 29th April, 1995 (w.e.f. 29th April, 1995).

3. Inserted by G.S.R. 844, dated 31st July, 1985 (w.e.f. 7th September, 1985).

58. Point of commencement of supply :-

[[1] The point of commence- ment of supply of energy to a consumer shall be deemed to be the point at the incoming terminal of the cut-outs installed by the consumer under rule 50];

1. Substituted by G.S.R. 45, dated 1st January, 1993.

59. Precautions against failure of supply-Notice of failures :-

(1) The lay-out of the electric supply-lines of the supplier for the supply of energy throughout his area of supply shall under normal working condi- tions be sectionalized and so arranged, and provided with cut-outs or circuit-breakers so located as to restrict within reasonable limits the extent of the portion of the system affected by any failure of supply.
(2) The supplier shall take all reasonable precautions to avoid any accidental interruptions of supply, and also to avoid danger to the public or to any employee or authorized person

when engaged on any operation during and in connection with the installation, extension, replacement, repair, and maintenance of any works.

(3) The supplier shall send to the Inspector [1][or any officer of a specified rank and class appointed to assist the Inspector] notice of failure of supply of such kind as the Inspector [1][or any officer of a specified rank and class appointed to assist the Inspector] may from time to time require to be notified to him, and such notice shall be sent by the earliest practicable post after the failure occurs or after the failure becomes known to the supplier and shall be in such form and contain such particulars as the Inspector may from time to time specify.

[3] [(4) For the purpose of testing or for any other purpose connected with the efficient working of the undertaking, the supply of energy may be discontinued by the supplier for such period as may be necessary subject (except in case of emergency) to not less than 24 hours notice being given by the supplier to all consumers likely to be affected by such discontinu- ance: Provided that the supply of energy shall be discontinued during such hours as are likely to interfere the least with the use of energy by consumers and the energy shall not be discontinued if the Inspector so directs.]

1. Inserted by G.S.R. 466, dated 18th July. 1991 (w.e.f. 17th August, 1991).

3. Substituted by G.S.R. 732. dated 18th June, 1985 (w.e.f. 3rd August, 1985).

CHAPTER 6 ELECTRIC SUPPLY LINES, SYSTEMS AND APPARATUS FOR LOW AND MEDIUM VOLTAGES

60. Test for resistance of Insulation :-

(1) Where any electric sup- ply-line for use at low or medium voltage has been disconnected from a system for the purpose of addition or alteration or repair, such electric supply line shall not be re-connected to the system until the supplier or the owner has applied the test prescribed under rule 48.

(2) The provisions of sub-rule (1) shall not apply to overhead lines except overhead insulated cables unless the Inspector otherwise directs in any particular case.

61. Connection with earth :-

(1) The following provisions shall apply to the connection with earth of system at low voltage in case where the voltage [1][between phases or outers] normally exceeds 125 volts and of systems at medium voltage :

[2][(a) Neutral conductor of a 3-phase, 4 wire system and the middle conductor of a 2-phase, 3 wire system shall be earthed by not less than two separate and distinct connections with a minimum of two different earth electrodes or such large number as may be necessary to bring the earth resistance to a satisfactory value both at the generating station and at the sub-station. The earth electrodes so provided, maybe inter-connected to reduce earth resistance. It may also be earthed at one or more points along the distribution system or service-line in addition to any con- nection with earth which may be at the consumers prem- ises.]

(b) In the case of a system comprising electric supply-lines having concentric cables, the external conductor of such cables shall be earthed by two separate and distinct connections with earth.

(c) The connection with earth may include a link by means of which the connection may be temporarily interrupted for the purpose of testing or for locating a fault.

(d)

(i) In a direct current three-wire system the middle con- ductor shall be earthed at the generating station only, and the current from the middle conductor to earth shall be continuously recorded by means of a recording ammeter, and if at any time the current

exceeds one- thousandth part of the maximum supply-current, im- mediate steps shall be taken to improve the insulation of the system.

(ii) Where the middle conductor is earthed by means of a circuit-breaker with a resistance connected in parallel. the resistance shall not exceed 10 ohms and on the opening to the circuit-breaker, immediate steps shall

(iii) The resistance shall be used only as a protection for the ammeter in case of earths on the system and until such earths are removed immediate steps shall be taken to locate and remove the earth.

(e) In the case of an alternating current system, there shall not be inserted in the connection with earth any impedance (other than that required solely for the operation of switch- gear or instruments), cut-out or circuit-breaker, and the result of any test made to ascertain whether the current (if any) passing through the connection with earth is normal, shall be duly recorded by the supplier.

(f) No person shall make connection with earth by the aid of. nor shall he keep it in contact with, any water main not belonging to him except with the consent of the owner thereof and of the Inspector.

(g) Alternating current systems which are connected with earth as aforesaid may be electrically interconnected : Provided that each connection with earth is bonded to the metal sheathing and metallic armouring (if any) of the electric supply-lines connected.

(2) The frame of every generator, stationary motor, **3**[* * *], portable motor, and the metallic parts (not intended as conductors) of all transform- ers and any other apparatus used for regulating or controlling energy and all medium voltage energy-consuming apparatus shall be earthed by the owner by two separate and distinct connections with earth.

4[(3) All metal castings or metallic coverings containing or protecting any electric supply-line or apparatus shall be connected with earth and shall be so joined and connected across all junctions, boxes and other openings as to make good mechanical and electrical connections through- out their whole length: Provided that where the supply of energy is at low voltage, this sub-rule shall not apply to the isolated wall tubes or to brackets, electroliers switches, ceiling fans or other fitting (other than portable hand lamps and portable and transportable apparatus) unless provided with an earth terminal and to class II apparatus/appliances : Provided further that where the supply of energy is at low voltage and where the installations are either new or renovated all plug sockets shall be of the three pin types, and the third pin shall be permanently and efficiently earthed. Explanation.-The words "class II apparatus-appliance will have the same meaning as assigned to these words in the relevant ISS".]

5[(4) All earthing systems shall,-

(a) consist of equipotential bonding conductors capable of car- rying the prospective of earth fault current and a group of pipe/rod/plate electrodes for dissipating the current to the general mass of earth without exceeding the allowable tem- perature limits as per relevant Indian Standards in order to maintain all non-current carrying metal works reasonably at earth potential and to avoid dangerous contact potentials being developed on such metal works :

(b) limit earth resistance sufficiently low to permit adequate fault current for the operation of protective devices in time and to reduce neutral shifting ;

(c) be mechanically strong, withstand corrosion and retain electrical continuity during the life of the installation. All earthing systems shall be tested to ensure efficient earthing, before the electric supply-lines or, apparatus are energised.]

(5) All earthing systems belonging to the supplier, shall, in addition, be tested for resistance on dry day during the dry season not less than once every two years.

(6) A record of every earth-test made and the result thereof shall be kept by the supplier for a period of not less than two years after the day of testing and shall be available to the Inspector **6**[or any officer appointed to assist the Inspector and and holding gazetted rank **7** [authorized under sub-rule (2) of rule 4A]] when required.

1. Inserted by G.S.R. 1640, published in the Gazette of India, Pt. II, Sec. 3 (i), dated 12th October, 1963.

2. Substituted by G.S.R. 1051, dated 25th October, 1985 (w.e.f. 9th November, 1985).

3. The words "and so far as is practicable" omitted by G.S.R. 1723, dated 21st November, 1977.

4. Substituted by G.S.R. 256, dated 28th February, 1983, Sec. 6.

5. Substituted by G.S.R. 358, dated 30th April, 1987.

6. Inserted by G.S.R. 522, dated 17th March, 1970.

7. Substituted by G.S.R. 1723, dated 21st November, 1977.

61A. Earth leakage protective device :-

[[1] The supply of energy to every electrical installation other than low voltage installation below 5 KW and those low voltage installations which do not attract provisions of S.30 of the Indian Electricity Act, 1910, shall be controlled by an earth leakage protective device so as to disconnect the supply instantly on the occurrence of earth fault or leakage of current : Provided that the above shall not apply to over-head supply lines having protective devices which are effectively bonded to the neutral of supply transformers and conforming to rule 91 of Indian Electricity Rules 1956.]

1. Inserted by G.S.R. 844. dated 31st July, 1985 (w.e.f. 7th September, 1985).

62. Systems at a medium voltage :-

When a medium voltage supply system is employed, the voltage between earth and any conductor forming part of the said system shall not under normal conditions, exceed low voltage.

CHAPTER7 ELECTRIC SUPPLY LINES, SYSTEMS AND APPARATUS FOR HIGH AND EXTRA-HIGH VOLTAGES

63. Approval by Inspector :-

(1) Before making an application to the Inspector for permission [1] [to commence or re-commence supply after an installation has been disconnected for one year and above] at high or extra-high voltage to any person, the supplier shall ensure that the high or extra-high voltage electric supply-lines or apparatus belonging to him are placed in position properly joined and duly completed and examined. The supply of energy shall not be commenced by the supplier unless and until the Inspector is satisfied that the provisions of rule 65 to rule 69 (both inclusive) have been complied with and approval in writing of the Inspector has been obtained by him: Provided that the supplier may energize the aforesaid electric supply- lines or apparatus for the purpose of tests specified in rule 65.
(2) The owner of any high or extra-high voltage installation shall, before making application to the Inspector for approval of his installation or additions thereto, test every high or extra-high voltage circuit or addition thereto, other than an overhead line, and satisfy himself that they withstand the application of the testing voltage set out in sub-rule (1) of rule 65 and shall duly record the results of such tests and forward them to the Inspector: Provided that an Inspector may direct such owner to carry out such tests as he deems necessary or if he thinks fit, accept the manufacturers certified tests in respect of any particular apparatus in place of the test required by this sub-rule.
(3) The owner of any high or extra-high voltage installation who makes any additions or alterations to his installation shall not connect to the supply his apparatus or electric supply

lines, comprising the said alter- ations or additions unless and until such alterations or additions have been approved in writing by the Inspector.

1. Substituted by G.S.R. 256. dated 28th February, 1983, Sec. 7.

64. Use of energy at high and extra-high voltage :-

[[1](1) The In- spector shall not authorize the supplier to commence supply or where the supply has been discontinued for a period of one year and above, to re- commence the supply at high or extra-high voltage to any consumer unless,-
(a) all conductors and apparatus situated on the premises of the consumer are so placed as to be inaccessible except to an authorized person and all operations in connection with the said conductors and apparatus are carried out by an authorized person:
(b) the consumer has provided and agrees to maintain a sepa- rate building or a locked weather-proof and fire-proof enclo- sure of agreed design and location to which the supplier at all times have access for the purpose of housing his appara- tus and metering equipment, or where the provision for a separate building or enclosure is impracticable, the con- sumer has segregated the aforesaid apparatus of the sup- plier from any other part of his own apparatus : Provided that such segregation shall be by the provision of fire proof walls, if the Inspector considers it to be necessary: Provided further that in the case of an out-door installation consumer shall suitably segregate the aforesaid apparatus belonging to the supplier from his own to the satisfaction of the Inspector;
(c) all pole type sub-stations are constructed and maintained in accordance with rule 69.
(2) The following provisions shall be observed where energy at high or extra-high voltage is supplied, converted, transformed or used :
[(a)
(i) Clearances as per Indian Standard Code shall be provided for electrical apparatus so that sufficient space is available for easy operation and maintenance without any hazard to the operating and maintenance personnel working near the equipment and for ensuring adequate ventilation,
[2]["(ii) The following minimum safety working clearances shall be maintained for the bare conductors or live parts of any apparatus in outdoor sub-stations, excluding overhead lines of HV and EHV installations.
(b) the windings of motors or other apparatus within reach from any position in which a person may require to be shall be suitably protected so as to prevent danger;
(c) where transformer or transformers are used. suitable pro- visions shall be made, either by connecting with earth a point
(d) a sub-station or a switch-station with apparatus having more than 2000 litres of oil shall not [3][* * *] be located in the basement where proper oil draining arrangement cannot be provided:
(e) where a sub-station or a switch-station with apparatus having more than 2000 litres of oil is installed, whether in-doors or out-doors, the following measures shall be taken. namely:
(i) The baffle walls [4][of 4-hour fire rating] shall be provided between the apparatus in the following cases :
(A) single phase banks in the switchyards of gener- ating stations and sub-stations ;
(B) on the consumer premises :
(C) where adequate clearance between the units is not available.
(ii) Provisions shall be made for suitable oil soakpit and where use of more than 9000 litres of oil in any one oil tank, receptacle or chamber is involved, provision shall be made for the draining away or removal of any oil which may leak or escape from the tanks, receptacles or chambers containing the same, special precautions shall be taken to prevent the spread of any fire-resulting from the ignition of the oil from any cause and adequate provision shall be made for extinguishing any fire which may occur. Spare oil shall not be stored in

any such sub-station or switch station.

[5](f)

(i) Without prejudice to the above measures, adequate fire protection arrangement shall be provided for quenching the fire in the apparatus.

(ii) Where it is necessary to locate the sub-station/switch sta- tion in the basement following measures shall be taken :

(a) the room shall necessarily be in the first basement at the periphery of the basement:

(b) the entrances to the room shall be provided with fire- resisting doors of 2 hour firerating. A curb (sill) of a suitable height shall be provided at the entrance in order to prevent the flow of oil from a ruptured trans- former into other parts of the basement. Direct access to the transformer room shall be provided from out- side ;

(c) the transformer shall be protected by an automatic high velocity water spray system or by carbondioxide

(iii) oil filled transformers installed indoors shall not be on any floor above the ground or below the first basement];

(g) cable trenches inside the sub-station and switch stations containing cables shall be filled with sand. pebbles or similar non-inflammable materials or completely covered with non- inflammable slabs;

(h) unless the conditions are such that all the conductors and apparatus may be made dead at the same time for the purpose of cleaning or for other work, the said conductors and apparatus shall be so arranged that these may be made dead in sections, and that work on any such section may be carried on by an authorized person without danger;

(i) only persons authorized under sub-rule (1) of rule 3, shall carry on the work on live lines and apparatus.]

[6] [(3) All EHV apparatus shall be protected against lightning as well as against switching over voltage. The equipment used for protection and switching shall be adequately co- ordinated with the protected apparatus to ensure safe operation as well as to maintain the stability of the intercon- nected units of the power system.]

1. Substituted by G.S.R. 843, dated 23rd July, 1985 (w.e.f. 7th September, 1985), for the rule as amended by G.S.R. 170, dated 15th January, 1979 and G.S.R. 256, dated 28th February, 1983.

2. Substituted for "(ii) the following minimum clearances shall be maintained for bare conductors or live parts or any apparatus in outdoor sub-stations, excluding overhead lines, of HV and EHV installations:

Voltage \	\Class	Ground clearance	Sectional \	\	\	\(Meters)	clearance \	(Meters)
Not exceeding 11	KV	2.75 \	\2.6	-do-	33 KV	3.7	\2.8	-do-
66 KV	4.0	\3.0	-do-	132 KV	4.6	\3.5	-do-	220 KV
5.5	\4.3	-do-	400 KV	8.0	\6.5]			

", by the "Indian Electricity (Amendment-1) rules, 2000".

3. Omitted by G.S.R. 358, dated 30th April, .

4. Inserted by 1987

5. Substituted by G.S.R. 358, dated 30th April, 1987.

6. Inserted by G.S.R. 336, dated 28th March, 1988 (w.e.f. 23rd April, 1988).

64A. Additional provisions for use of energy at high and extra- high voltage :-

[[1] The following additional provisions shall be observed where energy at high or extra high voltage is supplied, converted, transferred or used, namely:

(1) Inter-locks-Suitable inter-locks shall be provided in the following cases:

(a) isolators and the controlling circuit breakers shall be inter- locked so that the isolators

cannot be operated unless the corresponding breaker is in open position :
(b) isolators and the corresponding earthing switches shall be inter-locked so that no earthing switch can be closed unless and until the corresponding isolator is in open position ;
(c} where two or more supplies are not intended to be operated in parallel, the respective circuit breakers or linked switches controlling the supplies shall be inter-locked to prevent possibility of any inadvertent paralleling or feedback;
(d) when two or more transformers are operated in parallel, the system shall be so arranged as to trip the secondary breaker of a transformer in case the primary breaker of that trans- former trips;
(e) all gates or doors which give access to live parts of an installation shall be inter-locked in such a way that these cannot be opened unless the live parts are made dead. Proper discharging and earthing of these parts should be ensured before any person comes in close proximity of such parts;
(f) where two or more generators operate in parallel and neutral switching is adopted, inter-lock shall be provided to ensure that generator breaker cannot be closed unless one of the neutrals is connected to the earthing system.
(2) Protection.-All systems and circuits shall be so protected as to automatically disconnect the supply under abnormal conditions. The following protection shall be provided, namely:
(a) over current protection to disconnect the supply automati- cally if the rated current of the equipment, cable or supply line is exceeded for a time which the equipment, cable or supply-line is not designed to withstand;
(b) earth fault/earth leakage protection to disconnect the sup- ply automatically if the earth fault current exceeds the limit of current for keeping the contact potential within reason- able values;
(c) gas pressure type protection to give alarm and tripping shall be provided on all transformers of ratings 1000 KVA and above;
(d) transformers of capacity 10 MVA and above shall be pro- tected against incipient faults by differential protection; and
(e) all generators with rating of 100 KVA and above shall be protected against earth fault/leakage. All generators of rat- ing 1000 KVA and above shall be protected against faults within the generator winding using restricted earth fault protection or differential protection or by both.]

1. Inserted by G.S.R. 358. dated 9th May, 1987.

65. Testing, Operation and Maintenance :-

[
(1) Before approval is accorded by the Inspector under rule 63 the manufacturers test certificates shall, If required, be produced for all the routine tests as required under the relevant Indian Standards.
(2) No new HV or EHV apparatus, cable or supply-lineshall be commissioned unless such apparatus, cable or supply-line are subjected to site tests as per relevant code of practice of the [1][Bureau of the Indian Standards.]
(3) No HV or EHV apparatus, cable, orsupply-line which has been kept disconnected, for a period of 6 months or more, from the system for alterations or repair shall be connected to the system until such apparatus, cable or supply-line are subjected to the relevant tests as per code of practice of [1][Bureau of Indian Standards.]
(4) Notwithstanding the provisions of sub-rules (1) to (3) (both inclu- sive) the Inspector may require certain additional tests to be carried out before charging the installations or subsequently.
(5) All apparatus, cables and supply-lines shall be maintained in healthy conditions and test shall be carried out periodically as per the relevant codes of practice of the [3][Bureau of

Indian Standards].
(6) Records of all tests, trippings maintenance works and repairs of all equipments, cables and supply-lines shall be duly kept in such a way that these records can be compared with earlier ones ; and
(7) It shall be the responsibility of the owner of all HV and EHV installations to maintain and operate the installations in a condition free from danger and as recommended by the manufacturer and/or by the relevant codes of practice of the [2] [Bureau of Indian Standards] and/or by the Inspector.]

1. Substituted by G.S.R. 466, dated 18th July, 1991.

3. Substituted by G.S.R. 466. dated 18th July, 1991.

66. Metal-sheathed electric supply-lines-Precautions against ex- cess leakage :-

(1) The following provisions shall apply to electric supply- lines (other than overhead lines) [1][* * *] for use at high or extra-high voltage :
(a) The conductors shall be enclosed in metal sheathing which shall be electrically continuous and connected with earth, and the conductivity of the metal sheathing shall be main- tained and reasonable precautions taken where necessary to avoid corrosion of the sheatning : [2][Provided that in the case of thermc-plastic insulated and sheathed cables, with metallic armour, the metallic wire or tap armour shall be considered as metal sheathing for the purpose of this rule : Provided further that this rule shall not apply to cable with thermo-plastic insulation without any metallic screen or armour.]
[3] [(b) The resistance of the earth connection with metallic sheath shall be kept low enough to permit the controlling circuit breaker or cut-out to operate in the event of any failure of insulation between the metallic sheath and the conductor.]
(c) Where an electric supply-line as aforesaid has concentric cables and the external conductor is insulated from an outer metal sheathing and connected with earth, the external conductor may be regarded as the metal sheathing for the purposes of this rule provided that the foregoing provisions as to conductivity are complied with.
(2) Nothing in the provisions of sub-rule (1) shall preclude the employ- ment in generating stations, sub-stations and switch, (stations including outdoor stations and out-door switch stations) of conductors for use at high or extra-high voltages which are not enclosed in metal sheathing or preclude the use of electric supply-lines laid before the prescribed date to which the provisions of these rules apply.

1. Omitted by 1991

2. Substituted by G.S.R. 1723, dated 21st November, 1977.

3. Substituted by G.S.R. 529, dated 11th July, 1986 (w.e.f. 11th July, 1986) for Cl. (b) in sub-rule (i) as inserted by G.S.R. 1723, dated 21st November, 1977.

67. Connection with earth :-

[1][(1) All non-current carrying metal parts associated with HV/EHV installation shall be effectively earthed to grounding system or mat which will-
(a) limit the touch and step potential to tolerable values;
(b) limit the ground potential rise to tolerable values so as to prevent danger due to transfer of potential through ground. earth wires, cable sheath fences, pipe lines, etc;
(c) maintain the resistance of the earth connection to such a value as to make operation of the protective device effective:
(1-A) In the case of star-connected system with earthed neutrals or delta-connected system with earthed artificial neutral point:
(a) The neutral point of every generator and transformer shall be earthed by connecting it

to the earthing system as defined in rule 61(4) and here in above by not less than two separate and distinct connections: Provided that the neutral point of a generator may be connected to the earthing system through an impedance to limit the fault current to the earth: Provided further that in the case of multi-machine system neutral switching may be resorted to, for limiting the inju- rious effect of harmonic current circulation in the system:
(b) in the event of an appreciable harmonic current flowing in the neutral connection so as to cause interference with communication circuits, the generator or transformer neu- tral shall be earthed through a suitable impedance;
(c) in case of the delta connected system the neutral point shall be obtained by the insertion of a grounding transformer and current limiting resistance or impedance wherever consid- ered necessary at the commencement of such a system.]
[2](1B) In case of generating stations, Extra High Voltage sub-stations and Extra High Voltage industrial installations, the system neutral earthing and protective frame earthing may be, if system design so warrants, integrated into common earthing grid provided the resistance to earth of combined mat does not cause to exceed the step and touch potential beyond its permissible values.
(2) Single-phase high or extra-high voltage systems shall be earthed in a manner approved by the Inspector.
(3) In the case of a system comprising electric supply-lines having concentric cables, the external conductor shall be the one to be connected with earth.
(4) Where a supplier proposes to connect with earth an existing system for use at high or extra-high voltage which has not hitherto been so connected with earth, he shall give not less than fourteen days notice in writing together with particulars to the telegraph authority of the proposed connection with earth.
(5)
[3][(a)] Where the earthing lead and earth connection are used only in connection -with earthing guards erected under high or extra-high voltage overhead lines where they cross a tele-communication line or a railway line, and where such lines are equipped with earth leakage relays of a type and setting approved by the Inspector, the resistance shall not exceed 25 ohms.
[4] [(b) Every earthing system belonging to either the supplier or the consumer shall be tested for its resistance to earth on a dry day during dry season not less than once a year. Records of such tests shall be maintained and shall be produced, if required, before the Inspector or any officer appointed to assist him and authorized under sub-rule (2) of rule 4A.]
(6) In so far as the provisions of rule 61 are consistent with the provisions of this rule, all connections with earth shall also comply with the provisions of that rule.

1. Substituted by G.S.R. 358. dated 30th April, 1987.

2. In Rule 67, sub-rule (1B) shall be inserted by Indian Electricity (Second Amendment) Rules, 2002. , Gaz. of India, Exty., Pt. II-Sec. (i), No. 545, dt. 4.12.2002, p. 4.

3. Re-numbered by G.S.R. 1723, dated 21st November, 1977.

4. Inserted by G.S.R. 1723, dated 21st November, 1977.

68. General conditions as to transformation and control of energy :-

(1) Where energy at high Or extra-high voltage is transformed, converted, regulated or otherwise controlled in sub-stations or switch-sta- tions (including outdoor sub-stations and out-door switch-stations) or in street boxes constructed underground the following provisions shall have effect:
[1][(a) sub-stations and switch-stations shall preferably be erected above ground, but where necessarily constructed under- ground due provisions for ventilation and drainage shall be made and any space housing switchgear shall not be used for storage of any materials

especially inflammable and combustible materials or refuse.]
(b) out-door sub-stations except pole-type sub-stations and outdoor switch-stations shall (unless the apparatus is com- pletely enclosed in a metal covering connected with earth, the said apparatus also being connected with the system by armoured cables) be efficiently protected by fencing not less than [2] [1.8 metres] in height or other means so as to prevent access to the electric supply-lines and apparatus therein by an unauthorized person:
(c) underground street boxes (other than sub-stations) which contain transformers shall not contain switches or other apparatus, and switches, cut-outs or other apparatus re- quired for controlling or other purposes shall be fixed in separate receptacles above ground wherever practicable.
(2) Where energy is transformed, suitable provisions shall be made either by connecting with earth a point of the system at the lower voltage or otherwise to guard against danger by reason of the said system becoming accidentally charged above its normal voltage by leakage from a contact with the system at the higher voltage.

1. Substituted by G.S.R. 358, dated 30th April, 1987.

2. Substituted by G.S.R. 1723. dated 21st November, 1977.

69. Pole type sub-stations :-

Where platform type construction is used for a pole-type sub-station and sufficient space for a person to stand on the platform is provided, a substantial hand-rail shall be built around the said platform and if the hand-rail is of metal, it shall be connected with earth: Provided that in the case of pole-type sub-station on wooden support and wooden platform the metal hand-rail shall not be connected with earth.

70. Condensers :-

Suitable provisions shall be made for immediate and automatic discharge of every static condenser on disconnection of supply.

71. Additional provisions for supply to high voltage luminous tube sign Installation :-

(1) Any person who proposes to use or who is using energy for the purpose of operating a luminous tube sign installation, or who proposes to transform or who is transforming energy to a high voltage for any such purpose shall comply with the following conditions :
(a) All live parts of the installation (including all apparatus and live conductors in the secondary circuit, but excluding the tubes except in the neighbourhood of their terminals) shall be inaccessible to unauthorized persons and such parts shall be effectively screened.
(b) Irrespective of the methods of obtaining the voltage of the circuit which feeds the luminous discharge tube sign, no part of any conductor of such circuit shall be in metallic connection (except in respect of its connection with earth) with any conductor of the supply system or with the primary winding of the transformer.
(c) All live parts of exterior installation shall be so disposed as to protect them against the effects of the weather, and such installations shall be so arranged and separated from its surroundings as to limit, as far as possible, the spreading of fire.
(d) The secondary circuit shall be permanently earthed as the transformer and the core of every transformer shall be earthed.
(e) Where the conductors of the primary circuit are not in metallic connection with the supply conductors (e.g. where a motor-generator or a double wound convertor is used) one phase of such primary circuit shall be permanently earthed at the motor-generator or convertor, or at the transformer.
[1] [(ee) An earth leakage circuit breaker of sufficient rating shall be provided on the low voltage side to detect the leakage in such luminous tube sign installations.]

(f) A final sub-circuit which forms the primary circuit of a fixed luminous discharge-tube sign installation shall be reserved solely for such purpose.
(g) A separate primary final sub-circuit shall be provided for each transformer or each group of transformers having an aggregate input not exceeding 1,000 volt amperes, of a fixed luminous discharge tube sign installation.
(h) An interior installation shall be provided with suitable adja- cent means for disconnecting all phases of the supply except the "neutral" in a three-phase four-wire circuit.
(i) For installations on the exterior of a building a suitable emergency fire proof linked switch to operate on all phases except the neutral in a three-phase four-wire circuit shall be provided and fixed in a conspicuous position at not more than 2.743 metre (9 ft.) above the ground.
(j) A special "caution" notice shall be affixed in a conspicuous place on the door of every high voltage enclosure to the effect that the low voltage supply must be cut off before the enclosure is opened
(k) Where static condensers are used, they shall be installed on the load side of the fuses and the primary (low voltage) side of the transformer.
(l) Where static condensers are used on primary side. means shall be provided for automatically discharging the condens- ers when supply is cut off: Provided that static condensers or any circuit interrupting devices on the high or extra-high voltage side shall not be used without the approval in writing of the Inspector.
(2) The owner or user of any luminous tube sign or similar high voltage installation shall not bring the same into use without giving to the Inspector not less than 14 days notice in-writing of his intention so to do.

1. Inserted by G.S.R. 844, dated 7th September, 1985.

72. Additional provisions for supply to high voltage electrode boilers :-

(1) Where a system having a point connected with earth is used for supply of energy at high or extra-high voltage to an electrode boiler which is also connected with earth, the following conditions shall apply :
(a) The metal work of the electrode boiler shall be efficiently connected to the metal sheathing and metallic armouring (if any) of the high voltage electric supply-line whereby energy is supplied to the electrode boiler.
(b) The supply of energy at high or extra-high voltage to the electrode boiler shall be controlled by a suitable circuit- breaker so set as to operate in the event of phase currents becoming unbalanced to the extent of the 10 per cent. of the rated current consumption of the electrode boiler under normal conditions of operation : Provided that if in any case a higher setting is essential to ensure stability of operation of the electrode boiler, the setting may be increased so as not to exceed 15 per cent. of the rated current consumption of the electrode boiler under normal conditions of operation.
(c) An inverse time element device may be used in conjunction with the aforesaid circuit-breaker to prevent the operation thereof unnecessarily on the occurrence of unbalanced phase currents of momentary or short duration.
(d) The supplier shall serve a notice in writing on the telegraph authority at least seven days prior to the date on which such supply of energy is to be afforded specifying the location of every point (including the earth connection of the electrode boiler) at which the system is connected with earth.
(2) The owner or user of any high or extra-high voltage electrode boiler shall not bring the same into use without giving the Inspector not less than 14 days notice in writing of his intention so to do.

73. Supply to X-ray and high frequency installation :-

(1) Any person who proposes to employ or who is employing energy for the purpose of operating an X-ray or similar high-frequency installation shall comply with the following conditions :

(a) Mechanical barriers shall be provided to prevent to close an approach to any high voltage parts of the X-ray apparatus. except the X-ray tube and its leads, unless such high-voltage parts have been rendered shock-proof by being shielded by earthed metal or adequate insulating material.

(b) Where high-voltage generators operating at 300 peak KV or more are used. such generators shall be installed in rooms separate from those containing the other equipment and any step-up transformer employed shall be so installed and protected as to prevent danger.

(c) A suitable switch shall be provided to control the circuit supplying a generator, and shall be so arranged as to be open except while door of the room housing the generators is locked from the outside.

(d) X-ray tubes used in therapy shall be mounted in an earthed metal enclosure.

(e) Every X-ray machine shall be provided with a milli-ammeter or other suitable measuring instrument, readily visible from the control position and connected, if practicable, in the earth lead but guarded if connected in the high-voltage lead.

[1][(ee) Notwithstanding the provisions of Cl. (e), an earth leakage circuit breaker of sufficient rating shall be provided on the low voltage side to detect the leakage in such X-ray installa- tions].

(f) This rule shall not apply to shock-proof portable units or shock-proof self-contained and stationary units

.

(2)

(a) In the case of non-shock-proof equipment, overhead high-voltage conductors, unless suitably guarded against personal contact, shall be adequately spaced and high-voltage leads on tilting-tables and fluoroscopes shall be adequately insulated or so surrounded by barriers as to prevent inadvertent contact.

(b) The low voltage circuit of the step-up transformer shall contain a manually-operated control device having overload protection in addition to the over-current device for circuit protection, and these devices shall have no exposed live parts and for diagnostic work there shall be an additional

(i) a switch with a spring or other mechanism that will open automatically except while held closed by the operator, or

(ii) a time-switch which will open automatically after a definite period of time for which it has been set.

(c) If more than one piece of apparatus be operated from the same high or extra-high voltage source each shall be provided with a high or extra-high voltage switch to give independent control

(d) Low frequency current-carrying parts of a machine of the quenched gap or open gap type shall be so insulated or guarded that they cannot be touched during operation, the high-frequency circuit which delivers high frequency current normally for the therapeutic purposes, being exempted.

(e) All X-ray generators having capacitors shall have suitable means for discharging the capacitors manually.

(f) Except in the case of self-contained units, all 200 peak KV, or higher. X-ray generators shall have a sphere gap installed in the high voltage system adjusted so that it will break down on over-voltage surges.

(3)

(a) A non-current-carrying metal parts of tube stands, fluoroscopes and other apparatus shall be properly earthed and insulating floors, mats or platforms shall be provided for operators in proximity to high or extra- high voltage parts unless such parts have been

rendered shock-proof.
(b) Where short-wave therapy machines are used, the treatment tables and examining chairs shall be wholly non-metallic.
(4) The owner of an X-ray installation or similar high-frequency apparatus shall not bring the same into use without giving to the Inspector not less than 14 days notice in writing of his intention so to do: [2] [Provided that the aforesaid notice shall not be necessary in the case of shock-proof portable X-ray and high frequency equipment which have been inspected before the commencement of their use and periodically thereafter.]

1. Inserted by G.S.R. 844, dated 31st July. 1985 (w.e.f. 7th September, 1985)

2. Inserted by G.S.R. 1591, dated 20th October, 1964 (w.e.f. 7th November, 1964).

CHAPTER 8 3 [OVERHEAD LINES, UNDER-GROUND CABLES AND GENERATING STATIONS]

74. Material and strength :-

All conductors or overhead lines other than those specified in sub-rule (1) of rule 86 shall have a breaking strength of not less than 350 kg. (700 lbs.). (2) Where the voltage is low and the span is of less than 15.24 metres (50 ft.) and is on the owners or consumers premises, a conductor having an actual breaking strength of not less than 150 kg. may be used.

75. Joints :-

Joints between conductors of overhead lines shall be mechanically and electrically secure under the conditions of operation. The ultimate strength of the joint shall not be less than 95 per cent. of that of the conductor, and the electrical conductivity not less than that of the conductor. [1] [Provided that no conductor of an overhead line shall have more than two joints in a span.]

1. Inserted by G.S.R. 730, dated 7th September, 1989 (w.e.f. 30th September, 1989).

76. Maximum stresses, factors of safety :-

[1] (1) The load and permissible stresses on the structural members, conductors and ground wire of self-supporting steel lattice towers for overhead transmission lines shall be in accordance with the specifications laid down, from time to time, by the Bureau of Indian Standards.
(2) Overhead lines not covered in sub-rule (1) shall have the following minimum factors of safety:

(i)	for metal supports	1,5;
(ii)	for mechanically processed concrete supports	2.0;

(iii)	for hand moulded concrete supports	2.5;
(iv)	for wood supports	3.0.

Explanation 1. The minimum factors of safety shall be based on such load as may cause failure of the supports to perform its function (assuming that the foundation and other components of the structure are intact).
Explanation 2. The load shall be equivalent to the yield point stress or the modulus or rupture, as the case may be. for supports subject to bending and vertical loads and the crippling load for support used as struts.
Explanation 3. The strength of the supports of the overhead lines in the direction of the line shall not be less than one-fourth of the strength required in the direction transverse to the line.
Explanation 4. The minimum factor of safety for the stay wires, guard wires or bearer wires shall be 2.5 based on the ultimate tensile strength of the wire.
Explanation 5. The minimum factor of safety for conductors shall be 2 based on their ultimate tensile strength. In addition, the conductor tension at 32° C. without external load shall not exceed the following percentages of the ultimate tensile strength of the Conductor:

Initial unloaded tension	35 per cent
Final unloaded tension	25 per cent

Provided that the conductors having a cross-section of a generally triangular shape such as conductors composed of 3 wires the final unloaded tension at 32° C, shall not exceed 30 per cent of the ultimate tensile strength of such conductor.
(3) For the purpose of calculating the factors of safety specified under sub-rule (2):
(a) The maximum wind pressure shall be as specified in the relevant Indian Standards;
(b) For cylindrical bodies, the effective area shall be taken as full projected area exposed to wind pressure; and
(c) The maximum and minimum temperature shall be as specified in the relevant Indian Standard.
(4) Notwithstanding anything contained in sub-rules (2) and (3), in localities where overhead lines are liable to accumulations of ice or snow the appropriate Government may, by order in writing specify the loading conditions for the purpose of calculating the factor of safety.
1. Rule 76, shall be substituted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazette of India, Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

77. Clearance above ground of the lowest conductor :-

(1) No conductor of an overhead line, including service lines, erected across any street shall at any part thereof be at a height less than-
(a) for low and medium voltage line .. 5.791 metres (19 ft.)
(b) for high voltage line .. 6.096 metres (20 ft.)
(2) No conductor of an overhead lines, including service lines, erected along any street shall at any part thereof be at a height less than-
(a) for low and medium voltage lines.. 5.486 metres (18 ft.)
(b) for high voltage lines .. 5.791 metres (19 ft.)
(3) No conductor of an overhead line, including service lines, erected elsewhere than along

or across any street shall be at a height less than-
(a) for low, medium and high voltage lines up to and including 1 1,000 volts, if bare .. 4.572 metres (15 ft.)
(b) for low, medium and high voltage lines up to and including 1 1,000 volts, if insulated .. 3.963 metres (13 ft.)
(c) for high voltage lines above 11,000 volts..5.182 metres (17 ft.)
(4) For extra-high voltage lines the clearance above ground shall not be less than 5.182 metres (17 ft.) plus 0.305 metres (1 ft.) for every 33,000 volts or part thereof by which the voltage of the line exceeds 33,000 volts: Provided that the minimum clearance along or across any street shall not be less than 6.0965 metres (20 ft.).

78. Clearance between conductors and trolley wires :-

[1][(1)] No conductor of an overhead line crossing a tramway or trolley bus route using trolley wires shall have less than the following clearance above any trolley wire:
(a) low and medium voltage line .. 1.219 metres (4 ft.): Provided that where an insulated conductor suspended from a bearer wire crosses over a trolley wire the minimum clearance for such insulated conductor shall be 0.610 metre (2 ft.);
(b) high voltage lines up to and Including 11,000 volts .. 1.829 metres (6 ft.)
(c) high voltage line above 1 1,000 volts.. .. 2.439 metres (8 ft.)
(d) extra-high voltage lines .. 3.048 metres (10 ft.)
[2] [(2) In any case of a crossing referred to in sub-rule (1), whoever lays

1. Re-numbered by G.S.R. 528, dated 11th July, 1986 (w.e.f. l9th July,1986).

2. Inserted by G.S.R. 528.

79. Clearance from buildings of low and medium voltage lines and service-lines :-

(1) Where a low or medium voltage overhead line passes above or adjacent to or terminates on any building the following minimum clearances from any accessible point, on the basis of maximum sag, shall be observed:
(a) For any flat roof, open balcony, verandah, roof and lean-to roof-
(i) when the line passes above the building a vertical clearance of 2.439 metres (8 ft.) from the highest point, and
(ii) when the line passes adjacent to the building a hori- zontal clearance of 1.219 metres (4 ft.) from the nearest point, and
(b) for pitched roof-
(i) when the line passes above the building a vertical clearance of 2.439 metres (8 ft.) immediately under the lines, and
(ii) when the line passes adjacent to the building a hori- zontal clearance of 1.219 metres (4 ft.).
(2) Any conductor so situated as to have a clearance less than that specified in sub-rule (1) shall be adequately insulated and shall be attached [1][* * *] at suitable intervals to a bare earthed bearer wire having a breaking strength of not less than 350 kg. (700 lbs.).
(3) The horizontal clearance shall be measured when the line is at a maximum deflection from the vertical due to wind pressure.
[2] [Explanation.-For the purpose of this rule, expression "building" shall be deemed to include any structure, whether permanent or tempo- rary.]

1. The words by means of metal clips omitted by G.S.R. 523, dated 28th March, 1966 (w.e.f 9th April, 1966).

2. Added by G.S.R. 844. dated 31st July, 1985 (w.e.f. 7th September, 1985).

80. Clearance from buildings of high and extra-high voltage line :-

(1) Where a high or extra-high voltage overhead line passes above or adjacent to any building or part of a building it shall have on the basis of
(a) lor high voltage lines up to and including 33,000 volts 3.58 metres (12 ft.)
(b) for extra-high voltage line 3.658 metres (12 ft.)pl 0.305 metre (1 ft.) for every additional 33,000 volts or part thereof.
(2) The horizontal clearance between the nearest conductor and any part of such building shall, on the basis of maximum deflection due to wind, be not less than-
(a) for high voltage lines up to and including 11,000 volts .. 1.219 metres (4 ft.)
(b) for high voltage lines above 11,000 volts up to and including 33,000 volts .. 1.829 metres (6 ft.)
(c) for extra-high voltage line .. 1.829 metres (6 ft.)plu 0.305 metre (I ft.) for every additional 33,000 volts or part thereof.
[1][Explanation.-For the purpose of this rule expression "building" shall be deemed to include any structure, whether permanent or temporary.[2] ["Various clearances such as vertical, horizontal and ground clearance shall be considered as per the sketch in Annexure XVI.]

1. Inserted by G.S.R. 844, dated 31st July, 1985 (w.e.f. 7th September, 1985).

2. In Rule 80, in the Explanation the words shall be inserted by Indian Electricity (Second Amendment) Rules, 2002. , Gaz. of India, Exty., Pt. II-Sec. (i), No. 545, dt. 4.12.2002, p. 4.

81. Conductors at different voltages on same supports :-

. Where conductors forming parts of systems at different voltage are erected on the same supports, the owner shall make adequate provision to guard against danger to linesmen and others from the lower voltage system being charged above its normal working voltage by leakage from or contact with the highest-voltage system: and the methods of construction and clearances between the conductors of the two systems shall be subject to the prior approval of the Inspector.

82. Erection of or alteration to buildings, structures, flood banks and elevation of roads :-

[. [1] .-
(1) If at any time subsequent to the erection of an overhead line (whether covered with insulating material or bare), any person proposes to erect a new building or structure or flood bank or to raise any road level or to carry out any other type of work whether permanent or temporary or to make In or upon any building or structure or flood bank or road, any permanent or temporary addition or alteration. he and the contractor whom he employs to carry out the erection, addition or alteration, shall. If such work. building, structure,] flood bank, road or additions and alterations thereto would, during or after the construction result in contravention of any of the provision of rule 77, rule 79 or rule 80 give notice In writing of his intention to the supplier and to the Inspector and
(2)
(a) On receipt of the notice referred to in sub-rule (1) or otherwise, the supplier shall examine whether the line under reference was lawfully laid and whether the person was liable to pay the cost of alteration and, if so, send a notice without undue delay, to such person together with an estimate of the cost of the expenditure likely to be incurred to so alter the overhead line and require him to deposit, within thirty days of the receipt of the notice with the supplier, amount of the estimated cost.
(b) If the person referred to in sub-rule (1) disputes the suppliers estimated cost of alteration of the overhead line or even responsibility to pay such cost, the dispute may be referred to the Inspector by either of the parties whereupon the same shall be decided by

the Inspector.
(3) No work upon such building, structure, flood bank, road and addition or alteration thereto, shall be commenced or continued until the Inspector has certified that provisions of rule 77, rule 79 or rule 80 are not likely to be contravened either during or after the aforesaid construction: Provided that the Inspector may, if he is satisfied that the overhead line has been so guarded as to secure the protection of persons or property from injury, or risk of injury, permit the work to be executed prior to the alteration of the overhead line or in the case of temporary addition or alteration, without alteration of the overhead line.
(4) On receipt of the deposit the supplier shall alter the overhead line within one month of the date of the deposit or within such longer period as the Inspector may allow and ensure that it shall not contravene the provisions of rule 77, rule 79 or rule 80 either during or after such construction.
(5) In the absence of an agreement to the contrary between the parties concerned, the cost of such alteration of the overhead line laid down shall be estimated on the following basis, namely:
(a) the cost of additional material used on the alteration giving due credit for the depreciated cost of the material which would be available from the existing line;
(b) the wages of labour employed in effecting the alteration;
(c) supervision charges to the extent ofl5 per cent. of the wages mentioned in Cl. (b); and
(d) any charges Incurred by the supplier in complying with the provisions of Section 16 of the Act in respect of such alterations.
(6) Where the estimated cost of the alteration of the overhead line is not deposited, the supplier shall be considered as an aggrieved party for the purpose of this rule.]

1. Substituted by G.S.R. 1723, dated 21st November, 1977 (w.e.f. 31st December, 1977).

82A. Transporting and storing of material near overhead lines :-

[. [1] .-
(1) No rods. pipes or similar materials shall be taken below or in the vicinity of any bare overhead conductors or lines if they are likely to infringe the provisions for clearances under rule 79 and rule 80, unless such materials are transported under the direct supervision of a competent person authorized in this behalf by the owner of such overhead conductors or lines;
(2) under no circumstances rods, pipes or other similar materials shall be brought within the flash over distance of bare live conductors or lines; and
(3) no material or earth work or agricultural produce shall be dumped or stored or trees grown below or in the vicinity of bare overhead conductors or lines so as to reduce the requisite safety clearances under rule 79 and rule 80.]

1. Ins by G.S.R. 358. dated 30th April, 1987.

83. Clearance-General :-

(1)For the purpose of computing the vertical clearance of an overhead line, the maximum sag of any conductor shall be calculated on the basis of the maximum sag in still air and the maximum temperature as specified by the State Government under rule 76(2) (d). Similarly, for the purpose of computing any horizontal clearance of an overhead line the maximum deflection of any conductor shall be calculated on the basis of the wind pressure specified by the State Government under rule 76(2) (a) [1][or may be taken as 35Z, whichever is greater].
[2] (2) No blasting for any purpose shall be done within 300 metres from the boundary of sub-station or from the High Voltage or Extra High Voltage electric supply lines or tower structure without the consultation of the owner of such sub- station or electric supply lines or tower structures and in case of mining lease hold area, without the written permission of

the Chief Inspector of Mines or the Electrical Inspector of Mines.

1. Inserted by G.S.R. 1723, dated 21st November. 1977, Sec. 23.

2. In Rule 83, principal rule, shall be renumbered as sub-rule (1), and after the sub-rule (1), sub-rule (2) shall be inserted by Indian Electricity (Second Amendment) Rules, 2002. , Gaz. of India, Exty., Pt. II-Sec. (i), No. 545, dt. 4.12.2002, p. 4.

84. Routes-Proximity to aerodromes :-

Overhead lines shall not be erected in the vicinity of aerodromes until the aerodrome authorities have approved in writing the route of the proposed lines.

85. Maximum intervals between supports :-

All conductors shall be attached to supports at intervals not exceeding the safe limits based on the ultimate tensile strength of the conductor and the factor of safety prescribed in rule 76: Provided that in the case of overhead lines carrying low or medium voltage conductors, when erected in, over, along or across any street, the interval shall not, without the consent in writing of the Inspector, exceed 65 metres.

86. Conditions to apply where the tele-communication lines and power-lines are carried on same supports :-

(1) Every overhead tele- communication line erected on supports carrying a power line shall consist of conductors each having a breaking strength of not less than 270 kg.
(2) Every telephone used on a tele-communication line erected on supports carrying a power line shall be suitably guarded against lightning and shall be provided by cut-outs.
(3) Where a tele-communication line is erected on supports carrying a high or extra-high voltage power line arrangement shall be made to safe- guard any person using the telephone against injury resulting from contact, leakage or induction between such power and tele-communication lines.

87. Lines crossing or approaching each other :-

[1][(1) Where an overhead line crosses or is in proximity to any tele-communication line, either the owner of the overhead line or the tele-communication line, whoever lays his line later, shall arrange to provide for protective devices or guarding arrangements ; in a manner laid down in the Code of Practice or the guidelines prepared by the Power and Tele-communication Co- ordina- tion Committee and subject to the provisions of the following sub-rules.]
(2) When it is intended to erect a tele-communication line or an overhead line which will cross or be in proximity to an overhead line or a tele-communication line, as the case may be, the person proposing to erect such line shall give one months notice of his intention so to do along with the relevant details of protection and drawings to the owner of the existing line.
[2][(3) Where an overhead line crosses or is in proximity to another overhead line. guarding arrangement shall be provided so as to guard against the possibility of their coming into contact with each other. Where an overhead line crosses another overhead line, clearances shall be as under,- [3][Minimum clearances in metres between lines when crossing each other.

Sl. No.	Nominal System Voltage	11-66 KV	110-132 KV	220 KV	400 KV	800 KV
1.	Low and Medium	2.44	3.05	4.58	5.49	7.94
2.	11-66 KV	2.44	3.05	4.58	5.49	7.94
3.						

110-132 KV 3.05 3.05 4.58 5.49 7.94 4. 220 KV 4.58 4.58 4.58 5.49 7.94 5. 400 KV 5.49 5.49 5.49 5.49 7.94 6. 800 KV 7.94 7.94 7.94 7.94 7.94]:

Provided that no guardings are required when one extra-high voltage line crosses over another extra-high voltage, high voltage, medium or low voltage line or a road or a tram subject to the condition that adequate clearances are provided between the lowest conductor of the extra-high rule 77 from the topmost surface of the road is maintained.

(4) A person erecting or proposing to erect a line which may cross or be in proximity with an existing line, may normally provide guarding arrangements on his own line or require the owner of the other overhead line to provide guarding arrangements as referred to in sub-rule (3).

(5) In all cases referred to in the preceding sub-rules the expenses of providing guarding arrangements or protective devices shall be borne by the person whose line was last erected].

(6) Where two lines cross, the crossing shall be made as nearly at right angles as the nature of the case admits, [4][and as near the support of the line as practicable, and the support of the lower line shall not be erected below the upper line].

[5] "Provided that the angle of crossing of power lines shall not be less than 60°."

(7) The guarding arrangement shall ordinarily be carried out by the owner of the supports on which it is made and he shall be responsible for its efficient maintenance.

(8) All work required to be done by or under this rule shall be carried out to the satisfaction of the Inspector.

1. Substituted by G.S.R. 1723, dated 21st November, 1977, Sec. 24.

2. Substituted by G.S.R. 256, dated 28th February, 1983, Sec. 3.

3. Substituted by G.S.R. 466. dated 18th July, 1988 (w.e.f. 17th August. 1991).

4. Added by G.S.R. 170. dated 15th January, 1979 (w.e.f. 3rd January, 1979).

5. Rule 87, in sub-rule (6), proviso shall be inserted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazette ofIndia, Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

88. Guarding :-

(1) Where guarding is required under these rules the provisions of sub-rules (2) to (4) shall apply.

(2) Every guard-wire shall be connected with earth at each point at which its electricity continuity is broken.

(3) Every guard-wire shall have an actual breaking strength of not less than 635 kgs. and if made of iron or steel, shall be galvanized.

(4) Every guard-wire or cross-connected system of guard-wires shall have sufficient current-carrying capacity to ensure the rendering dead, without risk of fusing of the guard-wire or wires till the contact of any live wires has been removed.

(5) Lines crossing trolley-wire.-In the case of a crossing over a trolley- wire the guarding shall fulfil the following conditions, namely:

(a) where there is only one trolley-wire, two guard-wires shall be erected as in diagram A;

(b) where there are two trolley-wires and the distance between them does not exceed 40 cms. two guard-wires shall be erected as in diagram B;

(c) where there are two trolley-wires and the distance between them exceeds 40 cms. but does not exceed 1.2 metres three guard-wires shall be erected as in diagram C;

(d) where there are two trolley-wires and the distance between them exceeds 1.2 metres, each trolley-wire shall be sepa- rately guarded as in diagram D:

(e) the rise of the trolley boom shall be so limited that if the trolley leaves the trolley-wire,

it shall not foul the guard- wires; and
(f) where a telegraph-line is liable to fall or be blown down upon

89. Service-lines from overhead lines :-

No service-line or tapping shall be taken off an overhead line except at a point of support. [1] [Provided that the number of tappings per conductor shall not be more than four in case of low and medium voltage connections.]

1. Inserted byG.S.R. 45, dated 1st January, 1993.

90. Earthing :-

(1) All metal supports and all reinforced and pre- stressed cement concrete supports of overhead lines and metallic fitting attached thereto, shall be permanently and efficiently earthed. For this purpose a continuous earth-wire shall be provided and securely fastened to each pole and connected with earth ordinarily at three points in every 1.609 km. (mile), the spacing between the points being as nearly equidistant as possible. Alternatively, each support and the metallic fitting attached thereto shall be efficiently earthed.
[1] (1 -A) Metallic bearer wire used for supporting insulated wires of low and medium voltage/overhead/service lines shall be efficiently earthed or insulated.]
(2) Each stay-wire shall be similarly earthed unless an insulator has been placed in at a height not less than 3.0 metres from the ground.

1. Inserted by G.S.R. 732, dated 18th June, 1985 (w.e.f. 3rd August, 1985).

91. Safety and protective devices :-

(1) Every overhead line (not being suspended from a dead bearer wire and not being covered with insulating material and not being a trolley-wire erected over and part of a street or other public place or in any factory or mine or on any consumers premises) shall be protected with a device approved by the Inspector for rendering the line electrically harmless in case it breaks.
(2) An Inspector may by notice in writing require the owner of any such overhead line wherever it may be erected to protect it in the manner specified in subrule (1).
[1] [(3) The owner of every high and extra-high voltage overhead line shall make adequate arrangements to the satisfaction of the Inspector to prevent unauthorized persons ascending any of the supports of such overhead lines which can be easily climbed upon without the help of a ladder or special appliances. Rails, reinforced cement concrete poles and pre-stressed ce- ment concrete poles without steps, tubular poles, wooden supports without steps, I-sections and channels shall be deemed as supports which cannot be easily climbed upon for the purpose of this rule.]

1. Substituted by 838, dated 23rd July, 1980. published in the Gazette of India, Pt. II, Sec. 3 (i). dated 9th August, 1980.

92. Protection against lightning :-

(1) The owner of every overhead line [1][Sub-Station or Generating-Station] which is so exposed as to be liable to injury from lightning shall adopt efficient means for diverting to earth any electrical surges due to lightning.
[2] [(2) The earthing lead for any lightning-arrestor shall not pass through any iron or steel pipe, but shall be taken as directly as possible from the lightning-arrestor to a separate earth electrode and/or junction of the earth mat already provided for the high and extra high-voltage sub-station subject to the avoidance of bends wherever practicable.

1. Inserted by G.S.R. 466, dated 18th July. 1991 (w.e.f. 17th August, 1991).

2. Substituted by G.S.R. 1050, dated 22nd October, 1985 (w.e.f. 9th November. 1985).

93. Unused overhead lines :-

(1) When an overhead line ceases to be used as an electric supply-line, the owner shall maintain it in a safe mechanical condition in accordance with rule 76 or shall remove it.
(2) Where any overhead line ceases to be used as an electric supply line, an Inspector may, by a notice in writing served on the owner, require

CHAPTER 9 ELECTRIC TRACTION

94. Additional rules for electric traction :-

(1) The rules in this chapter apply only where energy is used for purposes of traction: Provided that nothing in this chapter shall apply to energy used for the public carriage of passengers, animals or goods on, or for the lighting or ventilation of the rolling stock of, any railway or tramway subject to the provisions of Railways Act, 1890.
(2) In this chapter the conductor used for transmitting energy to a vehicle is referred to as the "line" and the other conductor as the "return".
(3) The owner of the line, return, rails or trolley-wire, as the case may be, shall be responsible for the due observance of rule 95 to rule 108.

95. Voltage of supply to vehicle :-

No person shall supply energy at high or extra-high voltage to any trolley-wire or other conductor used in direct electrical and mechanical connection with any vehicle, except with the written approval of the Central or the State Government, as the case may be, and subject to such conditions as the Central or the State Government may think reasonable and proper in the circumstances.

96. Insulation of lines :-

Every line shall be insulated throughout.

97. Insulation of returns :-

(1) Where any rails on which cars run, or any conductors laid between or within 0.9 metres of such rails, from any part of a return, such part may be uninsulated. All other returns or parts of a return shall be Insulated, unless they are of such conductivity as to secure the conditions required by sub-rules (2) and (3) of rule 98.
(2) Where any part of a return is uninsulated, it shall be connected with the negative or neutral of the system.

98. Proximity to metallic pipes, etc :-

(1) Where an uninsulated re- turn is in proximity to any metallic pipe, structure or substance, not belonging to the owner of the return, he shall, if so required by the owner of such pipe, structure or substance, connect his return therewith at the latters expense.
(2) Where the return is partly or entirely uninsulated, the owner shall, in the construction and maintenance of his system, adopt such means for reducing the difference produced by the current between the potential of the uninsulated return at any one point and the

potential to the uninsulated return at any other point as to ensure that the difference of potential between the uninsulated return and any metallic pipe, structure or sub- stance in the vicinity shall not exceed four volts where the return is relatively positive, or one and one-third volts where the return is relatively negative.
(3) The owner of any such pipe, structure or substance as is referred to in sub-rule (2) may, in respect of it, require the owner of the uninsulated return at reasonable times and intervals to ascertain by test in his presence, or in that of his representative, whether the conditions specified in sub-rule (2) is fulfilled ; and, if such condition is found to be fulfilled all reasonable expenses of, and incidental to the carrying out of. the test shall be borne by the owner of the pipe, structure or substance-.

99. Difference of potential on return :-

Where the return is partly or entirely uninsulated, the owner shall keep a continuous record of the difference of potential during the working of his system, between every junction of an insulated return with an uninsulated return and the points on the route most distant from that junction, and the difference of potential shall not under normal running condition, exceed a mean value of seven volts between the highest momentary peak and the average for the hour of maximum load.

100. Leakage on conduit system :-

Where both the line and the re- turn are placed within a conduit, the following conditions shall be fulfilled in the construction and maintenance of the system :
(a) where the rails are used to form any part of the return, they shall be electrically connected, (as distance not exceeding 30 metres apart), with the conduit by means of copper strips having a cross-sectional area of at least 0.40 sq. cm. or by other means of equal conductivity. Where the return is wholly insulated and contained within the conduit, the latter shall be connected with earth at the generating station or sub-station through an instrument suitable for the indica- tion of any contact or partial contact of either the line or return with the conduit; and
(b) the leakage-current shall be ascertained daily, before or after the hours of running, when the line is fully charged ; and if at any time it is found to exceed 0.6 ampere per km. of single tramway track, the transmission and use of energy shall be suspended unless the leakage is stopped within twenty-four hours.

101. Leakage on system other than conduit system :-

Where both the line and the return are not placed within a conduit, the leakage current shall be ascertained daily before or after the hours of running, when the line is fully charged; and if at any time it is found to exceed 3 ampere per km. of single tramway track, the transmission and use of energy shall be suspended unless the leakage is stopped within twenty-four hours.

102. Passengers not to have access to electric circuit :-

Precau- tions to the satisfaction of an Inspector shall be taken by the owner of every vehicle to prevent :-
(a) the access of passengers to any portion of the electric circuit where there is danger from electric shock;
(b) any metal, hand-rail or other metallic substance liable to be handled by passengers, becoming charged.

103. Current density in rails :-

Where rails on which cars run are used as a return, the current density in such rails, shall not under ordinary working conditions, exceed 1.4 amperes of cross-sectional area.

104. Isolation of sections :-

Every trolley-wire shall be constructed in sections not exceeding 1.6 km. in length, and means shall be provided for isolating each section.

105. Minimum size and strength of trolley-wire :-

No trolley-wire shall be of less cross-sectional area than 0.5 sq.cm. or shall have an actual breaking load of less than 2000 kg.

106. Height of trolley-wires and length of span :-

A trolley-wire or traction-feeder on the same supports as a trolley-wire shall nowhere be at a height from the surface of the street of less than 5.2 metres except, where it passes under a bridge or other fixed structure, or through or along a tunnel or mine-shaft or the like in which case it shall be suspended to the satisfaction of an Inspector [1] [* * *].

1. The words "The intervals between the supports shall not exceed 140 ft. "omitted by G.S.R. 523. dated 28th March, 1966 (w.e.f.9th April, 1966).

107. Earthing of guard-wires :-

Every guard-wire shall be connected with earth at each point at which its electrical continuity is broken and shall also be connected with the rails at intervals of not more than five spans.

107A. Proximity to magnetic observatories and laboratories :-

[Traction works shall not be carried out in the vicinity of geomag- netic observatories and laboratories without the concurrence of the Central Government or of any officer authorized by it in this behalf.]

108. Records :-

(1) The owner shall, so far as is consistent with his system of working, keep the following records, namely :-
(a) Dally records showing-
(i) the maximum working current from the source of sup- ply;
(ii) the maximum working voltage at the source of supply;
(iii) the difference of potential, as required by rule 99: and
(iv) the leakage current (if any), as required by rule 100, and rule 101, and
(b) occasional records showing-
(i) every test made under sub-rules (2) and (3) of rule 98;
(iii) particulars of any abnormal occurrence affecting the electrical working of the system.
(2) Such records shall be open to examination by an Inspector or by any person authorized in writing by an Inspector.

CHAPTER 10 ADDITIONAL PRECAUTIONS TO BE ADOPTED IN MINES AND OIL-FIELDS

109. Application of chapter :-

[(1) The rules in this chapter shall apply only where energy is used in mines as defined in Mines Act. 1952].
["(2) In mines and oil fields, the rules in this chapter shall not apply to apparatus above the ground level except where such apparatus may directly affect the safety of the persons

employed in underground, open-cast and oil fields.".]

110. Responsibility for observance :-

[
(1) It shall be the duty of the owner, agent, engineer or manager of a mine, or of the agent, engineer of any company operating in an oil-field, or of the owner, engineer of one or more drilled well situated in an oil-field to comply with and enforce the following rules and it shall be the duty of all persons employed to conduct their work in accordance with such rules.
(2) Adequate number of authorized supervisors and electricians shall be on duty in every mine or oil-field while energy is being used therein. [Explanation.-For the purposes of this rule, the word "engineer" shall-
(a) in the case of a coal mine. have the same meaning as assigned to it in the Coal Mines Regulations, 1957;
(b) in the case of a metalliferous mine, have the same meaning as assigned to it in the Metalliferous Mines Regulations, 1961. and
(c) in the case of an oil mine, mean the "Installation Manager" under the Oil Mines Regulations, 19841;

111. Notices :-

(1) On or before the first day of February in every year, in respect of every mine or oil-field, returns giving the size and type of apparatus, together with such particulars in regard to circumstances of its use which may be required by the Inspector, shall be sent to the Inspector by the persons specified in rule 110 in the form set out in Annexure X or XI, whichever is applicable.
(2) The persons specified in rule 110 shall also give to the Inspector not less than seven days notice in writing of the intention to bring Into use any new installation in a mine or oil-field giving details of apparatus installed and its location: Provided that in case of any additions or alterations to an existing low and medium voltage installation imediate notice in writing shall be sent to the Inspector before such additions or alterations are brought into use. This rule shall not apply to tele-communication or signalling appara- tus.

112. Plans :-

(1) A correct plan, on the same scale as the plan kept at the mine in fulfilment of the requirements of Mines Act, 1952, shall be available in the office at the mine showing the position of all fixed apparatus and conductors therein, other than lights, tele-communication or signalling apparatus or cables for the same.
(2) A similar plan on the scale not less than 25 cm. to 1:4000 km. shall be kept by the manager or owner of one or more wells i any oil-field.
(3) A similar plan, on such scale as the Central Government may direct, showing the position of all electric supply lines, shall be kept in the office of any licensee or other person transmitting or distributing energy in a mine or oilfield.
(4) The plans specified under the provisions of this rule shall be examined, and corrected as often as necessary to keep them reasonably up to date. The dates of such examination shall be entered thereon by the manager or owner of the mine or wells and such plans shall be available to the Inspector or an Inspector of Mines, at any time.

113. Lighting, communications and fire precautions :-

(1) In a mine illuminated by electricity, one or more flame safety lamps, or other lights approved by the Inspector of Mines, shall be maintained in a state of continuous

illumination in all places where failure of the electric light at any time would be prejudicial to safety.
(2) Efficient means of communication shall be provided in every mine between the point where the switchgear provided under sub-rule (1) of rule 112 is erected and the shaft-bottom or other distributing centres in the mines.
(3) Fire extinguishing appliances of adequate capacity and of an approved type shall be installed and properly maintained in every place in a mine containing apparatus, other than cables, tele-communication and signalling apparatus.
[1] "(4) In case of mines, minimum clearance above ground of the lowest conductor of overhead lines or overhead cables where dumpers or trackless vehicle are being operated, shall not be less than twelve metres in height from the ground across the road where dumpers or trackless vehicles cross.".

1. Rule 113, sub-rule (4), shall be inserted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazette of India,Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

114. Isolation and fixing of transformer, switchgear, etc :-

(1) Where necessary to prevent danger of mechanical damage, transformers and switchgear shall be placed in a separate room, compartment or box.
(2) Unless the apparatus is so constructed, protected and worked as to obviate the risk of fire. no inflammable material shall be used in the construction of any room, compartment or box containing apparatus, or in the construction of any of the fittings therein. Each such room, compart- ment or box shall be substantially constructed and shall be kept [dry and illuminated and efficient ventilation] shall be provided for all apparatus installed therein.
(3) Adequate working space and means of access, clear of obstruction and free from danger, shall, so far as circumstances permit, be provided for all apparatus that has to be worked or attended to and all handles intended to be operated shall be conveniently placed for that purpose.

115. Method of earthing :-

Where earthing is necessary in a mine it shall be carried out by connection to an earthing system at the surface of the mine, in a manner approved by the Inspector.

116. Protective equipment :-

[1]["(1) In the interest of safety, appropriate equipment shall be suitably placed in the mines for automatically disconnecting supply to any. part of the system, where a fault, including an earth fault occurs. Fault current shall not be more than 750 milli-Amps in 550/1100 volt systems for underground/oil fields and 50 Amps in 3.3 KV.6.6 KV systems in open cast mines. The magnitude of the earth fault current shall be limited to these specified values by employing suitably designed, restricted neutral system of power supply.".]
(2) The operation of the switchgear and the relays shall be recorded daily at the generating station, sub-station or switch-station in a register kept for the purpose.
(3) The effectiveness of the switchgear and the protective [2] [system shall always, be kept and maintained in working order, shall be checked once in every three months] and the result thereof shall be recorded in a separate register kept for the purpose.]

1. Substituted for "(1) In the interest of safety, appropriate switch-gear with necessary protective equipment shall be suitably placed in the mine for automatically disconnecting supply to any part of the system where a fault including an earth fault occurs.", by the "Indian Electricity (Amendment-1) Rules, 2000".

2. Substituted by G.S.R. 45, dated 1st January. 1993.

117. Earthing metal, etc :-

(1) All metallic sheaths, coverings, han- dles, joint boxes, switchgear frames, instrument covers, switch and fuse covers or boxes, all lampholders (unless efficiently protected by an insulated covering made of fire-resisting material) and the frames and bed-plates of generators, transformers and motors including portable motors), shall be earthed by connection to an earthing system in the manner prescribed in rule 115.
(2) Where cables are provided with a metallic covering constructed and installed in accordance with Cl. (d) of rule 22, such metallic covering may be used as a means of connection to the earthing system.
(3) All conductors of an earthing system shall have conductivity, at all parts and all joints, at least equal to 50 per cent. of that of the largest conductor used solely to supply the apparatus, a part of which it is desired to earth: Provided that no conductor of an earthing system shall have a cross- sectional area less than 0.15 sq. cm. except in the case of the earth conductor of a flexible cable used with portable apparatus where the voltage does not exceed 125 volts, and the cross-sectional area and conductance of the earth core is not less than that of the largest of the live conductors in the cable.
(4) All joints in earth conductors and all joints in the metallic covering of cables shall be properly soldered or otherwise efficiently made.
(5) No switch, fuse or circuit-breaker shall be inserted in any earth conductors.
(6) This rule shall not apply (except in the case of portable apparatus) to any system in a mine in which the voltage does not exceed 30 volts.

118. Voltage limits :-

[Energy shall not be transmitted into a mine at a voltage exceeding 11,000 volts and shall not be used therein at a voltage exceeding 6,600 volts: Provided that: -
(a) where hand-held portable apparatus is used, the voltage shall not exceed 125 volts;
(b) where electric lighting is used :-
(i) in underground mines, the lighting system shall have a mid or neutral point connected with earth and the voltage shall not exceed 125 volts between phases ;
(ii) on the surface of a mine or in an open cast mine, the voltage may be raised to 250 volts, if the neutral or the mid point of the system is connected with earth and the voltage between the phases does not exceed 250 volts ;
(c) where portable hand-lamps are used in underground work- ing of mine, the voltage shall not exceed 30 volts ;
(d) where any circuit is used for the remote control or electrical interlocking of apparatus, the circuit voltage shall not exceed 30 volts: Provided that in fixed plants, the said voltage may be permitted up to 650 volts, if the bolted type plug is used.]

119. Transformers :-

[Where energy is transformed, suitable provi- sion shall be made to guard against danger by reason of the lower voltage apparatus becoming accidentally charged above its normal voltage by leakage from or contact with the higher voltage apparatus.]

120. Switchgear and terminals :-

Switchgear and all terminals, cable-joints and connections to apparatus shall be totally enclosed and shall be so constructed, installed and maintained as to comply with the following requirements:
(a) All parts shall be of mechanical strength sufficient to resist rough usage;

(b) All conductors and contact areas shall be of adequate cur- rent-carrying capacity and all joints in conductors shall be properly soldered or otherwise efficiently made :
(c) The lodgement of any matter likely to diminish the insulation or affect the working of any switchgear shall be prevented :
(d) All live parts shall be so protected or enclosed as to prevent persons accidentally coming into contact with them and to prevent danger from arcs, short-circuits, fire, water, gas or oil:
(e) Where there may be risk of igniting gas, coal-dust, oil or other inflammable material, all parts shall be so protected as to prevent open sparking; and
(f) Every switch or circuit-breaker shall be so constructed as to be capable of opening the circuit it controls, and dealing with any short-circuit without danger.

121. Disconnection of supply :-

(1) Properly constructed switch- gear for disconnecting the supply of energy to a mine or oil-field shall be provided [1][* * *] at a point approved by the Inspector. During the time any cable supplying energy to the mine from the aforesaid switchgear is live, a person authorized to operate the said switchgear shall be available within easy reach thereof: [2][Provided that in the case of gassy coal seam of degree II and degree III, the main mechanical ventilator operated by electricity shall be inter- locked with the switchgear so as to automatically disconnect the power supply in the event of stoppage of main mechanical ventilator.]
(2) When necessary in the interest of safety, appropriate apparatus suitably placed, shall be provided for disconnecting the supply from every part of a system.
(3) Where considered necessary by the Inspector in the interests of safety, the apparatus specified in sub-rule (2) shall be so arranged as to disconnect automatically from the supply and any section of the system subjected to a fault.
(4) Every motor shall be controlled by switchgear which shall be so arranged as to disconnect the supply from the motor and from all apparatus connected thereto. Such switchgear shall be so placed as to be easily operated by the person authorized to operate the motor.
[3] [(5) Whenever required by the Inspector the motor shall be controlled by a switchgear to disconnect automatically the supply in the event of conditions of over-current, over-voltage and single phasing.]

1. Omitted by G.S.R. 45, datea 1st January, 1994 (w.e.f. 23rd January, 1993).

2. Inserted by G.S.R. 45.

3. Inserted by G.S.R. 137, dated 29th January, 1983, published in the Gazette of India. Pt. II. Sec. 3 (i), dated 12th February, 1983 (w.e.f. 12th February, 1983).

122. Cables :-

All cables, other than flexible cables for portable or transportable apparatus, shall comply with the following requirements :-
(a) All such cables (other than the outer conductor of a concen- tric cable) shall be covered with insulating material and shall be efficiently protected from mechanical damage and sup- ported at sufficiently frequent intervals, and in such a manner as to prevent damage to such cables :
(b)
(i) except as provided in Cl. (c), no cables other than concentric cables or two-core or multi-core cables protected by a me- tallic covering, or single-core cables protected by a metallic covering and which contain all the conductors of a circuit shall be used-
(1) where the voltage exceeds 125 volts, or
(2) when an Inspector considers that there is risk of ignit - ing gas or coal dust or other

inflammable material, and so directs:
(ii) the sheath of metal-sheathed cables and the metallic armouring of armoured cables shall be of a thickness not less than that recommended from time to time [1][in the appropriate standard of the [2] [Bureau of Indian Standards];
(c) where a medium voltage direct current system is used. two single-core cables may be used for any circuit provided that their metallic covering are bonded together by earth conduc- tors so placed that the distance between any two consecutive bonds is not greater than 30 metres measured along either cable;
(d) the metallic covering of every cable shall be-
(i) electrically and mechanically continuous throughout :
(ii) earthed, if it is required by sub-rule (1) of rule 117 to be earthed by a connection to the earthing system of conductivity not less than that of the same length of the side metallic covering;
(iii) efficiently protected against corrosion where neces- sary :
(iv) of a conductivity at all parts and at all joints at least equal to 50 per cent. of the conductivity of the largest conductor enclosed by the said metallic covering ; and
(v) where there may be risk of igniting gas, coal-dust, or other inflammable material, so constructed as to pre- vent, as far as is practicable, the occurrence of open sparking as the result of any fault or leakage from live conductors;
(e) cables and conductors where connected to motors, trans- formers, switehgear, and other apparatus, shall be installed
(i) they are mechanically protected by securely attaching the metallic covering to the apparatus and
(ii) the insulating material at each cable is efficiently sealed so as to prevent the diminution of its insulating prop- erties ;
(f) where necessary to prevent abrasion or to secure gas-tight- ness, properly constructed glands or bushes shall be pro- vided ;
(g) unarmoured cables or conductors shall be conveyed either in metallic pipes or metal casings or suspended from efficient insulators by means of non-conducting material which will not cut the covering and which will prevent contact with any timbering or metal work. If separate insulated conductors are used, they shall be installed at least 3.75 cm. (one and one-half inches) apart and shall not be brought together except at lamps, switches and fittings.

1. Substituted by G.S.R. 523, dated 28th March. 1966, published in the Gazette of India. Pt. II, Sec. 3 (i), dated 9th April. 1966.

2. Substituted by G.S.R. 466. dated 18th July. 1991.

123. Flexible cables :-

(1) Flexible cables for portable or transportable apparatus shall be two-core or multi-core (unless required for electrical welding), and shall be covered with insulating material which shall be efficiently protected from mechanical injury. If a flexible metallic covering is used either as the outer conductor of a concentric cable or as a means of protection from mechanical injury, it shall not be used by itself to form an earth conductor for such apparatus, but it may be used for that purpose in conjunction with an earthing core.
(2) Every flexible cable intended for use with portable or transportable apparatus shall be connected to the system and to such apparatus by property constructed connectors:
[1][Provided that for high voltage machines a bolted type connector shall be used and the trailing cable be sutiably anchored at the machine end.]
[2]"Provided further that where there are space limitation for multiple onboard motors and equipment for transportable or portable machines, direct entry flexible cable with elastometric cealing rings, compression gland, packing gland or sealing box which does not alter the flame proof property may be permitted if a cable entry can accept any sealing ring

with same outside diameter but different internal dimension, the ring shall have a minimum uncompressed axial height of 20 mm for circular cables of diameter not greater than 20 mm and 25 mm for circular cables of diameter greater than 20 mm.".

(3) At every point where flexible cables are joined to main cables a [3][circuit breaker] shall be provided which is capable of [3][automatically] disconnecting the supply from such flexible cables.

(4) Every flexible cable attached to a portable or transportable machine shall be examined periodically by the person authorized to operate the machine, and, if such cable is used underground, it shall be examined at least once in each shift by such person. If such cable is found to be damaged or defective, it shall forthwith be replaced by a cable in good condition.

[5](5) If the voltage of the circuit exceeds low voltage, all flexible cables attached to any transportable apparatus shall be provided with flexible metallic screening or pliable armouring and cables of portable apparatus shall be provided with flexible metallic screening on all the power and pilot cores :

Provided that the provision of this sub-rule shall not apply to flexible cables attached to any transportable apparatus used in open cast mines where reeling and unreeling of such cables is necessary as per design features of the equipment.

(6) All flexible metallic screening or armouring specified in sub-rule (5) shall comply with the provisions of rule 122 (d) :

Provided that in the case of separately screened flexible cables the conductance of each screen shall be less than 25 per cent. of that of the power conductor and the combined conductance of all such screen shall In case be less than that of 0.15 sq. cm. copper conductor.

[6] (7) Flexible cable exceeding ninety metres in length shall not be used with any portable or transportable apparatus :

Provided that such flexible cable when used with coal cutting machines or cutter or loader or armoured face conveyor for long wall operation, or with shuttle cars or load haul dumper or cutter loader or all alike equipment, for development and de-pillaring operation, shall not exceed two hundred and fifty metres in length :

Provided further that the aforesaid cable in case of an open cast mine when used with electrically operated heavy earth moving machinery shall not exceed three hundred metres in length and for bucked wheel excavator at 11 KV shall not exceed one thousand metres in length.

(8) Flexible cable, when installed in a mine, shall be sufficiently supported and protected from mechanical injury.

(9) Flexible cable shall not be used with apparatus other than portable or transportable apparatus.

(10) Where flexible cables are used they shall be detached or otherwise isolated from the source of supply when not in use and arrangements shall be made to prevent the energising of such cables by unauthorized persons.

1. Inserted by G.S.R. 1723, dated 21st November, 1977, Sec. 30 (w.e.f. 31st December, 1977).

2. Rule 123, sub-rule (2), proviso shall be inserted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazette ofIndia, Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

3. Substituted by G.S.R. 466, dated 18th July, 1991 (w.e.f. 17th August, 1991).

5. Rule 123, sub-rule (5), shall be substituted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazette ofIndia, Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

6. Rule 123, sub-rule (7), shall be substituted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002, published in the Gazette ofIndia, Part

II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

124. Portable and transportable machines :-

The person author- ized to operate an electrically-driven coal cutter or other portable or transportable machine, shall not leave the machine while it is in operation and shall, before leaving the area in which such machine is operating, ensure that the supply is disconnected from the flexible cable which supplies the machine. When any such machine is in operation, steps shall be taken to ensure that the flexible cable is not dragged along by the machine.
[1] [Provided that all portable and transportable machines used in underground mines shall operate on remote control from the concerned switchgear with Pilot Core Protection.]

1. Added by G.S.R. 45. dated 1st January, 1993.

125. Sundry precautions :-

(1) All apparatus shall be maintained reasonably free from dust, dirt and moisture and shall be kept clear of obstructions.
(2) All apparatus other than portable and transportable apparatus shall be housed in a room, compartment or box so constructed as to protect the contents from damage occasioned by falling material or passing traffic.
(3) Inflammable or explosive material shall not be stored in any room, compartment, or box containing apparatus, or in the vicinity of any apparatus.
(4) Should there be a fault in any circuit, the part effected, shall be made dead without delay, and shall remain so until the fault has been remedied.
(5) While lamps are being changed the supply shall be disconnected. [1] [Provided that this sub-rule shall not apply to flexible cables attached to any transportable apparatus used in open cast mines where reeling and unreeling of such cables is necessary as per design features of the equip- ment.]
(6) No lampholder shall be in metallic connection with the guard or other metal work of a portable hand-lamp.
(7) The following notices, in Hindi and local language of the district, or designed and protected as to be easily legible at all times, shall be exhibited:
(a) at all places where electric apparatus is in use, a notice forbidding an unauthorized person to operate or otherwise interfere with such apparatus ;
(b) at those places in the interior or at the surface of the mine where a telephone or other means of communication is provided, a notice giving full instruction to person author- ized to effect the disconnection, at the surface of the mine of the supply of energy to the mine.
(8) All apparatus, including portable and transportable apparatus. shall be operated only by those persons who are authorized for the purpose.
(9) Where a plug and socket-coupling other than bolted type is used with flexible cables, an electrical inter-lock or other approved device shall be provided to prevent the opening of the coupling while the conductors are live.

1. Inserted by G.S.R. 137, dated 29th January, 1983 (w.e.f. 12th February, 1983).

126. Precautions where gas exists :-

. [1](1) In any part of a coal-seam of the first degree gassiness,-
(a} all cables shall be constructed, installed, protected, operated and maintained in such a manner as to prevent risk of open sparking:
(b) at any place which lies in-bye of the last ventilation connec- tion, all [2][signalling, tele-communication and remote con- trol] circuits shall be so constructed, installed, protected, operated and maintained as to be intrinsically safe ;

(c) all apparatus including portable and transportable appara- tus including lighting fittings used at any place which lies in-bye of the last ventilation connection shall be flame-proof.

[3]Provided that electrically operated or battery operated portable or transportable apparatus such as shuttle car, men or material transporting equipment of increased safety type e shall be permitted at any place with suitable monitoring devices for detection of gases, if any.

(2) At any place which lies in any part of a coal-seam of second and third degree gassiness,-

(a) all [1][signalling, tele-communication and remote control] cir- cuits shall be so constructed, installed, protected, operated and maintained as to be intrinsically safe ;

(b) all cables shall be constructed, installed, protected, operated and maintained in such a manner as to prevent risk of open sparking;

(c) all apparatus, including portable and transportable appara- tus used at any place with 90 metres of any workin face or

(d) all electric lamps shall be enclosed in flame-proof enclo- sures.

(3) In any oil mine or oil-field, at any place within the danger areas,-

(a) all [5][signalling, tele-communication and remote control] cir- cuits shall be so constructed, installed, operated, protected and maintained as to be intrinsically safe

(b) all cables shall be so constructed, installed, operated, and maintained as to prevent risk of open sparking :

(c) all apparatus including portable and transportable appara- tus shall be flame-proof;

(d) all electric lamps shall be enclosed in flame-proof enclo- sures.

(4) In any coal-seam of degree second and degree third gassiness or the danger zone of oil-mine the supply shall be discontinued.-

(a) immediately, if open sparking occurs ;

(b) during the period required for examination or adjustment of the apparatus, which would necessitate the exposing of any part liable to open sparking ;

(c) the supply shall not be re-connected until the apparatus has been examined by the electrical supervisor or one of his duly appointed assistants until the defect, if any, has been rem- edied or the necessary adjustment made :

(d) a. flame safety lamp shall be provided and maintained in a state of continuous illumination near an apparatus (includ- ing portable or transportable apparatus) which remains energised and where the appearance of the flame of such safety lamps indicates the presence of inflammable gas, the supply to all apparatus in the vicinity shall be immediately disconnected and the incident reported forthwith to an official of che mine : [4][and such apparatus shall be interlocked with the control- ling switch in such a manner as to disconnect power supply automatically in the event of percentage of inflammable gas exceeding one and one-quarter in that particular district] : Provided that where apparatus for automatic detection of the percent- age of inflammable gas or vapour are employed in addition to the flame safety lamps, such apparatus shall be approved by the Inspetor of Mines and maintained in perfect order.

(5)

(i) In any part of a coal-seam of any degree of gassinesss or in [7][any hazardous] area of an oil-mine, if the presence of inflammable gas in the general body of air is found any time to exceed one and one-quarter [8][per cent.] the supply of energy shall be immediately disconnected from all cables [9][In an oil mine where concentration of inflammable gas exceed 20 per cent. of its lowest explosive limit, the supply of electric energy shall be cut-off immediately from all cables and apparatus lying within 30 metres of the installation and all sources of ignition shall be removed from the said area and normal work shall not be resumed unless the area is made gas-free.] [10][Provided that such disconnection shall not apply to intrinsically safe environmental monitoring scientific instruments.]

(ii) Any such disconnection or re-connection of the supply shall be noted in the log-sheet which shall be maintained in the form set out in Annexure XII and shall be reported to the Inspector.

(6) The provisions of this rule shall apply to any metalliferous mine which may be notified by the Inspector of Mines, if inflammable gas occurs or if the Inspector of Mines is of the opinion that inflammable gas is likely to occur in such mine.

Explanation.-For the purpose of this rule,- (1) The expression "coal-seam of first degree gassiness", "coal- seam of second degree gassiness", "coal-seam of third degree gassi-ness", and "flame-proof apparatus", shall have the meanings respectively assigned to them in the Coal Mines Regu lations, 1957. (2) The following areas in an oil-mine or oil-field shall be known as [8][hazardous areas], namely : (a) an area of not less than 90 metres around an oil-well where a blowout has occurred or is likely to occur, as may be designated by the engineer-in-charge or the seniormost official present at the site : (b) an area within 90 metres of an oil-well which is being tested by open flow : (c) an area within 15 metres of- (i) a producing well-head or any point of open discharge of the crude therefrom or other point where emission of [8][hazardous] atmosphere is normally likely to arise, or (ii) any wildcat or exploration well-head being drilled in an area where abnormal pressure conditions are known to exist, or (iii) any exploration or interspaced well-head being drilled in the area where abnormal pressure conditions are known to exist, or (d) any area within 4 . 5 metres of- (i) any producing well-head where a closed system of production is employed, such as, to prevent the emission or accumulation in the area in normal circumstances of a [8][hazardous] atmo- sphere ; or (ii) exploration or interspaced well-head being drilled in an area where the pressure conditions are normal and where the system of drilling employed includes adequate measures for the prevention in normal circumstances of emission or accumulation within the area of a [14][hazard- ous] atmosphere: or (iii) an oil-well which is being tested other than by open flow. Explanation.-For the purposes of Cl. (d) [9][hazardous] atmosphere means an atmosphere containing any inflammable gases or vapours in a concentration capable of ignition : [9] [(e) all appliances, equipments and machinery that are or may be used in zone O, zones 1 and 2 hazardous areas shall be of such type, standard and make as approved by the Inspec- tor by a general or special order in writing. Explanation.-(i) "Zone O hazardous area" means "an area in which hazardous atmosphere is continuously present." (ii) "Zone 1 hazardous area" means "an area in which hazardous atmosphere is likely to occur under normal operating conditions." (iii) "Zone 2 hazardous area" means "an area in which hazardous atmosphere is likely to occur under abnor- mal operating conditions.]

1. Substituted by G.S.R. 253, dated 19th February, 1981, published in the Gazette of India, Pt. II, Sec. 3 (i), dated 7th March, 1981.

2. Substituted by G.S.R. 466, dated 18th July, 1991 (w.e.f. 17th August, 1991).

3. In Rule 126, sub-rule (1),in clause (c), proviso shall be insertedsubstituted by Indian Electricity (Amendment) Rules, 2002., Noti. No. G.S.R. 274, dated July 10, 2002,published in the Gazette of India, Part II, Section 3(i), dated 20th July, 2002, pp. 1460-1462.No.29

5. Added by G.S.R. 45, dated 1st January, 1993 (w.e.f. 23rd January, 1993).

7. Substituted by G.S.R. 466, dated 18th July, 1991 (w.e.f. 17th August, 1991).

8. Inserted by G.S.R. 466.

9. Added by G.S.R. 45. dated 1st January, 1993 (w.e.f. 23rd January, 1993).

10. Inserted by G.S.R. 466, dated 18th July, 1991.

14. Inserted by G.S.R. 466, dated 18th July, 1991.

127. Shot-firing :-

(1) Where shot-tiring is in progress adequate pre- cautions shall be taken to protect

apparatus and conductors other than those used for shot firing from injury.
(2) Current from lighting or power circuits shall not be used for firing shots.
(3) The provisions of rule 123 shall apply in regard to the covering and protection of shot-firing cables, and adequate precautions shall be taken to prevent such cable touching other cables and apparatus.

128. Signalling :-

Where electrical signalling is used-
(a) adequate precaution shall be taken to prevent signal and telephone wires coming into contact with other cables and apparatus:
(b) the voltage used with other circuit shall not exceed 30 volts: and
(c) contact-makers shall be constructed as to prevent the acci- dental closing of the circuit:
[1] [(a) bare conductors where used shall be installed in suitable insulators.]

1. Inserted by G.S.R.. 45, dated 1st January, 1993

129. Haulage :-

Haulage by electric locomotives on the overhead trol- ley-wire system, at medium or low voltage, and haulage by storage battery locomotives, may be used with the prior consent in writing of the Inspector, and subject to such conditions as he may impose in the interest of safety.

130. Earthings of neutral points :-

Where the voltage of an alternat- ing current system exceeds 30 volts, the neutral of mid-point shall be earthed by connection to an earthing system in the manner prescribed in rule 115: [1][Provided that when the system concerned is required for blasting and signalling purpose, the provisions of this rule shall not apply.] [2] [Provided further that in case of unearthed neutral system adequate protection shall be provided with the approval of the Inspector.]

1. Inserted by G.S.R. 1723, dated 27th November, 1977.

2. Inserted by G.S.R. 45. dated 1st January, 1993.

131. Supervision :-

[
(1)
(i) One or more electrical supervisors as directed by the Inspector shall be appointed in writing by the owner, agent or manager of a mine or by the agent or the owner of one or more wells in an oil-field to supervise the installation.
(ii) The electrical supervisor so appointed shall be the person holding a valid Electrical Supervisors Certificate of Competeney, covering mining installation issued under sub-rule (1) of rule 45.
(iii) If the Inspector considers necessary for the compliance with the duties specified in this rule, he may direct the owner or agent of the mine to appoint one or more electricians who shall be persons holding licence under sub-rule (i) of rule 45.
(2) Every person appointed to operate, supervise, examine or adjust any apparatus shall be competent to undertake the work which he is required to carry out as directed by the engineer.
(3) The electrical supervisor shall be responsible for the proper perfor- mance of the following duties, by himself or by electricians appointed under sub-rule (1):
(a) thorough examination of all apparatus (including the testing of earth conductors and

metallic coverings for continuity) as often as may be necessary to prevent danger :
(b) examination and testing of all new apparatus, and of all apparatus, re-erected in the mine before it is put into service in a new position.
(4) In the absence of any electrical supervisor for more than three days, the owner, agent or manager of the mine or the agent or owner of one or more oil-wells in an oil-field, shall appoint in writing a substitute electrical supervisor.
(5)
(i) The electrical supervisor or the substitute electrical supervisor appointed under sub-rule (4) to replace him shall be personally responsible for maintenance at the mine or oil-field, of a log-book made up of the daily log-sheets prepared in the form set out in Annexure XII.
(ii)The results of all tests carried out in accordance with the provisions of sub-rule (3) shall be recorded in the log-sheet prepared in the form set out in Annexure XII.]

132. Exemption :-

-The provisions of rule 110 to rule 128, both inclusive and rule 131 shall not apply in case where, on ground of emergency or special circumstances, exemption is obtained from the Inspector. In grant ing any such exemption the Inspector may prescribe such conditions as he thinks fit.

CHAPTER 11 MISCELLANEOUS

133. Relaxation by Government :-

(1) The State Government, or where mines, oil-fields, railways [1][or works executed for or on behalf of the Central Government] are affected, the Central Government may. by order in writing, direct that any of the provisions of rules in Chapter IV other than rules [1] [rule 44A] and rule 46, and rules in Chapters V, VI, VII, VIII and IX shall be relaxed generally or in particular case to such conditions as it may think fit.
(2) The Central Government may, by order in writing direct that any of the provisions of Chapter 10 of these rules shall be relaxed in any particular case to such extent and subject to such conditions as it may think fit.

1. Inserted by G.S.R. 523, dated 28th March. 1966 (w.e.f. 9th April. 1966).

134. Relaxation by Inspector :-

(1) The Inspector may, by order in writing, direct that any of the provisions of rule 44, rule 50(1) (a), (b) and (d), 51 (1), 61 (2), 63. 64 (2), 65, 71 to 73 (inclusive), 76 to 80 (inclusive) and 90, [1][118]. [1][119 (i) (a), 123 (5), 123 (7), 123 (9) and 130] shall be relaxed in any case to such extent and subject to such conditions as he may think fit.
(2) Where the voltage of any system does not exceed 125 volts the Inspector may, by order in writing, direct that any of the provisions of rule 29 to rule 34 (inclusive), rule 36 to rule 39 (inclusive), rule 83, rule 92, rule 94 to rule 107(inclusive),- [3] [* * *] shall, in addition to the rules specified in sub-rule (1), be relaxed as regards such system, to such extent and subject to such conditions as he may think fit.
(3) Every relaxation so directed shall be reported forthwith to, and shall be subjected to disallowance or revision by, the State Government, or where the relaxation affects mines, oil-fields or railways, by the Central Govern- ment.

1. Substituted by G.S.R. 1723, dated 21st November, 1977.

3. Substituted by G.S.R. 529. dated I 1th July. 1986 (w.e.f. 19th July. 1986).

135. Supply and use of energy by non-licensee and others :-

Where any person other than a non-licensee is supplied with energy by a non-licensee or other person or has his premises for the time being connected to the conductors or plant of a non-licensee or other person, or himself generates energy and uses such energy or part thereof, such person shall be deemed to be a consumer for the purposes of rule 9, rule 10, rule 80 to rule 33 (inclusive), 45 to 70 (inclusive), rule 87 and rule 142 and the non-licensee or other person shall be subjected to all the liabilities imposed on a licensee by those rules.

136. Responsibility of agents and managers :-

Where any person is responsible for the observance of any of these rules, every agent and manager of such person shall also be responsible for such observance in respect of matter under their respective controls.

137. Mode of entry :-

All persons entering in pursuance of the Act or these rules, any building which is used as a human dwelling or a place of worship shall, in making such entry, have due regard, so far as may be compatible with the exigencies of purpose for which such entry is made, to the social and religious usages of the occupant of the building entered.

138. Penalty for breaking seal :-

Where in contravention of rule 56, any seal referred to in that rule is broken,-
(a) the person breaking the seal shall be punishable with fine which may extend to two hundred rupees: and
(b) the consumer when he has not himself broken the seal shall be punishable with fine which may extend to fifty rupees unless he proves that he used all reasonable means in his power to ensure that the seal should not be broken.

138A. Penalty for breach of rule 44-A :-

Where, in contravention of rule 44A, any person responsible for the generation, transformation, transmission, conversion, distribution, supply or use of energy fails to report to the Inspector and other authorities concerned the occurrence of accidents, such person shall be punishable with fine which may extend to three hundred rupees.]

139. Penalty for breach of rule 45 :-

Where any electrical installa- tion work of the nature specified in sub-rule (1) of rule 54 has been carried out otherwise than-
(a) under the direct supervision of a person holding a certificate of competency issued by the State Government under that rule: and
(b) in the absence of any applicable exemption under the proviso to sub-rule (1) of that rule, by an electrical contractor licensed by the State Government in this behalf, [1] [the consumer, owner or occupier, the contractor (if any) or the person through whom the work is being or was carried out and the person under whose immediate super- vision the work is being or was carried out. shall each be punishable with fine which may extend to three hundred rupees.]

1. Substituted by G.S.R. 1723, dated 21st November, 1977.

140. Penalty for breach of rule 82 :-

(a) Where no notice is given under rule 82 (1) or the amount of estimate as demanded

under rule 82(2) Is not deposited, both the persons proposing and the contractor engaged for erecting a new building or structure whether permanent or temporary or for making In or upon any building or structure any permanent or temporary additions or alterations, ^hall be deemed to have committed a breach of rule 82JI) and shall be punishable with a fine which may extend to three hundred rupees;
(b) If any person, commences or continues any work in contravention of rule 82 (3), in or upon any such building, structure, flood bank, road or carries out addition or alteration thereto, the person contravening the same shall be punishable with a fine which may extend to three hundred rupees. In addition to this the supplier shall, after obtaining the concurrence of the Inspector discontinue the supply, if any, to such building, structure, flood bank, or road, etc. but only after giving forty-eight hours notice to the person concerned in writing of disconnection of supply and shall not commence the supply until he and the Inspector are satisfied that the cause has been removed.]

140A. Penalty for breach of rules 77, 79 or 80 :-

[. [1] .--Where a person is responsible for any construction which is or which results in contraven- tion of the provisions of rule 77, rule 79. or 80s he and the contractor whom he employs shall be punishable with a fine which may be extended to three hundred rupees and in the case of a continuing breach with a further daily fine which may extend to fifty rupees.]

1. Inserted by G.S.R. 1723, dated 21st November. 1977.

141. Penalty for breach of rules :-

Any person other than an Inspec- tor [1] [or any officer appointed to assist the Inspector] who, being responsible for the observance of the rules commits a breach thereof, shall be punish- able for every such breach with fine which may extend to three hundred rupees, and in the case, of a continuing breach with a further fine which may extend to fifty rupees, for every day after first during which the breach has continued.

1. Inserted by G.S.R. 522. dated 17th March, 1970 (w.e.f. 4th April. 1970).

142. Application of rules :-

Subject to the provision of sub-section (2) of Section 58, these rules shall be binding on all persons, companies and undertakings to whom licences have been granted or with whom agree- ments have been made by or with the sanction of Government for the supply or use of electricity before the commencement of the Act.

143. Repeal :-

The Indian Electricity Rules, 1937. are hereby re- pealed : Provided that any order made. notification issued or anything done or any action taken under any of the said rules shall be deemed to have been made, issued, done or taken under the corresponding provisions of the rules.