CN Theory Assignment-2

Name: Shreerang Mhatre
Rollno: 52
Batch: A3
PRN: 1032211745

Q1) Study the Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations 2020, available on https://cea.nic.in and write in your own words a three page summary of varias Technical Standards for Communication in Power sector.

Summary -

The central Electrical Authority's (CEA) 2020 rules establish important standards, including the essential requirements & specifications that regulate communication networks in the power industry. These rules cover a number of crucial elements required to guarantee the effective, trustworthy, & safe functioning of communication networks in power systems

- These regulations are designed to establish technical standards for the communication system used in power system operations.
- Definations: The regulations define a number of key terms, such as "communication system", "data" & "user".
- General requirements: The regulations outline a number of general requirement for the communication system, such as reliability security and interoperability

→

- Technical specifications - The regulations provide detailed technical specifications for the communication system, including network topology, transmission protocols and equipment requirements.

- Testing & commissioning - The regulations specify the requirements for testing and comissioning the communication system.

- Operation & Maintanance - The regulations outline the requirement for operating and maintaining the communication system.

- Cybersecority :- The regulations include a number of requirements for cyborseconity, such as access control data protection, and incident response.

* The key areas covered by the technical standards are -

① Applications -

These regulations shall apply to all the users National load dispatch centres Regional load dispatch centers, central/ state Transmission utility, Regional Power.

(2) Functional Requirements-

The communication system shall be capable to provide integration with supervisory control & data acquisition system, wide area measurement system, video confering system, automatic meter reading, electronic private automatic branch exchange voices over internet protocol & tele protection.

(3) wide band Network -

The communication system shall be formed by the side band network to support the requirement of power system operation. wide band specifications are mentioned in the regulation.

(4) Fibre optic communication-

All wide band communications shall be established using fibre optic communication consisting of underground fibre optic cable, OPW, 4 4fo & ADSS

→

(5) Power Line carrier communication-

PLCC shall be used in the grid network between two consecutive substations & power line carrier communication shall provide speech, data & tele protection requirements of the power system.

(6) cellular communication-

It may be used for data acquisition system, where feasibility of access to wide band network is not possible.

(7) Very small terminal communication-

It shall be used for supervisory control & Data Acquisition (SCADA) control functions of power system operation & shall not be used for primary protection function of power system as geostationary satellite hop delay is 240 MS.

⑧ Radio frequency communication -

This shall be used below 132 kilo volt/ 110 kilo volt system for low speed data acquisition system & shall not be used for protection of power system equipment.

⑨ Relaxation & Interpretation of Regulations -

The Authority may, by order & reasons to be recorded in writing relax any of provisions of there regulations in respect of the matters referred to the Authority on case to case basis. Other specifications regarding relaxation & interpretation are given in the regulations.