"PVC" NSSK Govt. Polytechnic Bilaspur at Kalol
Lecture Planning (Theory)

Branch : **Electrical Engg.** Semester: **4th**
Subject : **Electrical Power Transmission and Distribution** Session: **Jan-May, 25**
Teacher : **VINEETA SHARMA HOD EE** Cass Room : **L4**

Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1.	1-10	**Basics of Transmission and Distribution**	Single line diagrams with components of the electric supply transmission and distribution systems. Classification of transmission lines: Primary and secondary transmission; standard voltage level used in India. Classification of transmission lines: based on type of voltage, voltage level, length and others characteristics of high voltage for power transmission. Method of construction of electric supply transmission system – 110 kV, 220 kV, 400 kV. Method of construction of electric supply distribution systems – 220 V, 400V, 11 kV, 33 kV.	R1,R2, R3,R4,R5	
2.	11-20	**Transmission Line Parameters and Performance**	Line Parameters: Concepts of R, L and C of line parameters and types of lines. Performance of short line: Efficiency, regulation and its derivation, effect of power factor, vector diagram for different power factor. Performance of medium line: representation, nominal 'T', nominal 'π' and end condenser methods. Transposition of conductors and its necessity. Skin effect and proximity effect.	-do-	
3.	21-32	**Extra High Voltage Transmission**	Extra High Voltage AC (EHVAC) transmission line: Necessity, high voltage substation components such as transformers and other switchgears, advantages, limitations and applications and lines in India. Ferranti and Corona effect. High Voltage DC (HVDC) Transmission Line: Necessity, components, advantages, Limitations and applications. Layout of mono-polar, bi-Polar and homo-polar transmission lines. Lines in India. Features of EHVAC and HVDC transmission line. Flexible AC Transmission line: Features, d types of FACTS controller. New trends in wireless transmission of electrical power.	-do-	
4.	33-44	**A.C Distribution System**	AC distribution: Components classification, requirements of an ideal distribution system, primary and secondary distribution system. Feeder and distributor, factors to be considered in design of feeder and distributor. Types of different distribution schemes: radial, ring, and grid, layout, advantages, disadvantages and applications. Voltage drop, sending end and receiving end voltage. Distribution Sub-Station: Classification, site selection, advantages, disadvantages and applications. Single Line diagram (layout) of 33/11KV Sub-Station, 11KV/400V sub-station, Symbols and functions of their components.	-do-	

5.	45-56	**Components of Transmission and Distribution Line**	Overhead Conductors: Properties of material, types of conductor with trade names, significance of sag. Line supports: Requirements, types of line structures and their specifications, methods of erection. Line Insulators: Properties of insulating material, selection of material, types of insulators and their applications, causes of insulator failure, derivation of equation of string efficiency for string of three suspension insulator, methods of improving string efficiency. Underground Cables: Requirements, classification, construction, comparison with overhead lines, cable laying and cable jointing.	-do-	

27.1.25

Signature of Teacher with Date

Signature of HOD (EE)

Reference Resource:

1. G.C. Garg, Utilization of Electric Power & Electric Traction, Khanna Book Publishing Co., New Delhi (ISBN: 978-93-86173-355)
2. Mehta, V.K., Principles of Power System, S. Chand and Co. New Delhi, ISBN: 9788121924962
3.. Soni; Gupta; Bhatnagar, A Course in Electrical Power, Dhanpat Rai and Sons New Delhi, ISBN:9788177000207
4. Gupta,J.B., A Course in Power Systems, S.K. Kataria and sons, New Delhi, ISBN: 9788188458523
5. Theraja, B.L.; Theraja, A.K., A Textbook of Electrical Technology Vol. III, S.Chand and Co. New Delhi, ISBN : 9788121924900
6. Uppal,S.L., A Course in Electrical Power, S.K.Khanna Publisher New Delhi, ISBN : 9788174092380
7. Sivanagaraju S.; Satyanarayana S., Electrical Power Transmission and Distribution, Pearson Education, New Delhi, , ISBN:9788131707913