

Electrical Power Generation, Transmission and Distribution (313333)

Most repeated questions — MSBTE K-scheme papers S-2026, W-2025, S-2025, W-2024

How to read: **Asked in** shows the MSBTE papers where the same question came (same idea, any wording).

High = came in 3 or 4 of the 4 papers, **Medium** = 2 papers, **Low** = 1 paper or not asked yet but in the syllabus.

Prepare High ones first. Numericals (load curve, short line, distributor) come with new values every time — practise the method.

Top questions (came in all 4 papers)

1. Define load factor, demand factor, diversity factor, maximum demand, plant capacity factor, plant load factor, base / peak load plant (2/4 marks)
2. Medium line: nominal T / nominal π — circuit, phasor diagram, derivation, comparison (4/6 marks)
3. Single line diagram of 33/11 kV (or 11 kV/400 V) substation with labels (4 marks)
4. Distribution schemes — radial, ring main, interconnected (diagram, advantages) (2/4/6 marks)

Unit I — Thermal power plant and hydro power plant (16 marks)

Question / topic	Marks	Asked in	Probability
Name power stations in Maharashtra (hydro / thermal) with installed capacity	2	S-26, W-25, W-24 (3/4)	High
Factors for selection of site for thermal power plant	4	S-26, W-25, W-24 (3/4)	High
Layout of coal fired thermal power plant — draw / label parts / explain coal and ash handling	4/6	S-26, W-25, W-24 (3/4)	High
Safe practices in thermal / hydro power plants (six points)	6	S-26, W-25, W-24 (3/4)	High
Functions of super heater, economiser, air pre-heater, steam turbine	4	S-26, S-25 (2/4)	Medium
Layout of hydro power plant; functions of surge tank, penstock, reservoir	4	W-25, W-24 (2/4)	Medium
Types of hydro plants — pumped storage layout, run-off river with pondage, classification by head / flow	4	S-26, W-24 (2/4)	Medium
Classification of energy sources with examples	2	S-25 (1/4)	Low
Factors for site selection of hydro power plant	4	S-25 (1/4)	Low
Fire tube and water tube boilers	6	S-25 (1/4)	Low
Compare thermal and hydro power plants	4	S-25 (1/4)	Low
Advantages of thermal power plant	2	W-25 (1/4)	Low

Water hammer and cavitation in hydro plant	4	S-25 (1/4)	Low
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Unit II — Economics of power generation and interconnected power system (10 marks)

Question / topic	Marks	Asked in	Probability
Define load factor, demand factor, diversity factor, maximum demand, plant capacity factor, plant load factor, base / peak load plant	2/4	S-26, W-25, S-25, W-24 (4/4)	High
Define cold reserve, hot reserve, spinning reserve, connected load	2	S-26, W-25, W-24 (3/4)	High
Load curve numerical — draw load curve; find MD, average load, units per day, load factor	4/6	S-26, W-25, W-24 (3/4)	High
Load curve / load duration curve — draw and explain	4	W-25, S-25 (2/4)	Medium
State grid, national grid, blackout and brownout	4	S-26, W-24 (2/4)	Medium
Numerical on demand factor, diversity factor, average load, energy per year	4	S-25 (1/4)	Low
Advantages of combined operation of power stations	4	S-25 (1/4)	Low

Unit III — Transmission line components, parameters and performance (16 marks)

Question / topic	Marks	Asked in	Probability
Medium line: nominal T / nominal π — circuit, phasor diagram, derivation, comparison	4/6	S-26, W-25, S-25, W-24 (4/4)	High
Standard voltage levels in India (generation, primary and secondary transmission)	2	S-26, S-25, W-24 (3/4)	High
Types of transmission line supports (list / applications)	2	S-26, S-25, W-24 (3/4)	High
Short line numerical — sending end voltage, losses, efficiency, regulation	4/6	S-26, S-25, W-24 (3/4)	High
Need of transposition of conductors (with diagram)	2/6	S-26, S-25 (2/4)	Medium
Insulators — pin / suspension / strain (sketch, application, failure)	2/4	W-25, S-25 (2/4)	Medium
Classification of transmission lines; compare primary and secondary transmission	2/4	W-25 (1/4)	Low
Skin effect	2	W-25 (1/4)	Low
Meaning of ACSR conductor	2	W-24 (1/4)	Low
Effect of high transmission voltage on current, losses, conductor volume, supports	4	W-24 (1/4)	Low

Effect of load power factor on regulation (phasor diagrams)	4	S-25 (1/4)	Low
Compare overhead and underground lines	6	W-24 (1/4)	Low

Unit IV — Extra high voltage transmission: EHVAC and HVDC (12 marks)

Question / topic	Marks	Asked in	Probability
HVDC layouts — monopolar / bipolar (with merits)	4	W-25, S-25, W-24 (3/4)	High
HVDC / EHVAC transmission routes in India with voltage	2	S-26, W-25, W-24 (3/4)	High
Ferranti effect — explain with circuit and phasor diagram	4/6	S-26, W-25, W-24 (3/4)	High
Corona — phenomenon, advantages, disadvantages, methods to reduce	4/6	W-25, S-25, W-24 (3/4)	High
Wireless transmission of electrical power — methods / concept / features	2/4/6	S-26, W-25, S-25 (3/4)	High
Compare EHVAC and HVDC transmission	4	S-26, S-25 (2/4)	Medium
Features of HTLS conductors	4	S-26 (1/4)	Low
Line compensation, FACTS devices, necessity of EHV/UHV (in syllabus, not yet asked)	—	not yet (0/4)	Low

Unit V — Distribution line components, parameters and performance (16 marks)

Question / topic	Marks	Asked in	Probability
Single line diagram of 33/11 kV (or 11 kV/400 V) substation with labels	4	S-26, W-25, S-25, W-24 (4/4)	High
Distribution schemes — radial, ring main, interconnected (diagram, advantages)	2/4/6	S-26, W-25, S-25, W-24 (4/4)	High
Classification of distribution substations (service, construction) with applications	4/6	S-26, W-25, S-25 (3/4)	High
Distributor numerical — voltage drop, sending / far end voltage	6	S-26, S-25, W-24 (3/4)	High
Symbols / functions of substation components (CB, isolator, CT, relay, OCB, DO fuse, reactor)	2/4	S-26, S-25, W-24 (3/4)	High
Compare indoor and outdoor substation	4	S-26, W-24 (2/4)	Medium
Construction of underground cable (draw and explain)	4/6	W-25, S-25 (2/4)	Medium

Substation site selection; erection of LT/HT distribution lines (in syllabus, not yet asked)	—	not yet (0/4)	Low
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Units and unit marks follow the MSBTE K-scheme curriculum of 313333. Paper pattern: Q.1 any 5 of 7 (2 M), Q.2–Q.4 any 3 (4 M), Q.5–Q.6 any 2 of 3 (6 M); 70 marks, 3 hours.

Note: Based on MSBTE papers S-2024...S-2026 available on msbte.ac.in (K-scheme papers found for this subject: W-2024, S-2025, W-2025, S-2026). Practice guidance only — not a prediction of the exam, and not an official MSBTE document. Study the full syllabus. Prepared by Ananda Technologies — free for students — anandatechnologies.in

