Advanced Surveying (313321)

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. Prepare High ones first. Paper pattern in all 4 papers: 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.

Top questions (came in all 4 papers)

1. Uses / objects / advantages of tacheometry; situations where tacheometry is preferred *(2/4 marks)*
2. Numerical: horizontal distance and RL of staff station (staff vertical, inclined or horizontal sight, BM given) / gradient *(4/6 marks)*
3. Define curve / horizontal and vertical curve / compound curve; classify curves *(2 marks)*
4. Numerical: ordinates from long chord (given R or versed sine) with sketch *(4/6 marks)*
5. Procedure of measuring horizontal / vertical angle with digital theodolite *(4/6 marks)*
6. Applications of remote sensing in civil engineering (incl. land use) *(4/6 marks)*

Unit I — Tacheometric surveying

Question / topic	Marks	Asked in	Probability
Uses / objects / advantages of tacheometry; situations where tacheometry is preferred	2/4	S-26, W-25, S-25, W-24 **(4/4)**	**High**
Numerical: horizontal distance and RL of staff station (staff vertical, inclined or horizontal sight, BM given) / gradient	4/6	S-26, W-25, S-25, W-24 **(4/4)**	**High**
Principle of tacheometry (state / explain)	2/4	S-26, S-25, W-24 **(3/4)**	**High**
Field method of determining tacheometric constants (theory)	4/6	S-26, W-25, W-24 **(3/4)**	**High**
Numerical: find multiplying and additive constants from two observations	6	S-26, S-25, W-24 **(3/4)**	**High**
Essential characteristics of a tacheometer	4	W-25, S-25 **(2/4)**	**Medium**
Anallatic lens — meaning and purpose	4	W-25 **(1/4)**	**Low**
Theodolite vs tacheometer (accuracy, measurement, suitability, stations)	4	S-25 **(1/4)**	**Low**
Limitations of tacheometry	2	S-26 **(1/4)**	**Low**
Methods of tacheometry (list)	2	S-26 **(1/4)**	**Low**
Formula for horizontal distance (line of sight horizontal, staff vertical)	2	W-24 **(1/4)**	**Low**

Unit II — Curves

Question / topic	Marks	Asked in	Probability
Define curve / horizontal and vertical curve / compound curve; classify curves	2	S-26, W-25, S-25, W-24 **(4/4)**	**High**
Numerical: ordinates from long chord (given R or versed sine) with sketch	4/6	S-26, W-25, S-25, W-24 **(4/4)**	**High**
Necessity of curves	2/4	S-26, W-24 **(2/4)**	**Medium**
Types of curves used in road and railway alignment	4	S-26, W-25 **(2/4)**	**Medium**
Relation between radius and degree of curve (state / derive)	2/4	S-25, W-24 **(2/4)**	**Medium**
Sketch of simple circular curve showing notations (T, Δ, apex distance, long chord)	4	W-25, W-24 **(2/4)**	**Medium**
Setting out curve by Rankine's method of deflection angles (procedure)	4/6	W-25, S-25 **(2/4)**	**Medium**
Properties of a simple circular curve	4	S-25 **(1/4)**	**Low**
Numerical: curve elements — tangent length, long chord, curve length, chainage of T1	4	S-26 **(1/4)**	**Low**

Unit III — Digital theodolite, EDM and total station

Question / topic	Marks	Asked in	Probability
Procedure of measuring horizontal / vertical angle with digital theodolite	4/6	S-26, W-25, S-25, W-24 **(4/4)**	**High**
Uses of digital theodolite	2	S-26, W-25 **(2/4)**	**Medium**
Component parts of digital / micro-optic theodolite	2/4	W-25, W-24 **(2/4)**	**Medium**
Principle of EDM with sketch	4	W-25, W-24 **(2/4)**	**Medium**
Component parts of EDM (with functions)	2/6	S-26, S-25 **(2/4)**	**Medium**
Uses of EDM	4	S-26, S-25 **(2/4)**	**Medium**
Function / fundamental keys of total station and their use	4	W-25, W-24 **(2/4)**	**Medium**
Building / site layout using total station	6	S-26, W-24 **(2/4)**	**Medium**
Measurement of horizontal distance / horizontal angle with total station	4	S-25, W-24 **(2/4)**	**Medium**
Advantages of total station	4	W-25 **(1/4)**	**Low**
Sources of errors in total station	4	S-25 **(1/4)**	**Low**
Contouring with total station (stepwise)	6	S-25 **(1/4)**	**Low**
Modern surveying equipments (list)	2	S-26 **(1/4)**	**Low**

Unit IV — Remote sensing, GIS and GPS

Question / topic	Marks	Asked in	Probability
Applications of remote sensing in civil engineering (incl. land use)	4/6	S-26, W-25, S-25, W-24 **(4/4)**	**High**
Define remote sensing	2	S-26, W-25, S-25 **(3/4)**	**High**
GIS — definition and key components	4	S-26, W-25, S-25 **(3/4)**	**High**
GPS — definition, components and applications	2/4/6	S-26, W-25, S-25 **(3/4)**	**High**
Active and passive remote sensing system (define / differentiate)	2/4	S-26, W-24 **(2/4)**	**Medium**
Applications of GIS	4/6	S-26, W-24 **(2/4)**	**Medium**
Electromagnetic energy — define	2	W-24 **(1/4)**	**Low**
GIS software (name any two)	2	S-25 **(1/4)**	**Low**
Sources of errors in GIS	6	S-25 **(1/4)**	**Low**

Unit V — Aerial survey, photogrammetry and drones

Question / topic	Marks	Asked in	Probability
Applications of photogrammetry in civil engineering	4	S-26, S-25, W-24 **(3/4)**	**High**
Merits and demerits of photogrammetry	2/4/6	S-26, W-25, S-25 **(3/4)**	**High**
Define aerial surveying	2	S-26, W-25 **(2/4)**	**Medium**
Uses of aerial surveying	4	W-25, S-25 **(2/4)**	**Medium**
Classification of drones as per DGCA	4	W-25, W-24 **(2/4)**	**Medium**
Method of aerial surveying (state and explain one)	4	S-25 **(1/4)**	**Low**
Define photogrammetry	2	S-26 **(1/4)**	**Low**
Salient features of drones	4	W-24 **(1/4)**	**Low**
Geo-fencing	4	W-24 **(1/4)**	**Low**

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