Automobile Engineering (315372)

MSBTE Diploma · K-Scheme · Mechanical Engineering, Semester 5 · Important Questions

How this list was made: Based on MSBTE papers **W-2025 and S-2026** available on msbte.ac.in (these are the only two K-scheme papers of this course so far, so "High" simply means **asked in both papers** — with only two papers this is a weak signal). Every question of both papers (52 sub-questions) was grouped by topic. **High** = asked in both papers, **Medium** = asked in one paper, **Low** = in the K-scheme syllabus but not asked yet. Topics marked *(not in syllabus text)* were asked in a paper although they are not listed in the K-scheme syllabus (approved 24/02/2025). Practice guidance only — not a prediction of the exam.

Paper pattern (both papers): Q.1 any 5 of 7 (2 M) · Q.2 and Q.3 any 3 of 4 (4 M) · Q.4 any 3 of 5 (4 M) · Q.5 and Q.6 any 2 of 3 (6 M) · 70 marks, 3 hours. **Unit weightage (syllabus):** I – 16, II – 20, III – 14, IV – 12, V – 8 marks.

Topics asked in both papers

#	Topic	Unit	Times asked
1	Chassis and frame – functions, types, loads acting on frame	1	3 (S-26, W-25)
2	Automobile – definition and major components	1	2 (S-26, W-25)
3	Vehicle layout – Front Engine Front Wheel Drive (FEFWD)	1	2 (S-26, W-25)
4	Clutch – function, necessity, requirements	2	2 (S-26, W-25)
5	Single plate clutch (construction, working, comparison with multi-plate)	2	2 (S-26, W-25)
6	Propeller shaft, universal joint and slip joint	2	2 (S-26, W-25)
7	Differential – necessity, construction and working	2	2 (S-26, W-25)
8	Rear axle – types, semi-floating / fully floating	2	2 (S-26, W-25)
9	Disc brake vs drum brake (comparison)	3	2 (S-26, W-25)
10	Steering geometry – camber, caster, toe-in, toe-out, KPI	3	2 (S-26, W-25)
11	Steering system – types and requirements	3	2 (S-26, W-25)
12	MacPherson strut suspension	4	2 (S-26, W-25)
13	Telescopic shock absorber	4	2 (S-26, W-25)
14	Tube type vs tubeless tyres	4	2 (S-26, W-25)

Unit I – Introduction to Automobile — 16 marks

Question / topic	Marks	Asked in	Probability
Chassis and frame – functions, types, loads acting on frame • Explain in detail different loads acting on chassis frame. *(W-25 Q.5c)* • State the function of chassis. *(S-26 Q.1d)* • Explain different types of automobile chassis. *(S-26 Q.3a)*	2 M, 4 M, 6 M	S-26, W-25	**High**

Automobile – definition and major components • Define automobile, list major components of vehicle. *(W-25 Q.1a)* • Enlist the main components of automobile. *(S-26 Q.1b)*	2 M	S-26, W-25	**High**
Vehicle layout – Front Engine Front Wheel Drive (FEFWD) • State advantages of front engine front wheel drive vehicle layout. *(W-25 Q.1c)* • Draw general layout of front engine front wheel drive car. *(S-26 Q.2a)*	2 M, 4 M	S-26, W-25	**High**
Vehicle layout – Front Engine Rear Wheel Drive (FERWD) • With neat sketch explain front engine rear wheel drive layout. *(W-25 Q.2a)*	4 M	W-25	**Medium**
Electric vehicle – layout, advantages, disadvantages • Draw & explain layout of electric vehicle. State its advantages & disadvantages. *(W-25 Q.6a)*	6 M	W-25	**Medium**
LPG and CNG operated engines – advantages *(not in syllabus text)* • State the advantages of LPG and CNG operated engines. *(S-26 Q.4d)*	4 M	S-26	**Medium**
Classification of automobiles (purpose, load, fuel, drive, wheels, transmission, suspension) In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Rear engine rear wheel drive and four wheel drive (4WD) layouts In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Conventional frame vs unitized (frameless) construction; body requirements and body styles In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Hybrid vehicle – need, components and functions In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**

Unit II – Automobile Transmission System — 20 marks

Question / topic	Marks	Asked in	Probability
Clutch – function, necessity, requirements • State function and necessity of clutch. *(W-25 Q.1b)* • State the functions of clutch. *(S-26 Q.1a)*	2 M	S-26, W-25	**High**
Single plate clutch (construction, working, comparison with multi-plate) • Compare single plate clutch and multi plate clutch on power transmission capacity, heat dissipation, size, application. *(W-25 Q.2b)* • Describe with neat sketch single plate clutch. *(S-26 Q.2c)*	4 M	S-26, W-25	**High**

Propeller shaft, universal joint and slip joint • Describe construction and working of propeller shaft with sketch. *(W-25 Q.4b)* • State function of universal and slip joint in propeller shaft. *(S-26 Q.1c)*	2 M, 4 M	S-26, W-25	**High**
Differential – necessity, construction and working • Explain with neat sketch construction, working of differential. *(W-25 Q.5a)* • Why differential is used in automobile? Explain working of differential. *(S-26 Q.5a)*	6 M	S-26, W-25	**High**
Rear axle – types, semi-floating / fully floating • With neat sketch explain semi floating type rear axle with application. *(W-25 Q.6b)* • State different types of rear axle. Explain working of any one. *(S-26 Q.3c)*	4 M, 6 M	S-26, W-25	**High**
Gear box – functions, constant mesh gear box • State any two functions of gear box in automobile. *(S-26 Q.1e)* • Explain with neat sketch working of constant mesh gear box. *(S-26 Q.4c)*	2 M, 4 M	S-26	**Medium**
Torque converter • With neat sketch explain torque converter. *(W-25 Q.3a)*	4 M	W-25	**Medium**
Overdrive – construction and working *(not in syllabus text)* • Draw neat sketch of overdrive and explain its working. *(S-26 Q.6c)*	6 M	S-26	**Medium**
Synchromesh gear box In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Epicyclic gear box (gear train) In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Diaphragm spring clutch and multi-plate clutch construction In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Transmission layout of 2WD and 4WD; front axle and stub axle types In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**

Unit III – Automobile Control Systems — 14 marks

Question / topic	Marks	Asked in	Probability
Disc brake vs drum brake (comparison) • Compare disc brake and drum brake system. *(W-25 Q.3b)* • Differentiate between disc brake and drum brake. *(S-26 Q.3b)*	4 M	S-26, W-25	**High**
Steering geometry – camber, caster, toe-in, toe-out, KPI • Define with neat sketch: camber, caster. *(W-25 Q.4e)*	2 M, 4 M	S-26, W-25	**High**

• Define toe-in and toe-out. *(S-26 Q.1f)*			
Steering system – types and requirements • Enlist types of steering system used in automobile. *(W-25 Q.1d)* • State the requirements of steering systems. *(S-26 Q.2b)*	2 M, 4 M	S-26, W-25	**High**
Disc brake – construction and working • Explain with neat sketch disc brake system. *(W-25 Q.2c)*	4 M	W-25	**Medium**
Antilock brake system (ABS) • With block diagram explain concept of ABS. *(W-25 Q.4c)*	4 M	W-25	**Medium**
Rack and pinion steering gear box • With neat sketch explain construction, working, application of rack and pinion steering gearbox. *(W-25 Q.6c)*	6 M	W-25	**Medium**
Pneumatic (air) brake system • Describe pneumatic braking system with neat sketch and state its advantages. *(S-26 Q.6a)*	6 M	S-26	**Medium**
Hydraulic brake system, master cylinder and wheel cylinder In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Recirculating ball steering gear box and power steering In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Steering linkages for rigid axle / independent suspension; understeer and oversteer In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**

Unit IV – Automobile Suspension, Wheels and Tyres — 12 marks

Question / topic	Marks	Asked in	Probability
MacPherson strut suspension • With neat sketch explain MacPherson strut suspension system with advantages. *(W-25 Q.2d)* • Describe working of MacPherson suspension system with neat sketch. *(S-26 Q.2d)*	4 M	S-26, W-25	**High**
Telescopic shock absorber • Draw and explain with neat sketch telescopic shock absorber and label it. *(W-25 Q.4a)* • Explain with neat sketch working of telescopic shock absorber. *(S-26 Q.5b)*	4 M, 6 M	S-26, W-25	**High**
Tube type vs tubeless tyres • Differentiate tube type and tubeless tyres. *(W-25 Q.1e)* • Write any four advantages of tubeless tyre over tube tyre. *(S-26 Q.4b)*	2 M, 4 M	S-26, W-25	**High**
Rigid axle vs independent suspension • Compare rigid axle and independent suspension system. *(W-25 Q.3c)*	4 M	W-25	**Medium**

Wheel balancing – purpose and procedure • Explain wheel balancing procedure. *(W-25 Q.3d)*	4 M	W-25	**Medium**
Wheel alignment – necessity and procedure • State necessity and procedure of wheel alignment. *(W-25 Q.4d)*	4 M	W-25	**Medium**
Leaf spring (rigid axle suspension) • Describe with neat sketch the construction and working of leaf spring. *(S-26 Q.3d)*	4 M	S-26	**Medium**
Sprung and unsprung weight • List components of vehicle counted in sprung and un-sprung weight. *(S-26 Q.4a)*	4 M	S-26	**Medium**
Wheels – functions and requirements, types • State the functions of wheel in automobile. *(S-26 Q.1g)*	2 M	S-26	**Medium**
Aerodynamic forces acting on vehicle body *(not in syllabus text)* • State and explain different forces acting on the vehicle body related to aerodynamics. *(S-26 Q.6b)*	6 M	S-26	**Medium**
Wishbone suspension and air suspension In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**
Tyre cross-section: cross ply, radial ply, belted bias; tyre designation; tyre life In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**

Unit V – Introduction to Auto Electrical Systems — 8 marks

Question / topic	Marks	Asked in	Probability
Lead acid battery – construction and working • Explain construction and working of lead acid battery with neat sketch. *(W-25 Q.5b)*	6 M	W-25	**Medium**
Battery rating and capacity • Define battery rating in brief. *(W-25 Q.1f)*	2 M	W-25	**Medium**
Sensors used in automobile • Enlist different sensors used in automobile. *(W-25 Q.1g)*	2 M	W-25	**Medium**
Battery ignition system (4-cylinder) • Explain battery ignition system for four cylinder engine. *(S-26 Q.4e)*	4 M	S-26	**Medium**
Wiring colour codes *(not in syllabus text)* • Enlist various colour codes used in wiring system. State its necessity. *(S-26 Q.5c)*	6 M	S-26	**Medium**
Starting system and charging system (starter motor, alternator) In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**

Magneto and electronic ignition systems In syllabus, not asked yet — prepare for a surprise question.	—	Not yet	**Low**

Exam tips from the two papers

- This is a **theory + sketch** paper — neither paper had a numerical. Almost every 4 M and 6 M question says "with neat sketch": practise drawing the single plate clutch, differential, MacPherson strut, telescopic shock absorber, propeller shaft, rear axles, disc brake and the FEFWD/FERWD layouts.
- **Disc brake vs drum brake** came as a 4 M comparison in both papers; **tube vs tubeless tyre** and **clutch functions** also repeated.
- Unit I (16 M) and Unit II (20 M) carry half the paper — chassis/frame, layouts, clutch, propeller shaft, differential and rear axle are the core.
- Steering geometry (camber, caster, toe-in, toe-out, KPI) appears every time in some form — learn definitions with small sketches.
- S-2026 included a few topics that are not in the syllabus text (overdrive, aerodynamic forces, LPG/CNG, wiring colour codes); read them once, but give priority to syllabus topics.

Note: This is a **important-question list prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in