

GUJARAT TECHNOLOGICAL UNIVERSITY

BE-6 SEMESTER – OLD PAPER – S22 TO W25 – QUESTION BANK

Subject Name & Code:

AUTOMOBILE CHASSIS AND BODY ENGINEERING- 3160211

Unit 1: Automobile Chassis

Repeated Questions:

1. **Define/Differentiate Chassis, Body, and Frame.**
(S25 - Q1a, 03 marks)
(W24 - Q1a, 03 marks)
(S22 - Q1a, 03 marks)
(W22 - Q1a, 03 marks)
(W23 - Q2a, 03 marks)
(Base - Q1a, 03 marks)
2. **Explain the vehicle roof and vehicle side panel assembly.**
(S25 - Q4b, 04 marks)
(S22 - Q1b, 04 marks)
(W22 - Q1b, 04 marks)
(Base - Q4b, 04 marks)
3. **Describe various types of materials used for body construction.**
(S25 - Q1c, 07 marks)
(S22 - Q1c, 07 marks)
(W22 - Q1c, 07 marks)
(W23 - Q3c, 07 marks)
(Base - Q3c, 07 marks)

Other Important Questions:

4. **What is Automobile chassis? Give the name of main components of chassis.** (W24 - Q1a, 03 marks)
5. **Explain in brief which types of loads are acting on the vehicle frame.** (W24 - Q1b, 04 marks)
6. **Name various components of transmission line and explain functions of each.** (Base - Q1b, 04 marks)
7. **Explain types of car body with neat sketch.** (W23 - Q1c, 07 marks)
(Base - Q1c, 07 marks)
8. **Explain Unibody Structure design for vehicle.** (S25 - Q2a, 03 marks)
(W22 - Q1b, 04 marks)
9. **Explain different types of commercial vehicle body.** (W23 - Q1b, 04 marks)
(Base - Q2c, 07 marks)
10. **Explain driver seat design & dimension parameters.** (S25 - Q2c OR, 07 marks)
(W23 - Q2c, 07 marks)
(Base - Q2c OR, 07 marks)
11. **Explain Full frontal crash test with neat sketch.** (W23 - Q2c OR, 07 marks)
12. **Explain load analysis of simple van using SSS method.** (W23 - Q5c OR, 07 marks)
(Base - Q4c, 07 marks)
13. **Explain Aerodynamic Drag and its types.** (W24 - Q1c, 07 marks)
(W22 - Q2b, 04 marks)
(S22 - Q2b, 04 marks)
14. **Explain the effects of different types of forces & moments acting on vehicle body.** (W22 -

Q2c, 07 marks)

(S22 - Q2c, 07 marks)

(W23 - Q3c OR, 07 marks)

(Base - Q3c OR, 07 marks)

15. **Explain vehicle body trims.** (S22 - Q4b, 04 marks)

(W22 - Q4b, 04 marks)

(W23 - Q2b, 04 marks)

(Base - Q2b, 04 marks)

Unit 2: Car Body

Repeated Questions:

1. **Classify types of car bodies.**
(S25 - Q1b, 04 marks)
(S22 - Q2a, 03 marks)
(W22 - Q2a, 03 marks)
(W23 - Q3a, 03 marks)
2. **Explain the crumple zone in vehicle.**
(S25 - Q5a, 03 marks)
(W24 - Q2b, 04 marks)
(S22 - Q3b, 04 marks)
(W22 - Q3b, 04 marks)
(W23 - Q5b, 04 marks)
3. **Define crashworthiness of vehicle.**
(S25 - Q3a, 03 marks)
(W24 - Q3a OR, 03 marks)
(W23 - Q3a OR, 03 marks)
(Base - Q3a OR, 03 marks)
4. **Explain the Simple Structural Surface (SSS) method.**
(S25 - Q3c, 07 marks)
(W24 - Q2c, 07 marks)
(S22 - Q3c, 07 marks)
(W22 - Q3c, 07 marks)

Other Important Questions:

5. **List out the main parts of the car body work.** (W24 - Q2a, 03 marks)
 6. **Explain driver visibility & methods for improving visibility.** (W24 - Q2c OR, 07 marks)
(W23 - Q4c OR, 07 marks)
(Base - Q5c, 07 marks)
 7. **Explain types of body styling used for vehicle.** (W22 - Q2a, 03 marks)
 8. **Write a short note on wind tunnel testing of a scale model.** (S22 - Q2c OR, 07 marks)
(W22 - Q2c OR, 07 marks)
 9. **Define Blind Spot. Describe various methods to reduce blind spot in sedan car.** (S22 - Q3c OR, 07 marks)
(W22 - Q3c OR, 07 marks)
 10. **Describe dashboard of vehicle in detail.** (S22 - Q4a, 03 marks)
(W22 - Q4a, 03 marks)
(W23 - Q1a, 03 marks)
(Base - Q2a, 03 marks)
 11. **Explain dash board with figure in detail.** (S25 - Q2b, 04 marks)
(Base - Q2a, 03 marks) [Figure given - refer Question paper of S25]
 12. **Explain different forces and moments with their effects on the vehicle.** (S25 - Q3c, 07 marks)
 13. **Explain vehicle structure analysis using by simple structural surface method in simple van.** (W24 - Q2c, 07 marks)
 14. **Explain the aerodynamic resistance and articulated vehicle.** (W22 - Q4a OR, 03 marks)
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Unit 3: Bus Body and Commercial Vehicle Body

Repeated Questions:

1. **Classify types of commercial vehicle bodies.**
(S25 - Q4a, 03 marks)
(W24 - Q4a OR, 03 marks)
(S22 - Q3a OR, 03 marks)
(W22 - Q3a, 03 marks)
(W23 - Q1b, 04 marks)
2. **Classify types of bus bodies.**
(S22 - Q3a, 03 marks)
(W22 - Q3a OR, 03 marks)
(W23 - Q4b, 04 marks)
3. **Describe the uses of GRP in bus body.**
(S25 - Q3b, 04 marks)
(W23 - Q3b, 04 marks)
(Base - Q3b, 04 marks)
4. **Explain different types of metal section used in the construction of bus body.**
(W24 - Q4b, 04 marks)
(W23 - Q3b OR, 04 marks)
(Base - Q3b OR, 04 marks)

Other Important Questions:

5. **Write a short note on tipper body.** (W24 - Q3a, 03 marks)
 6. **Difference between Mini bus and Midi bus.** (W24 - Q3b, 04 marks)
 7. **Explain various types of tanker body construction with detail.** (W24 - Q3c, 07 marks)
(Base - Q5a OR, 03 marks)
 8. **Write a short note on car pillars.** (W24 - Q3b OR, 04 marks)
 9. **Explain the driver cabin design for compactness design of frames for bus and commercial vehicles.** (W24 - Q4c OR, 07 marks)
(W22 - Q2c OR, 07 marks)
 10. **Compare the conventional & integral type construction of bus body.** (W23 - Q4b OR, 04 marks)
(Base - Q5b, 04 marks)
 11. **Classify various bus bodies with diagram.** (W23 - Q4b, 04 marks)
(Base - Q5b OR, 04 marks) [Figure given - refer Question paper of W23]
 12. **Explain classification of bus body.** (W22 - Q3b OR, 04 marks)
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Unit 4: Vehicle Aerodynamics

Repeated Questions:

1. **Explain Aerodynamic Drag and its types.**
(S25 - Q3b, 04 marks)
(W24 - Q1c, 07 marks)
(W22 - Q2b, 04 marks)
(S22 - Q2b, 04 marks)
2. **Explain about resistance to vehicle motion.**
(W24 - Q4b, 04 marks)
(Base - Q4a, 03 marks)
(W23 - Q5a OR, 03 marks)
3. **Write a short note on "wind tunnel testing of a scale model".**
(S22 - Q2c OR, 07 marks)
(W22 - Q2c OR, 07 marks)
(W22 - Q3c, 07 marks)

Other Important Questions:

4. **State the sources of body noise.** (S25 - Q3a, 03 marks)
(W23 - Q3a, 03 marks)
(Base - Q3a, 03 marks)
 5. **List out minimum drag optimization techniques for aerodynamics.** (W24 - Q4a, 03 marks)
 6. **Explain external and internal flow problems in vehicle aerodynamics.** (W24 - Q5b, 04 marks)
 7. **Draw layout of power plant location and drive in vehicle with neat sketch.** (W24 - Q4c, 07 marks) [Figure given - refer Question paper of W24]
 8. **Describe the aerodynamic force and moments.** (S22 - Q3b OR, 04 marks)
(W22 - Q3b, 04 marks)
 9. **Explain various body optimization techniques used for drag reduction for vehicle body.** (W23 - Q4c, 07 marks)
(Base - Q5c OR, 07 marks)
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Unit 5: Ergonomic and Safety

Repeated Questions:

1. **Explain the concept of H-point referencing.**
(S25 - Q5b, 04 marks) (W24 - Q5b OR, 04 marks) (S22 - Q5a OR, 03 marks) (W22 - Q5a, 03 marks) (W23 - Q5a, 03 marks)
2. **Give the requirements of pedestrian safety.**
(S25 - Q5a, 03 marks)
(W24 - Q5a OR, 03 marks)
(W22 - Q5a OR, 03 marks)
(W23 - Q5b OR, 04 marks)
3. **Differentiate between passive and active safety.**
(S25 - Q4c, 07 marks)
(W24 - Q5c, 07 marks)
(S22 - Q4c, 07 marks)
(W23 - Q5c, 07 marks)
(Base - Q4c, 07 marks)
4. **Explain the chassis and body alignment test.**
(S25 - Q5c, 07 marks)
(W24 - Q5c OR, 07 marks)
(S22 - Q5c, 07 marks)
(W22 - Q5c, 07 marks)
5. **Explain working of Airbags.**
(S25 - Q4a, 03 marks)
(W24 - Q5a, 03 marks)
(S22 - Q5b, 04 marks)
(W22 - Q5b, 04 marks)
(W23 - Q5b OR, 04 marks)
(Base - Q4b, 04 marks)
6. **Explain working of seat belt.**
(W23 - Q4a OR, 03 marks)
(Base - Q5a, 03 marks)

Other Important Questions:

7. **Define: airbag, seat belt and dashboard of vehicles.** (W24 - Q5a, 03 marks)
8. **Explain roll over crash test.** (S25 - Q5b, 04 marks)
(W22 - Q5b OR, 04 marks)
9. **What is ergonomics? Explain in brief.** (S22 - Q5a, 03 marks)
(W22 - Q5b, 04 marks)
10. **Describe human ergonomics for driver's seat design.** (S22 - Q5c OR, 07 marks)
(W22 - Q5c OR, 07 marks)
11. **Explain the pedal controls and electronic displays.** (W22 - Q4b OR, 04 marks)
12. **Explain the Crash test.** (W22 - Q5a OR, 03 marks)
13. **Explain construction and working of safety belt for occupants.** (S22 - Q4c OR, 07 marks)
(W22 - Q4c OR, 07 marks)
(W22 - Q5c OR, 07 marks)
14. **Enlist the safety aspects in vehicle body design and explain active and passive safety.** (W22 - Q5c, 07 marks)
15. **Define ergonomics of vehicle.** (W23 - Q5a, 03 marks)
(Base - Q4a OR, 03 marks)
16. **Explain Pneumatic equipment for passenger door opening & closing.** (S25 - Q4c, 07 marks)
(W22 - Q4c OR, 07 marks)
