



Name :

Roll No. :

Invigilator's Signature :

CS/B.TECH/AUE(NEW)/SEM-6/AUE-604A/2013

2013

VEHICLE BODY ENGINEERING

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$
 - i) Which one of the following is a hatchback car ?
 - a) Maruti Omni
 - b) Tata Sumo
 - c) Ambassador
 - d) Tata Magic.
 - ii) Which one of the following is a saloon car ?
 - a) Hundai i-10
 - b) Chevrolet Beat
 - c) VW Polo
 - d) Tata Safari
 - e) Tata Manza.
 - iii) If ground clearance of a car is increased then it will experience
 - a) negative lift
 - b) positive lift
 - c) drag increase
 - d) drag decrease.



- iv) Rear wing is attached to the vehicle to
 - a) increase the negative lift
 - b) decrease the negative lift
 - c) increase the positive lift
 - d) decrease the positive lift.
- v) Piston ring are made of
 - a) stainless steel
 - b) aluminium
 - c) cast iron
 - d) high speed steel.
- vi) In double decker bus, passengers are not allowed to stand on the top deck because
 - a) passenger ventilation is affected
 - b) overall center of gravity of the bus changes
 - c) upper deck floor may be collapsed
 - d) bus may variate vigorously.
- vii) Laminated glass is used in the front of the passenger car because
 - a) refractive index is more than ordinary glass
 - b) refractive index is less than ordinary glass
 - c) it can resist more wind force at high speed
 - d) it does not produce splinters in case of accident.
- viii) Aerodynamic force on vehicle depends on
 - a) road gradient
 - b) frictional forces between road and tyre
 - c) vehicle speed
 - d) none of these.
- ix) Magnitude of driving wheel torque is than engine torque.
 - a) less
 - b) greater
 - c) equal
 - d) cannot be compared.



- x) Maximum tractive effort in a 4-speed gear box vehicle is available in the
- | | |
|-------------|--------------|
| a) 1st gear | b) 2nd gear |
| c) 3rd gear | d) 4th gear. |

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. What is Aerodynamic Drag ? Explain it with a suitable sketch.
3. Describe different types of car body with a suitable sketch.
4. Why is window regulator used ? Describe the mechanism of a mechanically operated window regulator for passenger car.
5. Outline the essential feature of the following types of automotive vehicles :
 - i) Sedan car
 - ii) Limousini
 - iii) Estate car.
6. Write down a note about protection against automotive body metal's corrosion.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. Describe different types of Bus body with a suitable sketch including double decker bus body.
8. Write short notes on the following topics : $5 + 5 + 5$
 - a) Drag coefficient & Aerodynamic lift
 - b) Rolling resistance.
 - c) Rear end spoiler and Wings.
9. a) Explain different safety considerations. 7
 - b) What is Air bag ? Explain the working principle of Air bag with a suitable sketch. Also write its advantages and disadvantages. 8



10. a) Explain different types of automotive corrosion. 3
b) Discuss one of the most vital automotive corrosion mechanisms. 5
c) Discuss different corrosion testing methods to measure different corrosion parameter. 7
11. Write short notes on the following related to automotive coating : 5 × 3
a) Electrocoat (*E*-coat)
b) Hot melt wax coating
c) Conversion coating
d) Powder coating
e) Metallic coating.

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