

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.

=====