

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**

(An Autonomous Institute Affiliated to AKTU, Lucknow)

**B.Tech**

**SEM: VI - CARRY OVER THEORY EXAMINATION - 2024-2025**

**Subject: Vehicle Body Engineering**

**Time: 3 Hours**

**Max. Marks: 100**

**General Instructions:**

**IMP:** Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right -hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

**SECTION-A**

20

1. Attempt all parts:-

- 1-a. When the brake pedal free play is less than the specified value, then the.... (CO1, K1) 1
- (a) Brake drags
  - (b) Brake fades
  - (c) Vapour locking occurs in the brake lines
  - (d) Antilock braking system malfunctions
- 1-b. Thinner is added to the paint in order to.....(CO1, K1) 1
- (a) Make pigments and resin mix easily
  - (b) Make paint film hard
  - (c) Optimise its viscosity
  - (d) None of these
- 1-c. The ball joints are used on the tie rod ends, because they.....(CO2, K1) 1
- (a) Reduce the amount of noise generated
  - (b) Reduce the amount of sliding resistance
  - (c) Can deal with movement of the suspension both vertically and in other directions
  - (d) Improve the force transmission speed
- 1-d. A clutch is usually designed to transmit maximum torque which is.... (CO2, K1) 1
- (a) Equal to the maximum engine torque
  - (b) 80% of the maximum engine torque

- (c) 150% of the maximum engine torque
- (d) None of these
- 1-e. Which of the following indicates multi-grade oil? (CO3, K1) 1
- (a) SAE 30
- (b) API SF
- (c) SAE20 W50
- (d) API 50
- 1-f. The frequency of flashing of light per minute in a direction (side turn) indicator is about.....(CO3, K1) 1
- (a) 9
- (b) 90
- (c) 900
- (d) 9000
- 1-g. The order in which effort applied to the steering wheel is transferred to the front wheel is .....(CO4, K1) 1
- (a) Steering wheel, steering gearbox, steering shaft, tie rod, steering knuckle, front wheels
- (b) Steering wheel, steering shaft, steering gearbox, tie rod, steering knuckle, front wheels
- (c) Steering wheel, steering shaft, steering gearbox, steering knuckle, tie rod, front wheels
- (d) Steering wheel, tie rod, steering gearbox, steering shaft, steering knuckle, front wheels
- 1-h. The fuel pump in the programmed fuel injection (PFI) system is located... (CO4, K1) 1
- (a) Between the fuel filler pipe and fuel tank
- (b) In the fuel tank
- (c) On the distributor mounting in the engine compartment
- (d) On the engine compartment bulkhead
- 1-i. The power source for a brake booster is.... (CO5, K1) 1
- (a) Exhaust manifold pressure
- (b) Electricity
- (c) The pressure difference between the atmospheric pressure and the vacuum pressure in the intake manifold
- (d) Hydraulic pump
- 1-j. The effect of having excess camber is.....(CO5, K1) 1
- (a) Excessive steering alignment torque
- (b) Hard steering
- (c) Too much traction

(d) Uneven tyre wear

2. Attempt all parts:-

- |      |  |   |
|------|--|---|
| 2.a. | What is seating arrangement in bus? (CO1, K1)                  | 2 |
| 2.b. | How composites are made for automobile applications? (CO2, K1) | 2 |
| 2.c. | What do you mean by wind tunnel? (CO3, K1)                     | 2 |
| 2.d. | What are good vehicle layout? (CO4, K1)                        | 2 |
| 2.e. | Give two methods of noise suppression. (CO5, K1)               | 2 |

**SECTION-B**

30

3. Answer any five of the following:-

- |      |   |   |
|------|---|---|
| 3-a. | Describe the loading capacity for coaches. (CO1, K2)            | 6 |
| 3-b. | Compare between car, pickups and vans. (CO1, K2)                | 6 |
| 3-c. | Classify the different properties of paint adhesives. (CO2, K2) | 6 |
| 3-d. | What are the different properties of ABS and Styrene. (CO2, K2) | 6 |
| 3.e. | What is the difference between torsion and bending? (CO3, K2)   | 6 |
| 3-f. | Describe longitudinal stability. (CO4, K2)                      | 6 |
| 3.g. | Explain the various purpose of bumper systems. (CO5, K2)        | 6 |

**SECTION-C**

50

4. Answer any one of the following:-

- |      |  |    |
|------|--|----|
| 4-a. | Differentiate between wheel arch structure and wheel arch. (CO1, K2) | 10 |
| 4-b. | Differentiate between wheel roof longitudes and rub rail. (CO1, K2)  | 10 |

5. Answer any one of the following:-

- |      |  |    |
|------|--|----|
| 5-a. | Describe the various types of composites used in body building of cars with examples. (CO2, K2)  | 10 |
| 5-b. | Describe the purpose of corrosion prevention techniques used in vehicle body building. (CO2, K2) | 10 |

6. Answer any one of the following:-

- |      |  |    |
|------|--|----|
| 6-a. | With proper diagram define the vehicle body stress analysis. (CO3, K2)                           | 10 |
| 6-b. | How we perform the aerodynamic study of the heavy vehicles. Explain with neat diagram. (CO3, K2) | 10 |

7. Answer any one of the following:-

- |      |  |    |
|------|--|----|
| 7-a. | Describe in detail the effect of operating factors on lateral stability. (CO4, K2) | 10 |
| 7-b. | Explain the government regulation on the vehicle stability. (CO4, K2)              | 10 |

8. Answer any one of the following:-

- |      |  |    |
|------|--|----|
| 8-a. | How the noise characteristics affect the working of the vehicle. (CO5, K2) | 10 |
| 8-b. | Discuss the advantages and disadvantages of bumper systems. (CO5, K2)      | 10 |