**Printed Page:-** **Subject Code**:- **AME0613**

**Roll. No:**

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

**(An Autonomous Institute Affiliated to AKTU, Lucknow)**

**B.Tech**

**SEM: VI - THEORY EXAMINATION (20.....- 20.....)**

**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. The component that connects the steering rack to the knuckles is (CO1, K1) 1

(a) Tierod
(b) Sectorgear
(c) Pivot
(d) Spline

1-b. It is necessary to maintain the valve clearances as they (CO1, K1) 1

(a) Reduce the resistance to sliding that occurs between the cam and the tappet
(b) Allow for lengthening of the valves owing to the heat of combustion
(c) Increase the speed at which the valves move up and down
(d) Make the crankshaft turn smoothly

1-c. For the same maximum pressure and temperature (CO2, K1) 1

(a) Diesel cycle is more efficient than Otto cycle
(b) Otto cycle is more efficient than Diesel cycle
(c) Both Otto cycle and Diesel cycle are equally efficient
(d) None of the above

1-d. If the engine coolant leaks into the engine oil, then engine oil (CO2, K1) 1

(a) Appears milky
(b) Become foamy
(c) Turns black

.

(d) None of these

1-e. The crescent shaped cavity on the piston head top surface is called as (CO3, K1) 1

(a) Piston oil hole
(b) Snap ring
(c) Valve recess
(d) Valve clearance

1-f. The valve overlap in four stroke petrol engines is approximately (CO3, K1) 1

(a) 30°
(b) 60°
(c) 90°
(d) 120°

1-g. The basic characteristics of a brake fluid is (CO4, K1) 1

(a) A high boiling point
(b) Low viscosity
(c) Compatibility with rubber and metal parts
(d) All of these

1-h. When the front wheels of a vehicle are locked during braking, then (CO4, K1) 1

(a) Stopping distance becomes extremely long
(b) Front tyres skid across the road surface, and the vehicle spins around
(c) Rear tyres skid across the road surface, and the vehicle spins around
(d) Driver loses control over the steering, and the vehicle continues moving in its current direction

1-i. The materials used for cylinder block are (CO5, K1) 1

(a) Cast iron and steel
(b) Cast iron and aluminium alloy
(c) Steel and aluminium alloy
(d) Brass and steel

1-j. When the piston is at T.D.C., the volume above the piston in the combustion chamber is the (CO5, K1) 1

(a) Clearance volume
(b) Cylinder volume
(c) Exhaust volume
(d) None of these

2. Attempt all parts:-

2.a. What is loading capacity in buses? (CO1, K1) 2

2.b. Define paint adhesives. (CO2, K1) 2

2.c. What do you mean by longitudinal loads? (CO3, K1) 2

2.d. How visibility can be improved? (CO4, K2) 2

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| | | |
|---|---|---|
| 2.e. | Give any two examples of non deformable bodies. (CO5, K1) | 2 |

**SECTION-B** 30

3. Answer any five of the following:-

| | | |
|---|---|---|
| 3-a. | How styling forms are generated? (CO1, K2) | 6 |
| 3-b. | What are the different types of commercial vehicles? (CO1, K1) | 6 |
| 3-c. | What are the different properties of alloy steels? (CO2, K1) | 6 |
| 3-d. | What are the different properties of glass reinforced plastics? (CO2, K1) | 6 |
| 3.e. | Explain the various static loads acting on the vehicle. (CO3, K2) | 6 |
| 3.f. | How vehicle behave on a curvilinear path? (CO4, K2) | 6 |
| 3.g. | How the laws of mechanism applied to the safety of the vehicle? (CO5, K2) | 6 |

**SECTION-C** 50

4. Answer any one of the following:-

| | | |
|---|---|---|
| 4-a. | Differentiate between ground clearance and cross bearers. (CO1, K3) | 10 |
| 4-b. | What is significance of loading capacity in commercial vehicles? How it can be measured? (CO1, K2) | 10 |

5. Answer any one of the following:-

| | | |
|---|---|---|
| 5-a. | Differentiate between sandwitch panel construction and simple panel with examples and properties. (CO2, K3) | 10 |
| 5-b. | How to choose the various material for the vehicle body building? (CO2, K2) | 10 |

6. Answer any one of the following:-

| | | |
|---|---|---|
| 6-a. | Explain the stress analysis of bus body structure in bending with proper figure. (CO3, K2) | 10 |
| 6-b. | Describe the various types of vehicle drag affecting the vehicle performance. (CO3, K2) | 10 |

7. Answer any one of the following:-

| | | |
|---|---|---|
| 7-a. | What are the various factors affecting the driver visibility? How the visibility can improve? (CO4, K2) | 10 |
| 7-b. | Explain the government regulations availible for the ergonomic design of vehicle in india? (CO4, K2) | 10 |

8. Answer any one of the following:-

| | | |
|---|---|---|
| 8-a. | How body structural vibrations are produced? What are the various factors affecting it? (CO5, K2) | 10 |
| 8-b. | How the vehicle stability plays an important role in the design? Explain in details. (CO5, K2) | 10 |