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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 (2022-2023)

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 capacity of a battery is usually expressed in terms of (CO1) 1
- (a) Volts
 - (b) Amperes
 - (c) Weight
 - (d) Ampere hours
- 1-b. The instrument used to check specific gravity of acid in a battery is (CO1) 1
- (a) Hydrometer
 - (b) Hygrometer
 - (c) Anemometer
 - (d) Multimeter
- 1-c. The tilting of the front wheels away from the vertical, when viewed from the front of the car, is called (CO2) 1
- (a) Camber
 - (b) Caster

- (c) Toe in
(d) Toe out
- 1-d. The formula for Iso-octane is (CO2) 1
(a) C₈H₁₈
(b) C₇H₁₇
(c) C₆H₁₈
(d) C₇H₁₈
- 1-e. In aluminium cylinder blocks, the cylinder liners are made of (CO3) 1
(a) Aluminium
(b) Ceramic
(c) Brass
(d) Cast iron
- 1-f. The main purpose of an engine's air cleaner is that it (CO3) 1
(a) Controls the engine's air intake volume
(b) Reduces the engine's air intake noise
(c) Prevents rain water from entering the engine
(d) Prevents dust and other foreign matter from entering the engine
- 1-g. The basic purpose of a four wheel drive (4WD) system is that it (CO4) 1
(a) Delivers improved cornering on dry road surfaces
(b) Eliminates the need of snow tyres, tyre chains, etc.
(c) Ensures effective transmission of engine torque to all four wheels, even on slippery road surfaces
(d) Ensures that effective braking can be performed, even on slippery surfaces
- 1-h. An oil filter bypass valve opens when the (CO4) 1
(a) Engine is cold
(b) Engine overheats
(c) Oil filter becomes clogged
(d) Engine runs at high speed
- 1-i. Vulcanizing means (CO5) 1
(a) Heating rubber under pressure
(b) Spraying with special paint
(c) Melting rubber while stirring it
(d) None of these

1-j.	Engine misfiring is likely to result from (CO5)	1
	(a) Spark plug gap too small	
	(b) Spark plug gap too wide	
	(c) Vapours lock in the fuel only	
	(d) Incorrect fuel air mixture	

2. Attempt all parts:-

2.a.	What are post diagonals? (CO1)	2
2.b.	How much carbon content is in steel? (CO2)	2
2.c.	What do you mean by static friction? (CO3)	2
2.d.	What is the purpose or ergonomics in design? (CO4)	2
2.e.	What are non deformable bodies? (CO5)	2

SECTION B

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3. Answer any five of the following:-

3-a.	What do you mean by seating arrangement in coaches? (CO1)	6
3-b.	Compare between car and buses. (CO1)	6
3-c.	What are the different properties of composites? (CO2)	6
3-d.	What are the advantages of thermo plastics? (CO2)	6
3.e.	What is the purpose of aerodynamics? (CO3)	6
3.f.	Define the effect of engine location on stability. (CO4)	6
3.g.	What is the function passive restraint system explain? (CO5)	6

SECTION C

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4. Answer any one of the following:-

4-a.	Describe the angle of departure in detail. (CO1)	10
4-b.	Differentiate between wheel cant rail and roof sticks. (CO1)	10

5. Answer any one of the following:-

5-a.	Explain the difference between ABS and Styrene. (CO2)	10
5-b.	Differentiate between high strength composites and metal matrix composites with examples and properties. (CO2)	10

6. Answer any one of the following:-

6-a.	Describe the various tests performed with the scale models. (CO3)	10
6-b.	What are the conditions for the aerodynamic loading conditions testing for vehicles? (CO3)	10

7. Answer any one of the following:-

- 7-a. Explain the various electronic displays used in vehicle with proper example. (CO4) 10
- 7-b. Describe the various factors affecting the critical speed for toppling and skidding? (CO4) 10

8. Answer any one of the following:-

- 8-a. What are the various methods to reduce the chassis bearing vibrations? (CO5) 10
- 8-b. Define and explain the laws of mechanisms applied to safety. (CO5) 10

2022-23 Jan_June