

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: AU307

Course Name: VEHICLE BODY ENGINEERING (AU)

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks

Marks

- | | | |
|---|---|------|
| 1 | Explain the classification of stylish forms with suitable sketches? | (10) |
| 2 | a) Write a short note about Gussets, Post diagonals and angle of Departure with a neat sketches? | (6) |
| | b) Explain the dimensions of a passenger's seat as per ARAI regulations? | (4) |
| 3 | a) Write a short note on flow visualization techniques used for aerodynamics testing? | (4) |
| | b) Explain the ergonomics in a commercial vehicle cabin? | (6) |
| 4 | Explain the various body optimization techniques for minimize aerodynamic drag with suitable examples and sketches? | (10) |

PART B

Answer any three full questions, each carries 10 marks

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|---|---|------|
| 5 | a) Explain the advantages and disadvantages of aluminium alloy as a monocoque material. | (4) |
| | b) Explain the application of Semi Rigid PUR foams and metal matrix composites? | (6) |
| 6 | a) List out different types of steels used in a truck, explain? | (5) |
| | b) Write a short note about sandwich panel construction and load bearing plastics? | (5) |
| 7 | a) Explain the critical speed of a car for skidding from the road? | (5) |
| | b) Which types of body structure you will recommend for an off-road vehicle, Justify? | (5) |
| 8 | Explain the various types of loads acting on a frame with a neat sketch? | (10) |

PART C

Answer any four full questions, each carries 10 marks

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|----|--|------|
| 9 | a) Explain the sources of noise in a public transport bus. | (5) |
| | b) List out and explain the different types of noise level measurement techniques. | (5) |
| 10 | List out the various passive safety systems in a new generation vehicle, explain any five systems. | (10) |
| 11 | a) A car is coasting at a speed of 40km/hr and feels vibration in steering wheel. Diagnoses the car and explain. | (5) |
| | b) Explain the methods of noise suppression in a front engine front wheel drive car? | (5) |

- 12 a) Explain the effects of air dams on front bumpers with two examples? (6)
b) Write a short note on CFD Technology? <http://www.ktuonline.com> (4)
- 13 Explain the methods to improve the visibility of a driver in a low floor bus. (10)
- 14 a) Explain the effect of interference drag in a super car. (2)
b) Explain the different seat adjustment mechanisms. (8)

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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017

Course Code: AU307

Course Name: VEHICLE BODY ENGINEERING (AU)

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks.

Marks

- | | | |
|---|--|------|
| 1 | a) Write short note on Approach angle and Departure angle. | (5) |
| | b) What do you mean by roof gutters? | (5) |
| 2 | What are the different types of coach work types? Explain. | (10) |
| 3 | a) Write a short note on flow visualization techniques with an example. | (3) |
| | b) What is meant by ergonomics? List out the basic considerations while designing a driver seat. | (7) |
| 4 | Briefly explain different types of drag experienced on a vehicle body. | (10) |

PART B

Answer any three full questions, each carries 10 marks.

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|---|--|------|
| 5 | Briefly explain corrosion and various corrosion prevention methods? | (10) |
| 6 | a) Write a short note on Sandwich panel construction. | (5) |
| | b) Write a short note on Load bearing plastics. | (5) |
| 7 | a) Write a short note on effect of operating factors on stability of vehicle. | (5) |
| | b) Write a short note on weight distribution over a vehicle. | (5) |
| 8 | a) Explain the relation between steering geometry and vehicle stability. | (5) |
| | b) Explain the effect of a vehicle running above critical speed on a curvilinear path. | (5) |

PART C

Answer any four full questions, each carries 10 marks.

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|----|---|------|
| 9 | What are the different sources of noise in a vehicle and suggest various methods to reduce noise (minimum 5 sources and suggestions)? | (10) |
| 10 | a) Explain the role of bumper in pedestrian safety as well as vehicle safety. | (5) |
| | b) Write a short note on structural vibrations and reasons for inducing the same. | (5) |
| 11 | Explain various safety measures provided in new generation cars. | (10) |
| 12 | a) Write a short note on visibility of a driver. | (5) |
| | b) Suggest various methods used for improving visibility. | (5) |
| 13 | Write a short note on CFD analysis and how it is applied in present day automotive industry. | (10) |
| 14 | a) Write short note on fluidic design and various considerations for the same. | (5) |
| | b) What is the effect of providing air dams on front bumpers of a passenger car. | (5) |
