

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Seventh Semester B.Tech Degree Supplementary Examination June 2022 (2015 Scheme)

**Course Code: ME463****Course Name: Automobile Engineering**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer any three full questions, each carries 10 marks.*

Marks

- |   |   |     |
|---|---|-----|
| 1 | a) Sketch and explain the working of CRDI systems with its advantages.                          | (5) |
|   | b) Explain the phenomenon of turbo lag in engines.  | (5) |
| 2 | a) Explain the function and need of two compression rings in an engine.                         | (5) |
|   | b) Compare the performance and working of naturally aspirated and turbo charged diesel engines. | (5) |
| 3 | a) Sketch and explain the working of a multi plate clutch in an automobile.                     | (5) |
|   | b) Explain the working of a torque convertor in an automobile and list its benefits.            | (5) |
| 4 | a) Draw the sketch of a Synchroniser ring and explain its function                              | (5) |
|   | b) Sketch and explain the working of sliding mesh gearbox.                                      | (5) |

**PART B***Answer any three full questions, each carries 10 marks.*

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|---|--|-----|
| 5 | a) Sketch and explain the working of a power assisted rack and pinion steering system. | (5) |
|   | b) Explain the effect of incorrect Camber in a vehicle.                                | (5) |
| 6 | a) Sketch and explain the working of recirculating ball screw steering gearbox system. | (5) |
|   | b) Explain the importance of Toe in and Toe out  | (5) |
| 7 | a) Sketch and explain the working of McPherson strut with its features and advantages. | (5) |
|   | b) Explain the features and advantages of Independent Suspension systems               | (5) |
| 8 | a) Sketch and explain the features and working of Leaf spring suspension system.       | (5) |
|   | b) Explain the operating principle and function of an anti roll bar                    | (5) |

**PART C**

*Answer any four full questions, each carries 10 marks.*

- 9 a) Explain the working of a hydraulic brake system with a sketch (5)  
b) Compare the working of air brake system over hydraulic brake system. (5)
- 10 a) Write a note on laying brake line systems for providing braking in all four wheels of a vehicle? (5)  
b) Explain the working of the Wheel Cylinder assembly with a sketch (5)
- 11 a) Sketch and explain the working of ABS braking system. (5)  
b) Compare the working of vacuum brakes and hydraulic brakes (5)
- 12 a) Write a note on the influence of shape of vehicles on drag coefficients (5)  
b) Explain the function and advantages of rear end spoiler in a vehicle (5)
- 13 a) How does under body floor height influences aerodynamic lift of a vehicle. (5)  
b) List and explain any two methods to control aerodynamic lift in a vehicle (5)
- 14 a) Explain any two methods to reduce drag of a car body. (5)  
b) Differentiate between notch back drag and hatch back drag. (5)

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