

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Seventh semester B.Tech examinations (S), September 2020

**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) Distinguish between MPFI and CRDI systems with its need and advantages.                                  | (5) |
|   | b) Explain the working and benefits of turbocharger with a sketch.  | (5) |
| 2 | a) Explain the function of the following components in an automobile<br>(1) Compression Rings (2) Fly wheel | (5) |
|   | b) Compare the performance and working of naturally aspirated engines and super charged engines.            | (5) |
| 3 | a) Explain the working of a torque convertor in an automobile and list its benefits.                        | (5) |
|   | b) Sketch and explain the working of a multi plate clutch in an automobile.                                 | (5) |
| 4 | a) Draw the sketch and function of an Over drive mechanism.   | (5) |
|   | b) Sketch and explain the working of synchromesh gearbox.   | (5) |

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

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|---|---|-----|
| 5 | a) Explain the effect of incorrect Toe (Toe-in and Toe-out) in a vehicle                            | (5) |
|   | b) Sketch and explain the working of a power assisted rack and pinion steering system.              | (5) |
| 6 | a) Sketch and explain the working of worm and roller steering gearbox system.                       | (5) |
|   | b) Explain the importance of the following steering angles (1) Caster (2) Camber                    | (5) |
| 7 | a) Sketch a McPherson strut suspension system and list its advantages.                              | (5) |
|   | b) Compare the features of (1) Non independent suspension system (2) Independent Suspension systems | (5) |
| 8 | a) Sketch and explain the features of Double Wish Bone suspension system.                           | (5) |
|   | b) Sketch and explain the function of an Antiroll Bar in a car.                                     | (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) How braking efficiency of a vehicle is evaluated? What are the parameters that affect braking efficiency? (5)
- 10 a) Compare the working of vacuum brakes and hydraulic brakes. (5)  
b) Write a note on laying brake line systems for providing braking in all four wheels of a vehicle? (5)
- 11 a) Discuss the working and advantages of ABS braking system over conventional systems. (5)  
b) Explain the working of a Brake Caliper with a sketch. (5)
- 12 a) Write a note on the influence of shape of vehicles on drag coefficients. (5)  
b) How does under body floor height influences aerodynamic lift of a vehicle? (5)
- 13 a) Explain the function and advantages of rear end spoiler in 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 fast back drag and hatch back drag. (5)

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