

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Seventh Semester B.Tech Degree Examination (Regular and Supplementary), December 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) Explain the working of MPFI system with a sketch. (5)  
b) What is the function of a fly wheel in an automobile, what are the parameters that decide the size of a fly wheel? (5)
- 2 a) Explain on the types of piston rings and their function in an automobile. (5)  
b) Explain the working of a CRDI system with a sketch. (5)
- 3 a) Explain the function of a synchroniser ring in a synchromesh gear box and its benefits. (5)  
b) Explain the working of a single plate clutch in an automobile with a sketch. (5)
- 4 a) Explain any three reasons for worn out of clutch plate. (5)  
b) Explain the benefits of a synchromesh gearbox over sliding mesh gear box. (5)

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

- 5 a) What is the importance of Toe-in and Toe-out in a vehicle? (5)  
b) Sketch and explain the basics of Ackerman steering principle. (5)
- 6 a) Sketch and explain the working of recirculating ball screw mechanism. (5)  
b) Explain the concept of “over steer” and “under steer”. (5)
- 7 a) Sketch and explain the features of McPherson strut. (5)  
b) Explain the operating principle of anti-roll bar in a vehicle with a sketch. (5)
- 8 a) Explain the features independent suspension system. (5)  
b) Sketch and explain the function of a leaf spring suspension. (5)

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

- 9 a) Discuss the benefits of ABS braking system. (5)  
b) Sketch and explain the working of a hydraulic brake system. (5)

- 10 a) Explain the working of air brake system with a layout. (5)  
b) What are the advantages of disc brakes over drum brakes? (5)
- 11 a) Explain the working of vacuum assisted brake with a sketch. (5)  
b) Compare the advantages of hydraulic brakes over mechanical brakes. (5)
- 12 a) Does the body shape of a vehicle influence the drag coefficients? Explain with an example quoting the details of a new generation car. (5)  
b) Explain the importance of aerodynamic lift in the design of a vehicle. (5)
- 13 a) Explain the function and benefits of rear end tail extension in a vehicle. (5)  
b) Explain the concept of aero lift and drag in a vehicle. (5)
- 14 a) What is the function of profile edge chamfering a vehicle? (5)  
b) Explain the concept of square back drag. (5)

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