

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
Seventh Semester B.Tech Degree Supplementary Examination August 2021

**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 difference between CRDI and MPFI system. What are its advantages over conventional systems? (6)
- b) What is turbocharging and supercharging in engines? (4)
- 2 a) Enumerate the functions of Fly wheel, Piston rings, Connecting Rod and Piston Pin. (4)
- b) With a neat sketch explain the working of a simple carburettor. (6)
- 3 a) With a simple figure explain the working of a Torque Converter in automobiles. (6)
- b) What are the advantages of Centrifugal Clutch over Semi-centrifugal Clutch? (4)
- 4 a) What are the resistances offered to vehicle motion, explain with resistance curves? (4)
- b) With a suitable sketch explain the working of a Synchromesh Gear Box. (6)

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

- 5 a) Why power assisted steering mechanisms were introduced in modern engines? Explain the Ackerman Steering Gear Box system in automobiles. (6)
- b) Explain Castor, Camber, King pin inclination, Toe in and Toe out. (4)
- 6 a) With a neat sketch explain the Rack and Pinion mechanism used in vehicle steering mechanism. (4)
- b) Compare the difference in working between screw and nut steering system with a recirculating ball nut type. (6)
- 7 a) With a neat sketch explain the working of a telescopic suspension system. (5)
- b) Explain the working of a Macpherson strut suspension with a sketch. (5)

- 8 a) Enumerate the advantages and disadvantages of a Hydro Pneumatic Suspension. (5)
- b) Explain the working of a Swinging arm Rear Wheel Drive Independent Suspension. (5)

**PART C**

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

- 9 a) With a neat sketch explain the working of an ABS Brake Mechanism. (5)
- b) Compare the Pneumatic Brake system with a Hydraulic Brake system. (5)
- 10 a) How do you evaluate the braking efficiency? Mention the factors affecting braking efficiency (5)
- b) With a neat sketch explain the working of a vacuum servo brake. (5)
- 11 a) With a neat sketch explain the working of a Master Cylinder assembly. (5)
- b) With a neat sketch explain the working of a Caliper Brake Assembly. (5)
- 12 a) What is the effect of Negative lift of aerofoil wings on vehicles? (5)
- b) What is the need for a Rear Spoiler in Vehicles? (5)
- 13 a) Explain profile Edge Chamfering in Vehicle design. (5)
- b) What are the various methods to reduce Vehicle Drag? (5)
- 14 a) What are the factors affecting Aerodynamic Lift and Drag? (5)
- b) What is the difference between Fast Back Drag and Hatch Back Drag? (5)

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