

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree (R,S) Examination May 2024 (2019 Scheme)

**Course Code: MRT342****Course Name: AUTOMOBILE ENGINEERING****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

- | | | Marks |
|----|--|-------|
| 1 | Explain the three types of frame construction. | (3) |
| 2 | With a neat sketch list out the components of an automobile. | (3) |
| 3 | What are the functions of suspension system? | (3) |
| 4 | Explain about roll axis. | (3) |
| 5 | Explain the desirable properties of brake pad materials. | (3) |
| 6 | With the help of neat diagram write about a mechanical braking system. | (3) |
| 7 | Distinguish the terms under steer and over steer. | (3) |
| 8 | Explain the advantages of fuel injection system | (3) |
| 9 | Describe the term aerodynamic lift. | (3) |
| 10 | How front end nose shape affect the lift. | (3) |

PART B*Answer any one full question from each module, each carries 14 marks.***Module I**

- 11 a) With a neat sketch explain the construction and working of centrifugal clutch. (6)
- b) Explain with a neat sketch about the construction and working of synchromesh gear box. (8)

OR

- 12 a) Explain about automated manual transmission. (7)
- b) With the help of a neat sketch explain about the construction and working of Torque Converter. (7)

Module II

- 13 a) Explain the working of Macpherson strut suspension. (7)
- b) Explain the working of double wishbone suspension. (7)

OR

- 14 a) Explain the working of hydro-pneumatic suspension. (7)
b) Explain the working of De Dion axle rear wheel suspension. (7)

Module III

- 15 a) Discuss the working and advantages of ABS over conventional systems. Also explain the types of ABS. (14)

OR

- 16 a) Explain about pneumatic operated disc brakes. (7)
b) Explain about regenerative braking system. (7)

Module IV

- 17 a) What is CRDI? Also explain the working of CRDI with suitable diagram. Note down its advantages. (10)
b) What is caster, camber, toe in and toe out ? (4)

OR

- 18 a) With the help of neat diagram explain worm and roller type steering gear box. (8)
b) Explain the Ackermann steering principle (6)

Module V

- 19 a) What are the methods to control the aerodynamic lift? (7)
b) With the help of neat drawing explain the working of fuel cell. (7)

OR

- 20 a) Explain the different types of batteries used for EV (4)
b) What are the various methods to reduce the air drag? (10)
