

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:2150202****Date:03/02/2021****Subject Name:Automobile Systems****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss the function universal joint in power transmission. 3
(b) How an automobile is classified on basis of (a) Transmission (b) Wheel drive. 4
(c) What is the importance of differential in vehicle? Explain its working and construction with diagram. 7
- Q.2** (a) List different types of lining materials used in brakes. 3
(b) Explain the following terms: (i) Caster (ii) Camber (iii) Toe in & Toe out (iv) Slip angle 4
(c) Explain hydraulic braking system. Explain construction and working of Master cylinder with neat sketch. 7
- Q.3** (a) Write the advantages of fluid flywheel. 3
(b) Explain functions of automobile frame. Give comparison of conventional frame and frameless construction. 4
(c) Explain important of steering gearbox. Explain any two types of steering gear box with neat sketch. 7
- Q.4** (a) “ In Automobile front axle, generally I section is provided in middle and elliptical Section provided at the end” Justify the statement. 3
(b) Explain semi centrifugal clutch. 4
Explain
(c) 1. Wishbone independent suspension 7
2. Mac Pherson strut independent suspension
- Q.5** (a) What is the requirement of propeller shaft ? Explain with neat sketch. 3
(b) Explain the difference between radial ply and bias ply tires. 4
A four wheel drive passenger car moving up with high speed on an inclined
(c) road surface. Explain the types of road loads acting on the vehicle with suitable diagram. 7
- Q.6** (a) Define the following terms: 3
(i) Air resistance (ii) Gradiability (iii) Traction and Tractive effort.
(b) Compare front and rear mounting engine. 4

- (c) What is Continuous variable transmission in automobile? Explain working principal of continuous variable transmission. 7
- Q.7** (a) Explain the following terms in details. 3
(i) Over inflation (ii) Air bleeding (iii) Under inflation.
- (b) Explain Ackermann steering in detail with neat sketch. 4
- (c) Explain different types of material used in automobile body construction. 7
- Q.8** (a) Explain with neat sketch vehicle layout for front engine front wheel drive. 3
- (b) Explain the types of belts in brief. 4
- (c) Explain hydro-elastic suspension. 7

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