

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2150202****Date: 31/05/2019****Subject Name: Automobile Systems****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Draw the layout plan of automobile and name the various components. **03**  
(b) Compare front and rear mounting engine. **04**  
(c) Explain the various types of frame and give function of frame. **07**
- Q.2** (a) Explain frameless construction. **03**  
(b) Give the brief classification of chassis of automobile vehicles. **04**  
(c) Explain different types of material used in automobile body construction **07**
- Or**
- (c) Write short note on torsional bar and helper spring. **07**
- Q.3** (a) Define sprung mass and unsprung mass. **03**  
(b) Explain Macpherson strut type suspension system. **04**  
(c) Explain hydro-elastic suspension **07**
- Or**
- Q.3** (a) Give the classification of brakes. **03**  
(b) Explain semi centrifugal clutch **04**  
(c) Give the comparisons of disc brake and drum brake. **07**
- Q.4** (a) Give the comparison between multi plate and single plate clutches. **03**  
(b) Explain bleeding of brake. **04**  
(c) Explain construction and working principle of fluid flywheel. Also give the merits and demerits of it. **07**
- Or**
- Q.4** (a) Why gear box is required in automobile vehicle. **03**  
(b) Explain radial ply tyre. **04**  
(c) What is the importance of differential in vehicle? Explain its working and construction with diagram. **07**
- Q.5** (a) Explain tyre rating. What does 215/75 R 15 89T means. **03**  
(b) Explain following term; 1. Traction and tractive effort 2. Air resistance **04**  
(c) Explain power steering in detail with neat sketch & its advantages **07**
- Or**
- Q.5** (a) Explain Hotchkiss and Torque-tube type rear axle drives with neat diagrams **03**  
(b) Explain Ackermann steering in detail with neat sketch **04**  
(c) Explain working of propeller shaft with suitable sketch and function of each Component of it. **07**

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