DEPARTMENT OF AERONAUTICAL AND AUTOMOBILE ENGINEERING
MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL
SEMESTER EVALUATION

Subject: AUTOMOTIVE CHASSIS AND SUSPENSION(AAE 3171)

Semester: V

Branch: Automobile Engineering

Date and Time: 22/02/2021; 9:20 AM. Duration:90 min. Max. Marks: 20

Instructions: All the questions are compulsory and missing data may be suitably assumed.

Q1. Explain the types and features of joints used for chassis side and cross member fastening and which is the best among them. **(03 Marks)**

Q2. A motor vehicle with a wheel base of 2.54 m and weighing 12400 N has its C.G. 1.32 m behind the front axle and 0.785 m above the ground level. The vehicle is fitted with brakes on all four wheels and the coefficient of adhesion between tyres and road is 0.6. If the vehicle is going up an inclined angle $\sin^{-1} 0.1$, determine the load distribution between the front and rear wheels and also distance at which it can be brought to rest from a speed of 40 km/hr when; (a) only front brakes are applied, (b) only rear brakes are applied and (c) all four wheel brakes are applied**. (04 Marks)**

Q3. With simple layout, explain the features and working of Macpherson independent suspension system**. (03 Marks)**

Q4. Discuss in detail the various parameter influencing the tyre life**. (03 Marks)**

Q5. Describe in detail constructional features of the tubed and the tubeless tyres for automotive use. Discuss also their relative merits and demerits. **(04 Marks)**

Q6. Sketch and explain the features of different chassis layouts used in commercial and passenger vehicles. **(03 Marks)**