BE/Sem VIII/CBSGS/AUTO/VD/29-11-2017

Q.P. Code :13524

Time: 3 Hrs

Max Marks: 80

NB:

1. Question No 1 is compulsory
2. Answer any three questions from remaining
3. Assume suitable data if required
4. Draw sketches to justify your answer

1. (a) Calculate the Conjugate point for the following data. 10
   Total Mass= 1000 Kg
   Spring Mass= 800 Kg
   Wheel Base= 2.5 m
   Front/Rear weight distribution = 65/35
   Front suspension = 30 KN/m
   Rear Suspension = 50 KN/m
   (b) Explain Wheel Wobble and Wheel Shimmy. 10

2. (a) Explain the Properties of Roll Center 10
   (b) Derive an expression to calculate the value of X_2 for simple spring and mass system of two masses similar to an Automobile. 10

3. (a) Explain Under-steer and over-steer. 10
   (b) Explain No Roll suspension and Interconnected suspension system. 10

4. (a) Find Yawing Velocity of a Car when moment 250 NM is acting through CG for the following data. 10
   Mass= 1200 Kg
   Wheel Base= 2.5 m
   a= 1.4 m and b= 0.9 m
   C_F = – 70 000 N/rad
   C_R = – 75 000N/rad
   Speed = 90 Kmph
   (b) Explain the working of central tyre inflation

5. (a) Explain the Roll geometry for any two Suspension system. 10
   (b) Derive an expression for Steady state yawing response to steering input. 10