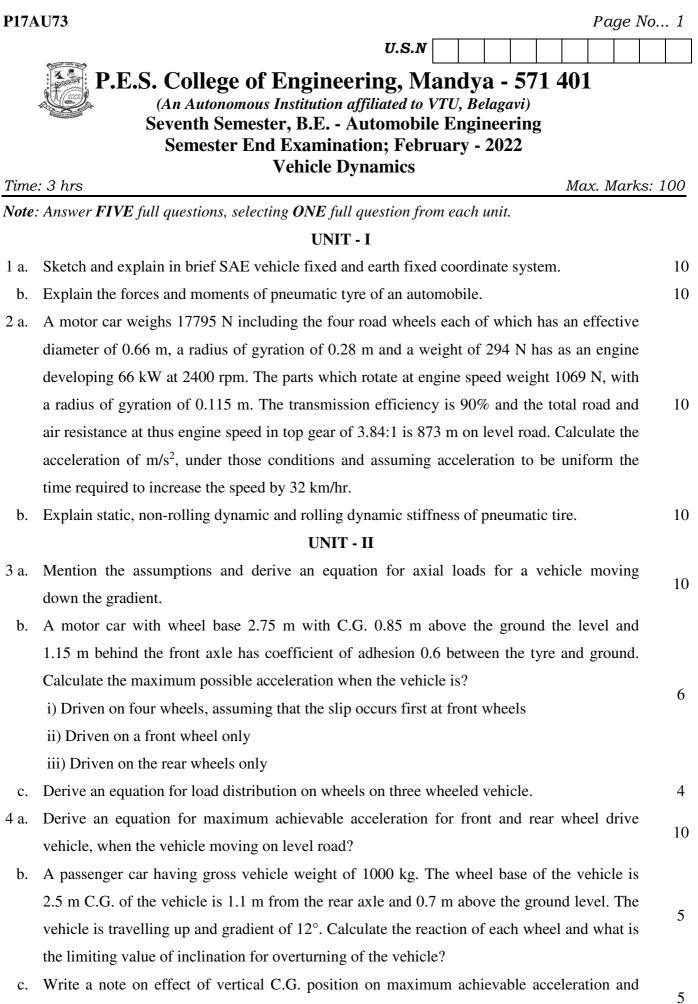
braking performance.



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## UNIT - III

- 5 a. Write a note on;
  - i) Stopping distance ii) Work done braking
  - iii) Braking efficiency along iv) Brake torque with suitable mathematical equations
  - b. A motor car has a wheel base of 2.64 m, the height of C.G. above the ground level is 0.61 m, and it is 1.12 m in front of the rear axle. If the car is travelling at 40 km/hr on a level road, determine the minimum stooping distance, when?
    - i) The rear wheels are braked
    - ii) The front wheels are braked
    - iii) All the wheels are braked

Take  $\mu = 0$ .

- 6 a. With a neat sketch, explain the construction of drum and disk braking system.
- b. A motor weighs 13341.5 N and has a wheelbase of 2.65 m. The C.G. is 1.27 m behind the front axle and 0.76 m above the ground level. Maximum braking on all four wheels on level ground will bring the vehicle uniformly to rest from a speed of 64 km/h in a distance of 25.9 m. Calculate the value of an adhesion between the tyre and the road. Under the same 10 road condition, vehicle descends a hill of gradient 1 in 20 and is braked on the front wheels only. Determine the load distributed between the front and rear wheels and the distance required to bring the car to rest.

## UNIT - IV

- 7 a. The distance between the king-pins of car is 1.3 m, the track arms are 0.1525 m long and the length of the track rod is 1.2 m for a track. 1.42 m and wheel base of 2.85 m, find the radius of curvature of the path followed by the rear-side front wheel at which correct steering is obtained when the car is turning to the right.
- b. Describe the cornering properties of pneumatic tyre of an automobile. 10
- 8 a. Explain the directional stability during under steer and over steer.
  - b. Explain the condition for true rolling and write equations for turning circle radius. 10

## UNIT - V

- 9 a. Explain the different sources of vibration of an automobile. 10
  - b. Explain the model an automobile for two-degree freedom system considering sprung and un sprung mass and write the equation of motion for the same.
- 10 a. Explain with a suitable equations aerodynamic drag, lift and skin friction and write a note on effect of same on stability and performance of an automobile.
  - b. Show the aerodynamic pressure distribution on an automobile and explain different 10 aerodynamics aids.