

- Leaf spring are made of which material?
- List some specification according to which vehicles are selected.
- What are the applications of toothed belt?
- Brief about choices of cycle for heavy duty vehicles.
- What is function of piston rings?
- What types of stresses are generated in crankshaft?
- Draw curve for typical car acceleration in different vehicle speed.
- Define gradient resistance.
- Write note on king pin bearing.
- What are the required properties of lubricant used in gear box?

SECTION-B

2. Discuss design aspects of rolling type bearing.
3. Step by step give the calculation and plotting curve of air and rolling resistance.
4. Calculate gear ratio for forward motion for four speed gear box.
5. Describe the operating variables which affect the performance and emission of vehicle.
6. Discuss in detail about value gear mechanism.

SECTION-C

7. Draw and explain the circuit for control of steering system in automobile using hydraulic system.
8. Write note on :
 - a) Solid state switches
 - b) Teach pendent
9. Power is transmitted using V-belt drive. The included angle of V-groove is 30° . The belt is 20 mm deep and maximum width is 20 mm. if the mass of the belt is 0.35 kg per metre length and maximum allowable stress is 1.4 MPa, determine the maximum power transmitter when the angle of lop is 140° , $\mu = 0.15$.

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