

Time: 3 Hours

Total Marks: -80

N.B: (1) Question no 1 is compulsory.

(2) Attempt any three out of remaining five questions.

- Q.1 Answer the following questions:
- a) Explain the working mechanism of hydraulic clutch. 05
 - b) Draw the sketches of 3 forward 1 reverse sliding mesh gearbox showing power flow in top and reverse gears. 05
 - c) Draw a neat sketch for propeller shaft. Explain the necessity of having a sliding joint for propeller shaft. 05
 - d) Draw a neat sketch of steering linkages and name the parts. 05
- Q.2
- a) A single plate clutch, with both sides effective has outer and inner diameters 300 mm and 200 mm respectively. The maximum intensity of pressure at any point in the contact surface is not to exceed 0.1 N/mm^2 . If the coefficient of friction is 0.3, determine the power transmitted by a clutch at a speed of 2500 r.p.m. 10
 - b) Explain the construction and working of disc brake with the help of neat sketch. What are their advantages over drum brake? 10
- Q.3
- a) Explain the working of following with a neat sketch. 10
 - i. Wishbone type independent suspension
 - ii. Tie rod rack and pinion type steering
 - b) Describe the working of torque converter. How does it differ from fluid coupling? 10
- Q.4
- a) Explain hotchkiss drive with a neat labelled diagram. How does it differ from torque tube drive? 10
 - b) Explain the working of synchromesh gearbox with neat labelled diagram. Explain its advantages over sliding and constant mesh type gear boxes. 10
- Q.5
- a) What are the different types of automotive wheels? Describe their construction, advantages and disadvantages. 10
 - b) Draw and explain semi-floating and full floating axles. 10
- Q.6
- a) Explain any five terms related to steering geometry with neat diagrams. 10
 - b) What is the principle of operation of hydraulic shock absorber? Describe the construction and working of telescopic shock absorber. 10