

2125
B.E. (Mechanical Engineering)
Seventh Semester
MEC-703: Automobile Engineering

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit. Support your answers with neat diagrams as applicable.

x-x-x

1. Give short answer:-
 - (a) Write strategy for driving up a steep gradient with a given load substantiated by effective use of available tractive effort.
 - (b) Write two combinations for achieving speed increase in epicyclic gear set.
 - (c) How clutch plate absorbs undesirable torsional vibrations?
 - (d) How the speed fluctuations in universal joint of the propeller shaft can be taken care of?
 - (e) Explain tire designation system. (5x2)

UNIT - I

2. A motor car engine develops maximum torque at 1900 rpm and maximum power at 3200 rpm. If the bottom gear ratio is 3:1, find the approximate ratios of speed of the successive speed changes for a gear box having 4 forward speeds when the ratios are in geometrical progression.
If the same car at top gear has speeds of near about 48km/hr and 80 km/hr at the corresponding engine speeds at maximum torque & maximum power respectively and effective diameter of the driving wheels is 61 cm, find suitable back axle reduction. (10)
3. a) Explain with sketch working of multi plate clutch and list its merits-demerits and applications.
b) What do you mean by turbo-lag? Explain with sketch arrangement and working of supercharger uses in automobiles. List limitations of using it with IC engine in automobile. (2x5)

(2)

4. Explain with diagram sensing and actuation strategies to achieve upshifting and downshifting of gears in an automatic transmission in automobiles. (10)

UNIT - II

5. Discuss with a neat sketch working of interconnected suspension system. How it is better than conventional suspension system? (10)
6. Explain Camber, Steering Axis Inclination and Castor angle made by front wheels and discuss their effect on steering characteristics of vehicle. (10)
7. a) What is antilock braking system? Discuss with sketch working of antilock braking system used in automobiles along with merits and application.
b) Discuss with sketch different types of wheels used in automobiles. How wheels are designated? (2x5)

x-x-x