

2063
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 (Part-A) which is compulsory and selecting two questions each from Part B-C. Support your answers with neat diagrams as applicable.

x-x-x

PART-A

- 1) Give short answer:
- (a) Write strategy for overtaking a vehicle substantiated by effective use of available tractive effort.
 - (b) Write two combinations for achieving speed decrease in epicyclic gear set.
 - (c) How clutch plate absorbs undesirable torsional vibrations?
 - (d) Explain different loads' distribution on the half floating rear axle of automobile?
 - (e) Explain tire designation system. 2x5=10

PART-B

- 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 single plate clutch and list its merits demerits and applications. 5
(b) Explain with sketch arrangement and working of turbocharger used in automobiles. List the advantages and limitations of using it with IC engine in automobile. 5
- 4) (a) Explain with schematic Borg and Warner automatic transmission for achieving 3 forward and one reverse speed. 5
(b) Discuss different forces and torques experienced by live rear axle of automobile and explain how these are handled in Hotchkiss drive. 5

PART-C

- 5) Discuss with a neat sketch working of wishbone type front wheel independent suspension system. How it is better than rigid axle 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. 5
(b) Discuss with sketch different types of wheels used in automobiles. How wheels are designated? 5

x-x-x

