

Code No: **RT41031****R13****Set No. 1****IV B.Tech I Semester Supplementary Examinations, February - 2019****AUTOMOBILE ENGINEERING****(Mechanical Engineering)****Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B************PART-A (22 Marks)**

1. a) Sketch the four wheel drive arrangement of an automobile. [4]
- b) Differentiate between tubed and tubeless tyres. [4]
- c) State the requirements of a good steering system. [3]
- d) List down the characteristics of rigid axle front suspension. [4]
- e) Explain how air bags work? [3]
- f) What causes emission of hydrocarbons from an automobile? What are its effects? [4]

PART-B (3x16 = 48 Marks)

2. a) Explain briefly the function and arrangement of lubricating oil filters. [8]
- b) Explain the factors that limit the extent of supercharging of S.I and C.I engines. [8]
3. a) Discuss the constructional details of a cross ply tyre. [8]
- b) Explain the working of a centrifugal clutch with a suitable sketch. [8]
4. a) Sketch and explain Davis steering mechanism. [8]
- b) Explain how kingpin inclination or steering axis inclination produces directional stability. [8]
5. a) Describe briefly a tandem master cylinder used in a hydraulic braking system. [8]
- b) Using single diagrams discuss the construction and working of the following accessories in an automobile: (i) Windscreen wiperz (ii) Horn and Head lights. [8]
6. a) Discuss in detail the engine specifications with regard to power and speed. [8]
- b) Explain the working of ABS in an automobile with the help of a sketch. [8]
7. a) Discuss the national and international emission standards of Bharat stage-IV and Bharat stage –VI engines. [8]
- b) Explain briefly the exhaust gas recirculation device for the control of NO_x. [8]