

**III B. Tech II Semester Supplementary Examinations, December -2023**  
**AUTOMOBILE ENGINEERING**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**  
All Questions Carry Equal Marks

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**UNIT-I**

1. a) Classify the automobiles based on their load capacity, fuel used, suspension system, body system and drive of the vehicle. [7M]  
b) Draw the assembly of piston, piston pin and connecting rod. [4M]  
c) Explain the crank arrangement in a four cylinder in line engine. [3M]  
(OR)
2. a) State the reasons for preventive maintenance. List the basic areas normally serviced as part of preventive maintenance. [7M]  
b) Enumerate the various components in a lubricating system and list the function of each component. [7M]

**UNIT-II**

3. a) Review the different types of automotive clutches. Explain the construction of centrifugal clutch. [7M]  
b) Differentiate between fluid-flywheel and torque converter. [7M]  
(OR)
4. a) Describe the operation of planetary gears when the system is in speed reduction. [7M]  
b) How many types of car wheels are there? Describe relative advantages and disadvantages of each. [7M]

**UNIT-III**

5. a) Write the functions of steering system in an automobile. [5M]  
b) What is 'under steering' & 'over steering'? [5M]  
c) What is the relevance of steering ratio? [4M]  
(OR)
6. Identify the parts of a MacPherson strut suspension system and describe their operations. Compare it with the double wish bone suspension system. [14M]

**UNIT-IV**

7. a) What is dual braking system? What are its advantages? [4M]  
b) Describe the parts and operation of the master cylinder and tandem master cylinder. Draw the schematic diagrams. [10M]  
(OR)
8. a) What is meant by Bendix drive mechanism? [5M]  
b) How Does an Oil Pressure Gauge Work? [5M]  
c) More and more accessories are finding place in cars that are available at present. Why? List commonly used accessories. [4M]

**UNIT-V**

9. a) Describe the operating sequence of a driver's airbag. [7M]  
b) Compare the following based on the vehicle body specification. [7M]  
(i) Coupe (ii) Sedan (iii) Hatchback (iv) Lift back (v) Kamm back  
(OR)
10. a) How connecting rod is inspected during maintenance? [4M]  
b) What sensors are used in autonomous cars? List their functions. [5M]  
c) Write a short note on the Onboard diagnosis system. [5M]

