

Paper Id: **140702**

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B. TECH.
(SEM.VII) THEORY EXAMINATION 2019-20
AUTOMOBILE ENGINEERING

Time: 3 Hours**Total Marks: 100****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A**

- 1. Attempt all questions in brief. 2 x 10 = 20**
- What role does a mechanical engineer play in an automobile manufacturing company?
 - What is the function of a bumper?
 - What is the ignition advance?
 - Why is gear box necessary in automobile?
 - What is a universal joint? What are its types?
 - What is meant by differential lock?
 - Why is wheel alignment and balancing necessary?
 - What is the correct method to apply brakes in a manual transmission car, first clutch, then brakes, or directly brakes?
 - What happens if we use diesel in a petrol engine and vice versa?
 - List the advantages of hydrogen fuel used in automobiles.

SECTION B

- 2. Attempt any three of the following: 10 x 3 = 30**
- Explain the working principle of synchromesh gear box with neat sketch.
 - What are the functions of a Hotchkiss drive? Compare its merits with torque tube drive.
 - What is the difference between Electronic Stability Control (ESC) and Electronic brake force distribution (EBD or EBF) in automobiles?
 - Sketch and explain the construction and working principle of the recirculating Ball type steering gear?
 - With a neat sketch, explain the Electronically controlled diesel injection system.

SECTION C

- 3. Attempt any one part of the following: 10 x 1 = 10**
- What is the difference between constant-mesh and synchromesh transmission? Describe any one of them.
 - How far will a vehicle having a mass of 750 kg and travelling at 37.5 km/hr up a gradient 1 in 10 would travel before stopping when neutral is applied. Its rolling resistance is 155 N.
- 4. Attempt any one part of the following: 10 x 1 = 10**
- Explain the Davis Steering Mechanism? Write its relative merits?
 - Sketch a chassis of any four wheelers and mark various parts on it. Explain the functions of various components of automobile.
- 5. Attempt any one part of the following: 10 x 1 = 10**
- How does rigid axle suspension work? Explain with neat diagram.
 - Explain with neat diagram an Anti-Lock Braking System. How is it better than normal braking system?
- 6. Attempt any one part of the following: 10 x 1 = 10**
- Explain about horn, wiper, fuel gauge and engine temperature indicator?
 - Explain the working of a pneumatically operated four-wheel brake system with a sketch.
- 7. Attempt any one part of the following: 10 x 1 = 10**
- What are catalytic converters? Explain the working principles of 3-way catalytic converters with chemical reaction.
 - Discuss the principle of operation of a fuel cell with a neat sketch and explain briefly the applications