



B. TECH.
(SEM VII) THEORY EXAMINATION 2017-18
AUTOMOBILE ENGINEERING

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

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20

- a. Classify an automobile on the basis of transmission system and wheel drive system.
- b. State the main functions of frame.
- c. Why a clutch is necessary in the transmission system of an automobile?
- d. What is meant by double declutching?
- e. What is a constant velocity joint?
- f. Explain camber and its effect on tire wear.
- g. Define bouncing and rolling.
- h. What is meant by fading of vehicle brakes?
- i. Enumerate the various requirements of a good ignition system.
- j. Draw the layout of the air-conditioning system for a car.

SECTION B

2. Attempt any three of the following: 10 x 3 = 30

- a. State the difference between dry and wet types of friction clutch. List the properties of a good clutch lining.
- b. Make a comparison between sliding mesh and constant mesh gear box.
- c. State and explain the principle of Ackerman steering mechanism.
- d. Give a brief description of torsion bar and stabilizer bar.
- e. Name the pollutants emitted by gasoline engines and petrol engines into the atmosphere.

SECTION C

3. Attempt any one part of the following: 10 x 1=10

- a. It is possible to make a faster climb in low gear on certain gradients than in top gear. Comment on the validity of this statement.
- b. What are synchronizers? Point out their utility in transmission.

4. Attempt any one part of the following: 10 x 1=10

- a. What is meant by cornering force? How it is affected by slip angle, inflation pressure and tire load?
- b. State the function of front axle. Sketch a typical front axle and give brief description of its constructional features.

5. Attempt any one part of the following: 10 x 1=10

- a. What is meant by independent suspension system? How it is achieved in front and rear wheel?
- b. Compare the constructional and operational aspects of disc and drum brakes. Which one is preferred and why?

6. Attempt any one part of the following: 10 x 1=10

- a. Draw the schematic arrangements for the common rail and individual pump injection systems. Point out the relative merits and demerits of these systems.





- b. Explain, with a neat sketch, the working of a simple plain tube carburetor. Mention the limitations of this carburetor.

7. Attempt any *one* part of the following:

10 x 1=10

- a. Mention a sectioned sketch to show the main features of a spark plug in common use. Name the main parts and state the materials from which they are made.
- b. State and explain the construction and working of 3-way catalytic converter.

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