

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0402

Roll No.

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### B.Tech.

## (SEM. VII) ODD SEMESTER THEORY EXAMINATION 2010-11 AUTOMOBILE ENGINEERING

Time : 3 Hours

Total Marks 100

- Note :**
- (1) Attempt *all* questions.
  - (2) Assume missing data suitably, if any.
  - (3) Be precise in your answer.

1. Attempt any *four* parts of the following :— (5×4=20)
  - (a) Name different resistances encountered by a moving vehicle. How propelling power is related to these resistances ?
  - (b) Explain working principle of synchromesh gear box with neat sketch.
  - (c) Draw and explain the valve timing diagram for 4-stroke petrol engine.
  - (d) What is supercharging ? Why it is done and what are supercharging limits for CI engine ?
  - (e) Draw the curve for torque characteristic (TVs N) for variable speed CI engine.
  - (f) What purposes are served by a gear box ? How are torque and gear ratio related ?
2. Attempt any *two* parts of the following :— (10×2=20)
  - (a) (i) What are the requirements of good transmission system ? Name the different units of transmission system.

(ii) Describe the working of torque converter with neat sketch.

(b) (i) Explain the construction and working of differential with neat sketch.

(ii) Explain king-pin inclination and how it effects vehicle stability.

(c) Explain the working of Steering system with a neat sketch/ layout showing its all components.

3. Attempt any *two* parts of the following :— (10×2=20)

(a) What are the requirements of good braking system ? Discuss the classification of brakes for automotive vehicles.

(b) What do you understand by independent suspension system ? Explain Wishbone arm system with neat sketch.

(c) Write short notes on the following :—

(i) Self energizing brakes

(ii) Causes of tyre wear.

4. Attempt any *two* parts of the following :— (10×2=20)

(a) Describe the main components and working of battery ignition system with neat sketch.

(b) What are the functional requirements of diesel engine injection system ? Describe different types of injection nozzles and compare them.

(c) What are the advantages of MPFI (multi point fuel injection) over the carburettor system ? Explain MPFI electronic control system with a block diagram.

5. Attempt any *four* parts of the following :— (5×4=20)

(a) Explain pressurized with cooling.

(b) Why overheating and over-cooling of Engine is harmful ?

(c) What are multigrade oils and what are their advantages ?

(d) Name different types of additives used in lubricating oil.

(e) Make comparison between periodic and preventive maintenance.

(f) Discuss Mist lubrication system.