| Reg. No. | | | | | | | | | | |
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# MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

*(A constituent institution of MAHE, Manipal)*

## VI SEMESTER B.TECH. (MECHATRONICS ENGINEERING)

## END SEMESTER EXAMINATIONS, MAY 2018

SUBJECT: AUTOMOBILE ENGINEERING [MTE 4001]

Time: 3 Hours MAX. MARKS: 50

**Instructions to Candidates:**

- Answer **ALL** the questions.
- Illustrate your answers with sketch wherever necessary.

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| **1A** | Explain with sketch different types of valves used in engine. | **03** |
| **1B** | List the merits and demerits of vertical and horizontal IC engine. | **03** |
| **1C** | With sketch explain the working of different types of carburetors. | **04** |
| **2A** | Compare the construction and working of distributor less and direct ignition systems. | **03** |
| **2B** | Classify types of radiators and mention their merits and demerits. | **03** |
| **2C** | Sketch and explain the working of splash and pressure lubrication system. | **04** |
| **3A** | Derive an expression for torque transmitted by single plate clutch. (Assume uniform wear and uniform pressure conditions) | **04** |
| **3B** | Describe with sketch the construction and working of a sliding gear box. | **04** |
| **3C** | List the parts and explain the working of drive line in automobile. | **02** |
| **4A** | Explain with sketch the working of worm and worm wheel gear used in steering gear. | **04** |
| **4B** | Discuss the working of steering linkages. | **03** |

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| **4C** | Sketch and explain the construction and working of Wishbone type suspension system. | **03** |
| **5A** | Sketch and explain the construction and working of vacuum servo brakes. | **03** |
| **5B** | Compare the different types of shoe mechanisms used in drum type braking systems. | **04** |
| **5C** | Explain the construction and working of fixed caliper disk brake. | **03** |