| Reg. No. | | | | | | | | | | |
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# Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

## VI SEMESTER B.TECH (MECHANICAL ENGINEERING)

## END SEMESTER EXAMINATIONS, JUNE/JULY 2016

## SUBJECT: AUTOMOBILE ENGINEERING [MME 304]

### REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

**Instructions to Candidates:**

- Answer **ANY FIVE** full questions.
- Draw sketches using pencils only.

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|---|---|---|
| **1A.** | Explain with a neat sketch the working of an overhead valve mechanism. | **04** |
| **1B.** | What is the purpose of differential unit in an automobile craft? Describe with simple sketch the functioning of differential unit. | **04** |
| **1C.** | What is 'firing order'? What are the correct firing orders for 4-cylinder and 6-cylinder in-line engines? | **02** |
| **2A.** | Sketch and explain working of a Vacuum advance Ignition mechanism. | **04** |
| **2B.** | Sketch and explain the operation of a swinging caliper type disc brake. | **04** |
| **2C.** | Highlight atleast three effects of overcooling and undercooling in IC engines. | **02** |
| **3A.** | With a neat sketch explain the Working of a Constant Vacuum Carburetor. | **05** |
| **3B.** | Explain the working of rack and pinion steering gear system with a neat sketch. | **05** |
| **4A.** | Explain the operation of a fluid flywheel with the help of a diagram. | **04** |
| **4B.** | What is meant by Independent suspension system? Sketch a telescope type of shock absorber and explain its working in the independent suspension system of a car. | **04** |
| **4C.** | What are the requirements of a good clutch? | **02** |
| **5A.** | Explain with a neat sketch the working of a forced circulating cooling system in automobiles. | **04** |
| **5B.** | The front axle of a car has pivot pin centers 1.1 m apart, the length of each steering arm is 15cm, while, the track rod is of 1m length. Calculate wheel | **04** |

base for perfect rolling of the car wheels, when the inner wheel stub axle is at 55 degrees to the car centre line

**5C.** What are the desirable properties of tyre? **02**

**6A.** Explain the operation of a multiplate clutch with a help of a diagram. **04**

**6B.** Differentiate between Hotchkiss drive & Torque tube drive with a neat sketch. **04**

**6C.** Write atleast four desirable properties of the lubricants. **02**