



Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



IV SEMESTER B.TECH (Mechanical / Industrial Production Engineering) END SEMESTER EXAMINATIONS, MAY 2016

SUBJECT: AUTOMOBILE ENGINEERING [MME 2204]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- Missing data may be suitable assumed.

1A.	What are the functions of engine cylinder liner? What are the differences between a dry and wet liner?	3
1B.	What are the desirable properties of tyres? Explain.	3
1C.	With a neat sketch explain constant choke carburetor.	4
2A.	With a neat sketch explain valve operating mechanism for a side valve engine. List its advantages and disadvantages.	3
2B.	With a neat sketch explain the construction and working of three quarter floating axle.	3
2C.	What is ignition advance? With a neat sketch explain the working of vacuum ignition advance mechanism.	4
	6	
3A.	What are the effects of overheating of engine components? Explain.	3
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3A. 3B. 3C. 4A.	 What are the effects of overheating of engine components? Explain. With a neat sketch explain the working of recirculating ball type steering gear. What are the basic functions of a suspension system? Explain. A vehicle has pivot pins 1.45m apart, length of each track arm is 0.25m, and track rod is behind the front axle and of length 1.35m. When the vehicle is turning, the inner wheel stub axle is 62 degrees to the centerline of the vehicle. Determine the wheel base which will give true rolling for all the wheels. 	3 3 4 3

- **5A.** What is piston slap? With the help of a neat sketch explain how it can be **3** avoided.
- **5B.** What is kingpin offset radius? What are its effects on steering of an **3** automobile?
- **5C.** A plate clutch has three discs on the driving shaft and two discs on the driven shaft, providing four pairs of contact surfaces. The outside diameter of the contact surfaces is 235 mm and inside diameter 115 mm. Assuming uniform pressure and μ = 0.295, find the total spring load pressing the plates together to transmit 28kW power at 1325 revolution per minute. If there are 6 springs each of stiffness 12.7 kN/m and each of the contact surfaces has worn away by 1.25 mm, find the maximum power that can be transmitted, assuming uniform wear.