Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

II SEMESTER M.TECH. (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, APR 2018

SUBJECT: TWO WHEELER AND THREE WHEELER [AAE 5239]

REVISED CREDIT SYSTEM
(23/04/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A. Explain hand operated mechanical brake with a neat sketch. **(03)**

1B. Sketch and explain the layout a scooterette. **(02)**

1C. Explain with neat sketch the drive train of a passenger auto rickshaw. **(03)**

1D. Why are single leading shoe type drum brakes used for front wheels in two-wheelers? **(02)**

2A. What is meant by digital ignition system? Illustrate its working with a labelled diagram. **(03)**

2B. Enumerate the effects of providing an inverted telescopic suspension on a motorbike. **(02)**

2C. Explain the construction of a two-wheeler frame with a neat sketch. **(05)**

3A. How are engine oils selected for a two-wheeler engine? Explain two-stroke premix lubrication with a neat sketch. **(04)**

3B. Discuss the different types of wheels used for two-wheelers. **(03)**

3C. With a neat sketch, explain the thermostat used for cooling systems. **(03)**

4A. Explain the triple-tree arrangement in two-wheeler steering with a neat sketch. **(03)**

4B. Distinguish between ape hanger and beach handlebars using relevant illustration. **(04)**

4C. How does the wheelbase of a two-wheeler affect the steering geometry? Provide proper reasoning with a suitable example. **(03)**

5A. Explain the working of a sequential gearbox with a neat sketch. Discuss the gear engagement mechanism for sequential gearbox. **(05)**

5B. A multi-plate disc clutch transmits 60 kW of power at 1800 rpm. Coefficient of friction for the friction surfaces is 0.1. Axial intensity of pressure is not to exceed 160 kN/m^2. The internal radius is 70 mm and is 0.65 times the external radius. Determine the number of plates needed to transmit the required torque. Assume the case of uniform wear rate. **(03)**

5C. Show the construction of a chain tensioner shoe. **(02)**