V SEMESTER B.TECH. (AUTOMOBILE ENGINEERING) END SEMESTER EXAMINATIONS, NOV/DEC 2018

SUBJECT: TWO AND THREE WHEELED VEHICLES [AAE 4022]

REVISED CREDIT SYSTEM

(26/11/2018)

Time: 3 Hours

MAX. MARKS: 50

- ✤ Answer ALL the questions.
- Missing data may be suitable assumed.
- **1A.** What is piston slap? How does the slapping tendency can be overcome in offset **(04)** pistons?
- 1B. Compare 2 and 4 stroke engines based on (i) Power output for same cylinder volume (ii) Removal of exhaust gases (iii) Carbon deposit inside cylinder (iv) Fuel consumption (iv) Fuel consumption
- 1C. A clutch has 3 discs on driving and 2 on driven shaft. Outer and inner dimensions of contact surfaces is 240 mm and 120 mm respectively. If coefficient of friction between the contact surfaces is 0.3, find the maximum intensity of pressure between the discs for transmitting 25 kW at 1600 RPM.
- 2A. Illustrate the constructional details of a Continuously variable transmission system and explain its mode of operations during (i) Low engine speed (ii) High engine (04) speed
- **2B.** Differentiate the Sliding caliper and Swinging caliper type of disk brakes. Show them **(03)** pictorially.
- 2C. A Single cylinder two stroke S I engine develops 4 kW IP. Find the average speed of piston in m/s, if it develops a mean effective pressure of 6.5 bar and has bore of 100 mm diameter.
- **3A.** What are the kinematic and dynamic requirements of front wheel suspension systems (03) in two wheeled vehicles? How such requirements are met?
- **3B.** Define the following (i) Real trail (ii) Triple tree (iii) Leading shoe (iv) Asymmetric **(04)** port timing
- **3C.** Discuss the constructional details of a monocoque chassis used for two wheeled vehicles. (03)
- **4A.** Draw the circuit diagram of a Capacitive discharge ignition system and explain the working principle of the same. (04)
- **4B.** Differentiate the following (i) Cold and Hot spark plugs (ii) Wire wheel and (03) Composite wheel
- 4C. List any four types of handle bars used in two wheeled vehicles. Discuss the essential features of a beach handle bar with a relevant sketch. (03)
- **5A.** With a neat sketch, discuss the constructional details of a leading link type **(03)** suspension. Why such systems are not suitable for vehicles with large size wheels?
- **5B.** Illustrate how different gear ratios are obtained in a sequential 4 speed gearbox. **(04)**

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5C. Demonstrate how an optimized exhaust system design prevent loss of charge from **(03)** two stroke cycle engines.