GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – III • EXAMINATION – SUMMER • 2013

Subject code: 732101   **Date: 28-11-2013**
Subject Name: Advanced Internal Combustion Engine
Time: 10.30 am – 01.00 pm   **Total Marks: 70**
Instructions:
  1. **Attempt all questions.**
  2. **Make suitable assumptions wherever necessary.**
  3. **Figures to the right indicate full marks.**

Q.1 **(a)** What are the main pollutants emitted by petrol engine? Discuss it briefly.   **07**
       (b) Explain main types of turbo charging methods.   **07**

Q.2 **(a)** The swept volume of a diesel engine working on a dual cycle is 0.0053 cubic   **07**
               meter and clearance volume is 0.00035 cubic meter. The maxim pressure is 65
               bar. Fuel injection ends at 5 % of the stroke. The temperature and pressure at the
               start of the compression are 80 ^{o}C and 0.9 bar . Determine the air standard
               efficiency of the cycle. Take γ for air 1.4. Also draw P-V & T-S diagram of its.
       (b) Write short note on catalytic converter.   **07**
                                        OR
       (b) State various measurement techniques use to measure pollutions. Discus any one   **07**
               in detail.

Q.3 **(a)** Discus any one type of biodiesel as substitute fuels for diesel engine.   **07**
       (b) What are the advantages and disadvantages of CNG fuel?   **07**
                                        OR
Q.3 **(a)** State the advantages and disadvantages of hydrogen as I.C. engine fuel.   **07**
       (b) Explain biogas as alternate fuel for I.C. Engine.   **07**

Q.4 **(a)** Describe the various stages of combustion in S.I. engines.   **07**
       (b) Discus different effects of knocking on I.C. engine. How it can be controlled?   **07**
                                        OR
Q.4 **(a)** Describe the various stages of combustion in compression ignition engines.   **07**
       (b) Write comparison between battery and magneto ignition system.   **07**

Q.5 **(a)** Explain EURO norms for internal combustion engine vehicles.   **07**
       (b) Explain MPFI system of I.C. Engine in details.   **07**
                                        OR
Q.5 **(a)** Describe properties of good I.C. engine fuel.   **07**
       (b) How noise pollution can be controlled for auto vehicle?   **07**

****