

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-V • EXAMINATION – SUMMER • 2015**

**Subject Code:150201****Date:07/05/2015****Subject Name: Automobile Engines****Time:02.30pm-05.00pm****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) Give actual valve timing diagram of a typical C.I. engine and explain why it is different from theoretical valve timing diagram. **07**
- (b) What is over-cooling and under-cooling of an I.C. engine? Give merits and demerits of each. **07**
- Q.2** (a) (i) Differentiate between supercharging and turbo charging. **03**
- (ii) What do you understand by Scavenging? List methods of scavenging. **04**
- (b) With neat sketch explain the working of stratified charge engine. Write its merits and demerits. **07**

**OR**

- (b) With neat sketch give working of Wankel engine, also give its merits over conventional engines **07**
- Q.3** (a) What is knocking? How it is different in CI engine and SI engine, explain. **07**
- (b) Explain the stages of combustion with P- $\theta$  diagram in S.I. engines. **07**

**OR**

- Q.3** (a) What is carburetion? Explain the working of a single jet carburetor with neat sketch. **07**
- (b) Give full form of term used in C. I. engines CRDI? Explain working of this system with neat sketch. **07**
- Q.4** (a) State methods used to measure IP of an I.C. engine? **07**
- Explain measurement of indicated power of multi cylinder engine by Morse test.
- (b) During one hour performance test on four stroke, single cylinder diesel engine data observed are; **07**
- Bore=300 mm, Stroke = 450 mm, Fuel used = 8.8 kg, CV of fuel = 41800 kJ/kg  
R.P.M = 200, i.m.e.p = 5.8 bar, Brake friction load = 1860 N, Cooling water used = 650 kg with rise in temperature 22<sup>0</sup>C, Brake drum diameter = 1.22 m.  
Draw heat balance sheet for this test.

**OR**

- Q.4** (a) State the advantages and disadvantages of hydrogen as I.C. engine fuel. **07**
- (b) (i) What is the purpose of Gudgeon pin in a reciprocating I.C. engine? **07**
- (ii) How I.C engines are classified?
- Q.5** (a) What are the desired properties of a lubricant for IC engines? Name the additives which are added to the lubricant. **07**
- (b) Explain the effects of different pollutants on environment from SI engines and give measures for its control. **07**

**OR**

- Q.5** (a) What types of thermostats are used in I.C. engine cooling system? With neat sketch explain working of any one such thermostat. **07**
- (b) What are the functions of a lubrication system? Explain the dry sump lubrication system with neat sketch. **07**

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