

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V • EXAMINATION – WINTER • 2014****Subject Code: 150201****Date: 01-12-2014****Subject Name: Automobile Engines****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) Classify the internal combustion engine according to cylinder arrangements, types of ignition and number of stroke. Also Differentiate between 2-stroke & 4-stroke engines. **07**
- (b) Define Scavenging & Enlist types of engine scavenging and explain any one of them. **07**
- Q.2** (a) Derive an equation for A: F ratio of a single jet carburetor with compressibility of air. **07**
- (b) Explain starting/pilot jet for cold starting condition used in carburetor. **07**
- OR**
- (b) Explain the MPFI system used in S.I engines with neat sketch. **07**
- Q.3** (a) Explain types of nozzles and fuel spray patterns used in C.I engines. **07**
- (b) Classify injection pump governors and explain pneumatic governor with neat sketch. **07**
- OR**
- Q.3** (a) Define Ignition lag & explain factors affecting delay period in C.I engines. **07**
- (b) Classify types of combustion chambers used in S.I engines and explain Richardo turbulent combustion chamber with neat sketch. **07**
- Q.4** (a) Enlist various methods used for measurement of Indicated power. Explain Morse test for multi-cylinder engines. **07**
- (b) The following observations are made a trial on an oil engine. **07**
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|---|---------------------------------|
| (1) Motor power to start the engine = 10 KW       | (2) R.P.M. = 1750               |
| (3) Brake torque = 327.5 Nm                       | (4) Fuel used = 15 kg/hr        |
| (5) C.V of fuel used = 42 MJ/kg                   | (6) Air supplied = 4.75 kg/min  |
| (7) Quantity of cooling water = 16 kg/min         | (8) Room temperature = 20.8 °C  |
| (9) Outlet temperature of cooling water = 65.8 °C | (10) Exhaust gas temp. = 400 °C |
- Take  $C_{pw} = 4.2 \text{ KJ/kg. K}$  and  $C_{pg} = 1.25 \text{ KJ/kg. K}$   
Determine (a) B.P. (2) Mechanical efficiency (3) bsfc and (4) draw a heat balance sheet on KW basis and percentage basis.
- OR**
- Q.4** (a) Enlist different methods of Turbo-charging and explain Pulse turbo charging method. **07**
- (b) Explain the Stratified charged engine with neat sketch. **07**
- Q.5** (a) Explain Thermostatic Regulator forced cooling system with neat sketch. **07**
- (b) Define: Pour point and Explain various functions of good lubricating system. **07**
- OR**
- Q.5** (a) Explain various modern methods and gas chromatography to control air-pollution. **07**
- (b) Explain briefly: Dual Timing Spark Ignition system **07**

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