

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-V Examination-Nov/Dec.-2011

Subject code: 150201

Date: 29/11/2011

Subject Name: Automobile Engines

Time: 2.30 pm -5.00 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) Explain with a neat sketch cooling with thermostatic regulator. **07**
(b) With a neat sketch explain scavenging methods for two stroke engine. **07**

- Q.2** (a) Explain limitations of a single jet carburettor. **07**
(b) Explain in brief different devices used to meet the requirements of an ideal carburettor. **07**

OR

- (b) Classify governors and explain with a neat sketch any one of them. **07**

- Q.3** (a) Explain with neat sketch the working of wankel engine. **07**
(b) Explain how LPG can be used as a substitute fuel for S.I. Engine. **07**

OR

- Q.3** (a) Draw schematic diagram of diesel engine fuel pump and explain its working. **07**
(b) Explain briefly with a neat sketch different types of nozzle and fuel spray patterns. **07**

- Q.4** (a) Explain factors affecting flame propagation in S.I. Engine. **07**
(b) Explain stages of combustion in C.I. Engine. **07**

OR

- Q.4** (a) Explain exhaust gas emission from S.I. Engine. **07**
Q.4 (b) Discuss briefly different performance parameters of I.C. Engine. **07**

- Q.5** (a) Classify various lubrication systems. Explain with a neat sketch the splash lubrication system. **07**
(b) What are the purposes of supercharging the I.C. Engine ? Classify types of superchargers and explain anyone of them. **07**

OR

- Q.5** (a) Explain measurement of indicated power of multi cylinder engine by morse test. **05**

(b) The following observations are made during a trial on an engine.

09

- (1) Motor power to start the engine = 10 kW.
- (2) RPM = 1750.
- (3) Brake torque = 327.5 N-m.
- (4) Fuel used = 15 kg/hr.
- (5) Calorific value of fuel used = 42 MJ/kg.
- (6) Air supplied = 4.75 kg/min.
- (7) Quantity of cooling water = 16 kg/min.
- (8) Outlet temperature of cooling water = 65.8 ° C.
- (9) Room temperature = 20.8 ° C.
- (10) Exhaust gas temperature = 400 ° C.

Take $C_{pw} = 4.2 \text{ kJ/kg-K}$ and $C_{pg} = 1.25 \text{ kJ/kg-k}$.

Determine (a) Brake power (b) Mechanical efficiency

(c) BSFC and (d) Draw a heat balance sheet on kW basis and performance basis.
