Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – SUMMER 2013

Subject Code: 150201 Date: 20-05-2013

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)** Why Diesel Engines are Called C.I engines? Differentiate between S.I & C.I engines. **07**

(b) **Explain the following terms:** **04**
(1) Swept volume (2) specific fuel consumption (3) Compression ratio
(4) Volumetric efficiency

(c) A 4-stroke SI engine develops 450 KW BP with mechanical efficiency of 80%. The measured fuel consumption is 165 kg/hr. Calculate (a) IP & FP
(b) Brake specific fuel consumption. **03**

Q.2 **(a)** What is carburetor? Explain the working of single jet carburetor with neat sketch. **07**

(b) Explain the Multi-point fuel injection system used in S.I engines with neat sketch. **07**

OR

(b) Derive an equation for A:F ratio of a single jet carburetor without compressibility of air. **07**

Q.3 **(a)** List the various diesel injection systems used in C.I engine. Also explain Common Rail Diesel Injection System with neat sketch. **07**

(b) Explain the Bosch fuel pump with neat sketch. **07**

OR

Q.3 **(a)** What is pre-ignition? Compare Knocking in S.I and C.I engines. **07**

(b) Explain the combustion phenomena in S.I engine With Pressure Vs crank angle diagram. **07**

Q.4 **(a)** Explain the function of lubrication system. Designate the grading of lubricating Oil SAE- 20W40 **07**

(b) Explain the Splash lubrication system used in automobile engines with neat sketch. **07**

OR

Q.4 **(a)** List the various methods used to measure the B.P of the engine. Also explain the rope brake dynamometer with neat sketch. **07**

(b) A 4-cylinder, 4-stroke petrol engine 60 mm bore and 90 mm stroke was tested at constant speed. The fuel supply was fixed to 0.13 kg/min and plugs of 4-cylinders were successively short-circuited without change of speed. The power-measurement were as follows: **07**
With all cylinder working =16.25 KW, (B.P)
With No. 1st ï cylinder cut-off =11.55 KW, (B.P)
With No. 2nd ï cylinder cut-off =11.65 KW, (B.P)
With No. 3rd ï cylinder cut-off =11.70KW, (B.P)
With No. 4th ï cylinder cut-off =11.50 KW, (B.P)
Find (a) The I.P of the engine (b) The mechanical efficiency and
(c) Indicated thermal efficiency if C.V of fuel used is 42,000 KJ/kg.

Q.5	**(a)**	Why cooling is required in automobile engines? Differentiate between Air cooling & water cooling system.	**07**
	(b)	Explain the Wankel engine with neat sketch.	**07**
		OR	
Q.5	**(a)**	Write a short note: Orsat apparatus.	**07**
	(b)	Write a short note: Catalytic convertor	**07**

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