Seat N	o.:	Enrolment No.		
Seat		GUJARAT TECHNOLOGICAL UNIVERSITY		
BE- V th SEMESTER-EXAMINATION – MAY/JUNE - 2012				
Subject code: 150201 Date: 05/06/2012				
Subje	Subject Name: Automobile Engines			
Time	Time: 02:30 pm – 05:00 pm Total Marks: 70			
Instructions:				
1. 2.	2. Make suitable assumptions wherever necessary.			
<u> </u>	Figu	ures to the right indicate full marks.		
Q.1	(a)	Classify the internal combustion engine with respect to	07	
		Cycle of operation, types of ignition, cylinder arrangements, types of fuel used, method of abarging the cylinder and type of cooling		
	(b)	Define Scavenging and explain various methods of scavenging.	07	
	(~)		01	
Q.2	(a)	Describe the working of jerk type fuel feed pump for CI engine with neat sketch.	07	
	(b)	Explain automotive engine's air-fuel requirements based on following demand. (i) Idling (ii) cruising (iii) high power & acceleration	07	
		OR		
	(b)	Discuss working and construction of Sterling engine with neat sketch.	07	
03	(a)	A simple single ist carburator is required to supply 5 kg of sir and 0.5 kg of fuel	07	
Q.3	(a)	per minute. The specific gravity is 0.75. The air is initially at 1 bar and 300 K.	07	
		Calculate the throat diameter of the choke for a flow velocity of 100 m/s. Velocity		
		coefficient is 0.8. If the pressure drop across the fuel metering orifice is 0.80 of		
		that of the choke, calculate orifice diameter assuming coefficient of flow Cdf = 0.60 and specific heat ratio $x = 1.4$ for air		
	(b)	Define Highest useful compression ratio, Octane no, Cetane no and Diesel index.	07	
		OR		
Q.3	(a)	Classify the combustion chambers for CI engine and discuss the open combustion	07	
	(b)	chambers with neat sketch. Explain phenomenon of knock in CL engine and compare it with SL engine knock	07	
	(0)	Explain phenomenon of knock in er engine and compare it with of engine knock.	07	
Q.4	(a)	Discuss how additives help to achieve desired properties for lubricants.	07	
	(b)	Classify the cooling system and discuss Pressure cooling system with neat sketch.	07	
0.4	(a)	What is air cooling system? Why fins and baffles are required in an air cooled	07	
-		engine?		
	(b)	What is meant by supercharging? Explain the working of supercharger.	07	
Q.5	(a)	A four stroke cycle gas engine has a bore of 20 cm and a stroke of 40 cm. The	07	
		compression ratio is 6. In a test on the engine the indicated men effective pressure $\frac{1}{2}$		
		is 5 bar, the air to gas ratio is 6:1 and the calorific value of the gas is 12 MJ/m ³ at		
		pressure 0.98 bar. Neglecting residual gases, determine the indicated power, the		
		thermal efficiency and the relative efficiency of the engine at 250 rpm.		
	(b)	Describe Catalytic converter with neat sketch.	07	
05	(a)	OR Explain working and construction of Orset apparatus	07	
V •3	(a) (b)	Classify engine emissions. Explain briefly various exhaust emission from engine.	07	
	. /	******		