Seat No.: _____ Enrolment No._____

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. (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 ^{0}C (9) Outlet temperature of cooling water = 65.8 ^{0}C (10) Exhaust gas temp. = 400 ^{0}C Take C_{pw} = 4.2 KJ/kg. K and C_{pg} =1.25 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.	**07**
		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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