GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 150201   **Date: 27/04/2017**
Subject Name: Automobile Engines
Time: 02:30 PM to 05:00 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 the phenomena of scavenging of 2-stroke petrol engine with neat sketch.	**07**
	(b)	Explain construction and working of wankel rotary engine with neat sketch.	**07**
Q.2	**(a)**	Define carburetion. Explain the working of Compensating jet with neat sketch.	**07**
	(b)	Differentiate knocking in S.I and C.I engines.	**07**

OR

	(b)	Define Ignition lag. Explain the stages of combustion in S.I engines using P-θ diagram. Where θ = crank angle.	**07**
Q.3	**(a)**	Explain Duel timing spark ignition system used in automobile engines.	**07**
	(b)	Explain construction and working of Bosch fuel pump with neat sketch.	**07**

OR

Q.3	**(a)**	Explain Rating of C.I engine fuels in details.	**07**
	(b)	Differentiate Air cooling and Water cooling system in automobile engines.	**07**
Q.4	**(a)**	Explain the role of antifreeze solution in water cooling system.	**07**
	(b)	Define the following terms: (1) Viscosity (2) Pour point (3) Flash and fire point (4) Viscosity index.	**07**

OR

Q.4	**(a)**	Classify different Converters for S.I engine and explain construction and working of a 3-way Catalytic Converter with neat sketch.	**07**
	(b)	Explain the principle and functions of lubrication in details.	**07**
Q.5	**(a)**	Classify various lubrication systems and explain lubrication of crank and Gudgeon pin with neat sketch.	**07**
	(b)	The following particulars were obtained in a trial on a 4-stroke gas engine when trial is conducted for one hour. (1) Revolutions =16000 (2) Missed cycles = 600 (3) Net brake load = 1600 N (4) Brake circumference = 4 m (5) IMEP = 8 bar (6) Gas consumption = 22000 liters (7) C.V. of gas = 20 KJ/ liter. **Take** d = 25 cm, L = 40 cm and R_C = 6.5 for the engine. **Calculate:** (a) I.P and B.P. (b) bsfc (c) η_{bth} and (d) η_r	**07**

OR

Q.5	**(a)**	Explain construction and working of Exhaust gas calorimeter with neat sketch.	**07**
	(b)	Explain various emission norms for S.I and C.I engines in details.	**07**

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