

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3171923****Date:29/12/2021****Subject Name:Internal Combustion Engine****Time:10:30 AM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Compare SI and CI engines.	03
	(b) What do you mean by rich mixture and lean mixture?	04
	(c) Explain working and construction of simple carburetor.	07
Q.2	(a) Explain RON and MON	03
	(b) Explain factors affecting on delay period on CI Engines.	04
	(c) Calculate amount of air required for complete combustion of C_8H_{18} by mass analysis.	07
OR		
	(c) Calculate amount of air required for incomplete combustion of C_8H_{18} by mass analysis.	07
Q.3	(a) What do you mean by Knocking?	03
	(b) Explain HUCR.	04
	(c) Briefly explain stages of combustion in S.I,Engine	07
OR		
Q.3	(a) What do you mean by VCR engine?	03
	(b) Explain with neat sketch splash lubrication system.	04
	(c) Draw neat sketch of pintaux nozzle and discuss its merits.	07
Q.4	(a) Why engine cooling is required?	03
	(b) Tell Bharat Stages of emission norms in brief for cars and two wheelers.	04
	(c) With neat sketch explain construction and working of solex carburetor.	07
OR		
Q.4	(a) List of equipment and its function for i.c.engine performance.	03
	(b) Discuss heat balance sheet.	04
	(c) Define Supercharging and give its advantages. Also explain the methods of supercharging and explain with sketch any one of them.	07
Q.5	(a) What are the different methods of cooling of I.C. engine?	03
	(b) Explain MPFI engine.	04
	(c) A four-cylinder 4 stroke spark ignition engine running at 40 rps has carburetor venturi with 3 cm throats. Assuming the bore and stroke to be 10 cm, venturi efficiency of 75%, the density of air to be 1.15 and coefficient of air flow to be 0.75. Calculate the suction at the throat.	07

OR

- Q.5**
- (a) Explain sterling engine. **03**
 - (b) Explain turbocharging with sketch. **04**
 - (c) The throat diameter of a carburetor is 8cm and nozzle diameter is 5.5 mm. Coefficient of discharge is 0.70 for fuel and for air is 0.85. The nozzle is up by 6mm of hg as compare to fuel level in float chamber. The pressure difference causing the flow is 0.1 bar. Find the air fuel ratio neglecting nozzle lip and considering nozzle lip. Density of air is 1.2 kg/m^3 and density of fuel is 750 kg/m^3 **07**
