

GUJARAT TECHNOLOGICAL UNIVERSITY**B.VOC - SEMESTER- I EXAMINATION – WINTER 2019****Subject Code: 1110302****Date: 10/01/2020****Subject Name: General Mechanical Engineering - II****Time: 10:30 AM TO 12:30 PM****Total Marks: 50****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		Marks
Q.1	(a) Define thermodynamic system. Explain types of system with examples.	05
	(b) Define C_p or C_v . Prove that $C_p - C_v = R$ with usual notations.	05
Q.2	(a) Derive $pv^\gamma = C$ for Adiabatic Process.	05
	(b) Explain Carnot Cycle.	05
OR		
	(b) Derive the equation of workdone of Isothermal Process.	05
Q.3	(a) Explain 4-stroke SI engine with neat sketch.	05
	(b) During testing of single cylinder two stroke petrol engine, following data is obtained: Brake torque 650 Nm, cylinder diameter 20 cm, Speed 400 rpm, stroke 30 cm, mean effective pressure 5.5 bar, oil consumption 8.5 kg/hr, C.V = 42500 kJ/kg. Find, i) Mechanical Efficiency, ii) Indicated thermal efficiency iii) brake thermal efficiency iv) brake specific fuel consumption.	05
OR		
Q.3	(a) Explain 2-stroke CI engine with neat sketch.	05
	(b) A 4 cylinder two stroke cycle petrol engine develops 30 kW at 2500 rpm. The Indicated Mean Effective Pressure of each is 800 kPa and $\eta_{mech} = 80\%$. Calculate the diameter and stroke (in mm) of each of the cylinder if $L/D = 1.5$. Also calculate the fuel consumption in kg/hr. Take C.V = 44000 kJ/kg	05
Q.4	(a) Explain Construction and working of Babcock & Wilcox boiler Boiler.	05
	(b) Explain in brief any five :- (1) Compression ratio (2) Safety Valve (3) Fusible plug (4) Carburetor (5) Scavenging (6) Flywheel.	05
OR		
Q.4	(a) Define Boiler. Give the difference between Fire tube boiler and Water tube boiler.	05
	(b) Explain condensing plant by using its different elements.	05
Q.5	(a) Compare Steam and Gas Turbine.	05
	(b) State the Function of Steam Turbine. Classify Steam Turbine.	05
OR		
Q.5	(a) Explain Working Principle of Gas Turbine and Give the Classification of Open cycle and Closed Cycle Gas turbine.	05
	(b) Give the difference between Impulse and Reaction Turbine.	05
