VIT
Vellore Institute of Technology

SLOT-C2+TC2+V5

SCHOOL OF MECHANICAL ENGINEERING

CONTINUOUS ASSESSMENT TEST – I - WINTER SEMESTER 2019-2020

Programme Name & Branch: BEC, BEM, BME

Course Name Code: MEE 2003

Course Name: Thermal Engineering Systems

Faculty Name(s): DR. DEVENDRA KUMAR PATEL, DR. BIBHUTI BHUSAN SAHU, DR. GAURAV GUPTA

Class Number(s): **Exam Duration: 90 mins** **Maximum Marks: 50**

General instruction(s): ***Attempt all questions.***

All questions carry equal marks.

Sl.No.	Question	Course Outcome (CO)
1.	The test on two stroke diesel engine was carried out for one hour and the following observations were recorded Frictional Power absorbed = 1.5 KW Speed of the engine = 600 rpm Brake Torque = 120 Nm Fuel consumed = 2.5 kg Calorific value of fuel = 40.3 MJ/kg Cooling water circulated = 818 kg Rise in temperature of cooling water = 10 °C Temperature of exhaust gas = 345 °C Room Temperature = 25 °C A/F = 32.1 Determine the following parameters: a. Brake Power b. Indicated Power c. Mechanical Efficiency d. Indicated Thermal Efficiency e. Draw Heat Balance Sheet on minute basis and also in percentage.	2
2.	In a test of a 4-cylinder, 4-stroke engine 75 mm bore and 100 mm stroke, the following results were obtained at full throttle at a particular constant speed and with fixed setting of fuel supply of 6.0 kg/h. BP with all cylinder working = 15.6 kW, BP with No. 1 cylinder cut-off = 11.1 kW. BP with No. 2 cylinder cut-off = 11.03 kW. BP with No. 3 cylinder cut-off = 10.88 kW. BP with No. 4 cylinder cut-off = 10.66 kW. If the calorific value of the fuel is 43600 kJ/kg and clearance volume is 0.0001 m^3, calculate:	2

	(a) Mechanical efficiency (b) Air standard efficiency (c) Indicated thermal efficiency.	
3.	Discuss the difference between ideal and actual valve timing diagrams of a petrol and diesel engine.	1
4.	State the relative advantages and disadvantages of battery and magneto ignition system.	1
5.	Bring out clearly the process of combustion in practical CI engines and also explain the various stages of combustion with neat sketches.	1