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MANIPAL INSTITUTE OF TECHNOLOGY

(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH. (MECHATRONICS ENGINEERING) END SEMESTER EXAMINATIONS, NOVEMBER 2019

SUBJECT: AUTOTRONICS [MTE 4003]

(26/11/2019)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

✤ Answer ALL the questions.

1A.	Compare the acceleration and deceleration control strategy in CI engine management systems.	2	CO2
1 B .	Considering suitable performance variables, summarize the dependency of SI engine's performance on the air-fuel ratio.	3	CO1
1C.	Explain the construction and working of L-jetronic injection system with suitable schematic diagram.	5	CO3
2A.	Combustion quality in a vehicle can be determined from exhaust gas. Explain the method/sensor used in support of the above statement.	3	CO1
2 B .	Compare the engine's performance with EGR and without EGR.	3	CO2
2C.	With a schematic diagram explain the working of conventional ignition system in SI engines.	4	CO3
3A.	With pressure vs time graph, compare the main injection pattern for common rail and conventional injection system.	3	CO2
3B.	With a suitable diagram explain the working of torque converter.	3	CO3
3C.	Explain the CAN arbitration mechanism using suitable example.	4	CO1
4A.	Explain how exhaust gas is treated before releasing it to the atmosphere.	2	CO2
4B.	Explain the construction and working of standard starter system designed for automobiles.	4	CO1
4C.	Imagine that you had to park the car at a parking lot which had very congested parking space between cars. For the given scenario, which system provides you with stable steerability of the vehicle? Justify your answer.	4	CO1
5A.	Elucidate the advantages of wiring harness used in vehicles.	2	CO1
5B.	Compare active and passive safety system with examples.	3	CO3
5C.	Explain the different phases of operation of an alternator with relevant electrical circuit diagram.	5	CO1