Reg. No.									

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SECOND SEMESTER M.TECH. (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, MAY 2024

BATTERY AND FUEL CELL TECHNOLOGY (AAE 5416)

REVISED CREDIT SYSTEM

Time: 3 Hours **Date: 05 MAY 2024** **Max. Marks: 50**

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

Q. No	Question	Max Marks	CO	BT
1A.	Draw a neat sketch of automotive battery system architecture and explain function of HV fuse and HV disconnection.	*(05)*	*CO2*	*L5*
1B.	Discuss application of measures for battery system units with respect to Level 4 battery cells.	*(03)*	*CO2*	*L4*
1C.	Distinguish between secondary and primary cells.	*(02)*	*CO1*	*L3*
2A.	Explain modelling of mechanical deformation and modelling of electrical contact and leakage.	*(05)*	*CO3*	*L5*
2B.	Explain specific hazards of electric vehicles.	*(03)*	*CO3*	*L3*
2C.	How does chromatography work?	*(02)*	*CO3*	*L3*
3A.	With a neat relevant sketch explain thermal run-away experimental test rig.	*(05)*	*CO3*	*L5*
3B.	Explain working of flame ionization detectors.	*(03)*	*CO4*	*L4*
3C.	Write short note on recent development in new electrode materials.	*(02)*	*CO4*	*L3*
4A.	Explain lithium-ion battery failure modes.	*(04)*	*CO4*	*L4*
4B.	With neat sketch explain working of Lithium-Ion Battery	*(04)*	*CO4*	*L3*
4C.	Explain working principle of fuel Cell.	*(02)*	*CO5*	*L3*

5A.	With a neat sketch explain construction and working of alkaline fuel cells.	*(05)*	*CO5*	*L4*
5B.	With neat sketch explain working of filter press electrolyzer.	*(03)*	*CO5*	*L4*
5C.	State the difference between battery and fuel cells.	*(02)*	*CO5*	*L3*