15-05-2026 FE SEM-II MECHANICAL (NEP-2020) EME QP CODE: 20010955

DURATION: 2 HOURS **MAX MARKS: 60**

Instructions:

1. **Question No 1 is Compulsory.**
2. **Attempt any 3 out of remaining 5 Questions.**
3. **Each Question carry 15 Marks.**

Q.NO	Attempt any five	Marks	BL	CO
1	a) State the name and function of the components of hybrid Electric Vehicle	3	R	5
	b) State the zeroth law of thermodynamics with example.	3	R	2
	c) State the difference between Gear drive, Belt drive and Chain drive	3	R	3
	d) Discuss the function of air conditioning system	3	U	4
	e) Draw a neat sketch of Spur gear ,Helical Gear and Bevel Gear	3	R	5
	f) Define Robotics and State its function.	3	U	6
2	a) Explain various application of mechanical engineering.	4	U	1
	b) Define the terms system, surroundings, and types of boundaries, and explain each concept with the help of suitable diagram.	4	U	2
	c) State function of each component of Reciprocating I C engine with a neat sketch.	7	U	2
3	a) Draw a neat sketch PV and TS diagram of Otto cycle and Diesel Cycle	4	U	2
	a) State the types of belt used in belt drive with a neat sketch.	4	R	3
	b) Explain salient features of Chain drive power transmission system.	7	U	3
4	a) Draw a Automobile layout showing all the parts.	4	R	5
	b) Write a note on front wheel drive and Rear wheel drive.	4	U	5
	a) Discuss on any one Indian Electric Vehicle.	7	U	5
5	a) Discuss Augmented reality and Virtual Reality.	4	R	6
	b) Write a note on Digital Twin Technology	4	R	6
	c) Explain working of refrigeration process with a neat labelled diagram and also state Sustainable Development Goal (SDG) which is related to refrigeration and air-conditioning field.	7	U	4
6	a) State the difference between Split and Window Air conditioner.	4	R	4
	b) Differentiate between 2 stroke engine and 4 stroke engine	4	U	2
	c) Discuss the role of a Mechanical Engineer in the field of industry and Society.	7	U	1

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