NATIONAL INSTITUTE OF TECHNOLOGY
ARUNACHAL PRADESH, JOTE, Pin-791113
(Established by Ministry of Education, Govt. of India)

Mid-Semester Examination (Jan-Jun) 2025

ME 321B (Automobile Engineering)

Time: 2 Hours

Max. Marks: 30

Instructions:
1. Use question numbers as given in this question paper.
2. Marks are indicated against each question. Answer to all questions.

		M	CO
Q.1	(a) The cooling system of automobile engine most simple when the engine is placed at the_____.	5	1

(b) Which of the following is a classification of automobiles based on Load?

i) Heavy transport vehicle (HTV)

ii) Sedan Hatchback car

iii) Four-wheeler vehicle

iv) Front-wheel drive

(c) What carries the driving wheels of a vehicle?

i) crankshaft

ii) flywheel

iii) clutch

iv) axles

(d) Which of the following is not a part of the chassis?

i) wheels

ii) differential

iii) gear box

iv) seats

(e) The space provided beneath the rear hood for the purpose of keeping goods, belongings and spare wheel is known as _____

	c)	Derive the homogenous transformation matrix (T) for the following operation. Rotation of α about OX axis Translation of 'a' along OX axis Translation of 'd' along OZ axis Rotation of θ about OZ axis	[3]	2
3.		Explain the process of determining the Denavit-Hartenberg (DH) parameters for a SCARA robot. Also, discuss how these parameters are used to formulate the forward kinematics of the SCARA robot, and derive the transformation matrix for the end-effector position.	[10]	2,3

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