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**Course – MDM AIML**

1. **PEAS Descriptors of task environment**

**Performance Measure:**

* **Safety**: Avoiding collisions with other vehicles, pedestrians, and obstacles.
* **Efficiency**: Following traffic rules and reaching the destination in the shortest possible time.
* **Comfort**: Providing a smooth and comfortable ride, minimizing abrupt stops and sharp turns.
* **Fuel Efficiency**: Minimizing fuel consumption or optimizing battery usage in electric vehicles.
* **Compliance**: Adhering to local traffic laws and regulations.

**Environment:**

* **Roads**: Various types such as highways, city streets, rural roads.
* **Traffic**: Other vehicles, pedestrians, cyclists.
* **Weather Conditions**: Rain, fog, snow, which can affect visibility and road conditions.
* **Road Conditions**: Potholes, construction zones, traffic signals, and signs.
* **Geography**: Urban, suburban, rural areas with different road layouts and conditions.

**Actuators:**

* **Steering**: Controls the direction of the car.
* **Throttle**: Controls the acceleration.
* **Brakes**: Controls the deceleration or stops the car.
* **Lights**: Headlights, brake lights, turn signals.
* **Horn**: To signal other road users.
* **Communication System**: To receive and send signals to/from other vehicles or control centers.

**Sensors:**

* **Cameras**: To detect lane markings, road signs, traffic lights, and obstacles.
* **LIDAR/Radar**: To detect the distance to other vehicles and obstacles.
* **GPS**: To determine the car's location and navigation routes.
* **Ultrasonic Sensors**: To detect nearby objects during parking and manoeuvring.
* **Accelerometer and Gyroscope**: To monitor the car's movement and orientation.