



# **SNS COLLEGE OF TECHNOLOGY**

**(An Autonomous Institution)**

**COIMBATORE-35.**



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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

## **DEPARTMENT OF AUTOMOBILE ENGINEERING**

### **COURSE NAME : 19AUE308 - SPECIAL VEHICLES**

**III YEAR / VI SEMESTER**

**Unit 5- Military and Motorsports Vehicles**

**Topic : Formula One Car**



# CONTENT



- Introduction
- Components
- Construction & Working
- Advantages & Disadvantages
- Applications
- Manufacturing Companies



# INTRODUCTION



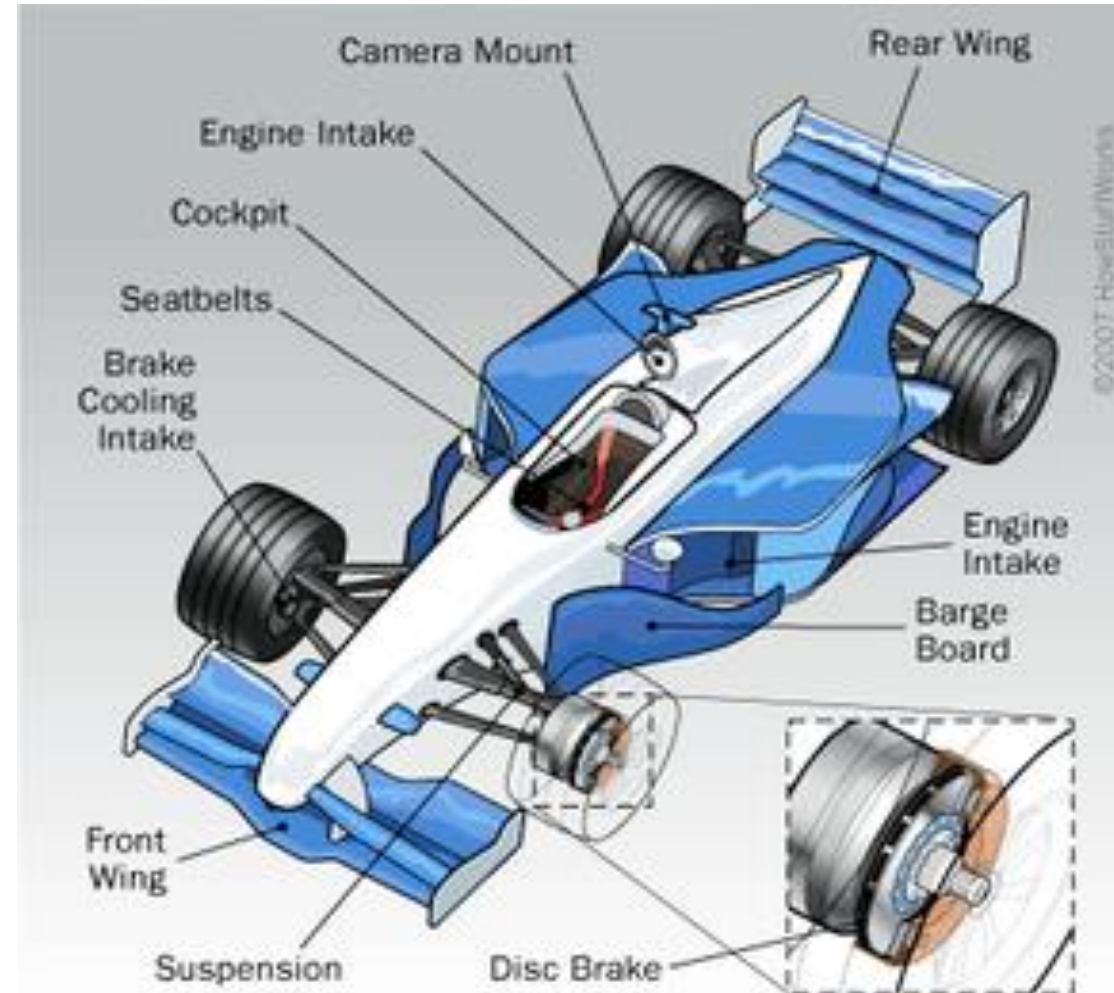
- ❖ A Formula One car is an open-wheel, open-cockpit, single-seat racing car for the purpose of being used in Formula One competitions.
- ❖ It is equipped with two wings plus an engine, which is located behind the driver.
- ❖ The F1 races are conducted on specifically built racing tracks called 'circuits'.





# COMPONENTS

- Engine and Final Drive Unit
- Tubular Frame
- Pitman Arm Steering System
- Hydraulic Disc Brake
- Tyres
- Firewall
- Bucket Seat
- Bumpers
- Electrical Systems





# CHASSIS



- Formula One race cars feature monocoque construction.
- Formula One cars these days are made from carbon fiber and ultra-lightweight components
- Monocoque is a French word meaning "single shell," which refers to the process of making the entire body out of a single piece of material
- The monocoque incorporates the cockpit, a strong, padded cell that accommodates a single driver.



# STEERING SYSTEM



- A Formula 1 race car uses a **hydraulically assisted Rack and Pinion steering assembly** to steer the car.
- The Hydraulic power steering helps the driver turn the steering wheel, but other car components, such as suspension and the differential, assist the car to take corners at high speeds





# ENGINE



- Before 2006, Formula One cars were powered by massive three-liter, V10 engines.
- Formula One currently uses **1.6 litre four-stroke turbocharged 90 degree V6 double-overhead camshaft (DOHC) reciprocating engines.**





# SUSPENSION SYSTEM



- The suspension of a Formula One car has all of the same components as the suspension of a road car.
- Those components include springs, dampers, arms and anti-sway bars.





# BRAKING SYSTEM



- The Disc brake is used in Formula One car
- The big difference, of course, is that the brakes used in Formula One must stop a vehicle traveling at speeds greater than 200 mph.
- This causes the brakes to glow red-hot when they are used.
- To help reduce wear and tear and increase braking performance, carbon fiber discs and pads are now used.



# TRANSMISSION SYSTEM



- It's the job of the transmission to transfer all of the engine's power to the rear wheels of the Formula One car.
- Six-speed gearboxes were popular for several years, but most Formula One cars now run seven-speed units.
- A reverse gear must also be fitted.
- The gearbox is connected to a differential, a set of gears allowing the rear wheels to revolve at different speeds during cornering.
- Instead of using a traditional "H" gate selector, drivers select gears using paddles located just behind the steering wheel.



# AERODYNAMICS



- Front Wings and Rear Wings produce downforce, which holds the car onto the track, especially during cornering.
- The angle of both front and rear wings can be fine-tuned and adjusted to get the ideal balance between air resistance and downforce.
- Diffuser is an upward-sweeping device located just beneath the engine and gearbox that creates a suction effect as it funnels air up and passes it to the rear of the car.
- The barge boards, located just behind the front wheels, pick up the air from there, accelerating it to create even more downforce



# Tyres

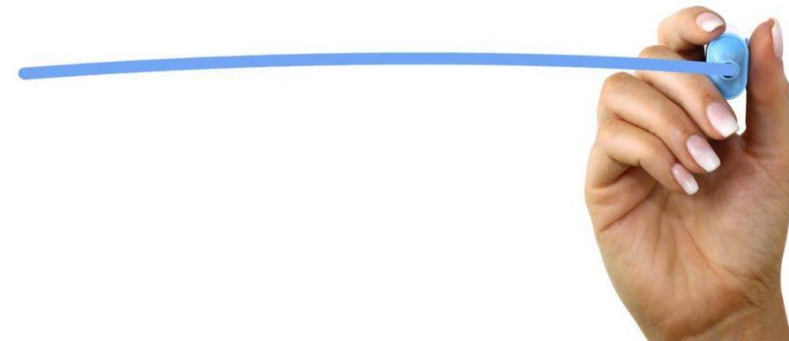


- Formula One car, tires are highly regulated. Slick tires - those with no tread pattern and a high contact area
- Formula One tires are made from very soft rubber compounds which, as they heat up, adhere to the road and provide enormous gripping power.
- In fact, racing tires perform best at high temperatures, so they have to be warmed up before they are race-ready.
- The tradeoff is decreased durability. A Formula One tire is designed to last for, at most, about 125 miles



1. Mention the components of Formula One Car?
2. Is the Formula One Car having suspension system?
3. What is the cost of Formula One Car?

ASSESSMENT





## REFERENCE



- ❖ <https://auto.howstuffworks.com/auto-racing/motorsports/formula-one6.htm>
- ❖ <https://www.youtube.com/watch?v=V7707zEX9X4>



**THANK YOU !!!**