Dr. MAHALINGAM
MCET
COLLEGE OF ENGINEERING AND TECHNOLOGY
Enlightening Technical Minds

Dr. MAHALINGAM
COLLEGE OF ENGINEERING AND TECHNOLOGY

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Udumalai Road, Pollachi - 642 003.

DEPARTMENT OF AUTOMOBILE ENGINEERING

SCUDERIA AVES

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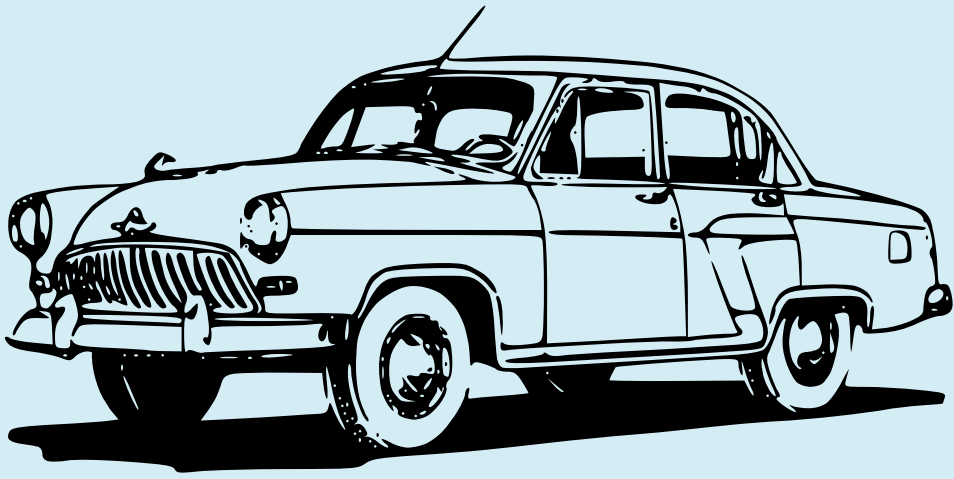


INSTITUTE'S VISION AND MISSON

VISION

- We develop a globally competitive workforce and entrepreneurs.

MISSON

- Dr. Mahalingam College of Engineering and Technology, Pollachi
- endeavors to impart high quality, competency based technical education in Engineering and Technology to the younger generation with the required
- skills and abilities to face the challenging needs of the industry around the globe. This institution is also striving hard to attain a unique status in the international level by means of infrastructure, state-of-the-art computer facilities and techniques.

DEPARTMENT'S VISION AND MISSON

VISION

- To offer cutting-edge technology in the broad area of automobile engineering and develop globally competitive engineers.

MISSON

- To develop automobile engineering graduates for a successful career in automotive industry around the globe through effective teaching-learning and training.
- To develop the capability of graduates for creating innovative products / systems to enhance the quality of life.
- To inculcate in them the ability to solve societal problems through engineering and professional skills.

PEOS, POS & PSOS

Programme Educational Outcomes (PEOS)

- **PEO 1. Technical Expertise:** Actively apply technical and professional skills in engineering practices to face industrial challenges around the globe.
- **PEO 2. Higher studies and Research :** Own their professional and personal development by continuous learning to create new knowledge.
- **PEO 3. Ethical Knowledge:** Conduct themselves in a responsible, professional and ethical manner supporting sustainable economic development, which enhances the quality of life.

Programme Outcomes (POs)

- **PO 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **PO 2. Problem analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- **PO 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- **PO 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- **PO 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **PO 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

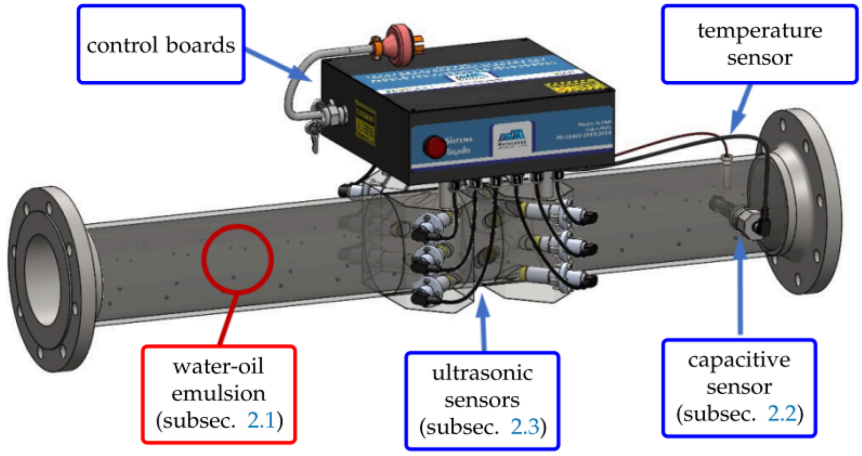
Programme Outcomes (POs)

- **PO 9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO 10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- **PO 11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **PO 12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes (PSOs)

- **PSO 1.** Analyze the systems behaviour and optimize for the results using modelling, simulation and experiments.
- **PSO 2.** Design automotive components with due considerations of environment and sustainability.

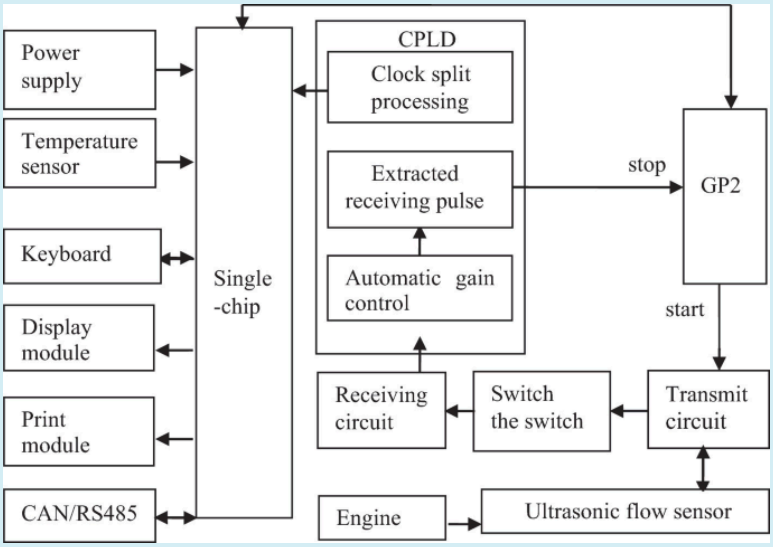
Optimizing Automobile Fuel Consumption Testing using Ultrasonic Technology



The paper discusses the use of ultrasonic technology for automobile fuel consumption testing. It addresses issues such as temperature effects on testing accuracy and uneven signal strength received by ultrasonic flow sensors. The study analyses factors like temperature, sensor structure parameters, ultrasonic time testing errors, and fuel flow speed distribution in the supply line. It proposes improvement measures to optimize the mathematical model of fuel consumption testing and enhance accuracy. Temperature impacts the optimal operating frequency of ultrasonic converters, affecting testing accuracy. Uneven and asymmetric signal strength in sensors is addressed through structural improvements. The study also examines the influence of sensor parameters like sound road angle and tubing wall thickness on testing accuracy. Ultrasonic time testing errors are identified and corrected by swapping converter positions and optimizing wiring.

The distribution of fuel flow speed in the supply line is analysed using fluid mechanics theory, introducing a flow correction coefficient for accurate measurements. The paper also discusses co-frequency noise affecting signal calculation and proposes noise processing methods for improvement. Overall, the research aims to enhance the accuracy of automobile fuel consumption testing by addressing various influencing factors and implementing optimization strategies.

In conclusion, the paper provides a comprehensive analysis of factors affecting fuel consumption testing with ultrasonic technology and suggests practical solutions to optimize testing accuracy. The study contributes to the advancement of intelligent automobile fuel consumption testing instruments and aligns with the development needs of the automotive industry. Further research on detection threshold and fuel cleanliness may offer additional insights for improving testing accuracy.



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By
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Ferrari 812 GTS (2021)

The Ferrari 812 GTS is a high-performance sports car that marks the first front-engine V12 series production convertible model offered by Ferrari in 50 years. It is the open-top version of the 812 Superfast and is powered by a 6.5-liter V12 engine that produces 788.52bhp@8500rpm and 718Nm@7000rpm.

KEY FEATURES

- Engine: 6.5-liter V12 - 65°
- Transmission: 7-Speed DCT
- Drive Type: RWD
- Paddle Shift: Yes
- Top Speed: 340 Km/h
- 0-100 km/h: 3.0 Sec
- Fuel Type: Petrol
- Fuel Capacity: 92 Liters

SAFETY AND DRIVER-ASSISTANCE FEATURES

Like a lot of supercars, the 812GTS offers little in the way of driver-assistance features. For more information about the 812's crash-test results, visit the National Highway Traffic Safety Administration (NHTSA) and Insurance Institute for Highway Safety (IIHS) websites. Key safety features include:

- Standard backup camera
- Standard front and rear parking sensors

The Ferrari 812 GTS has received positive reviews for its exceptional performance, handling, and design. It is considered a rare and exclusive model, making it a prized possession for Ferrari enthusiasts.

Pricing and color varieties

- Price: ₹ 5.75 Cr (ex-showroom, Delhi)
- Colors: 50 colors including Blu Scozia, Verde British, Blu Swaters, Grigio Scuro, and more.

By
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HYUNDAI i20 N LINE

The Hyundai i20 is a compact hatchback car produced by the South Korean manufacturer Hyundai. The 2021 model year saw the introduction of the third generation of the i20, which features a new design, improved safety features, and a range of engine options.

The 2021 Hyundai i20 is available with a range of engine options, including:

- 1.0-liter turbocharged petrol engine producing 100 horsepower
- 1.2-liter naturally aspirated petrol engine producing 82 horsepower
- 1.0-liter turbocharged diesel engine producing 75 horsepower

SAFETY FEATURES

- Six airbags
- Electronic stability control (ESC)
- Traction control
- Hill start assist

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BMW iX 2021

The BMW iX 2021 is a game-changing electric SUV that marks a significant milestone in the company's transition to electric vehicles.

Electric Powertrain

- The iX is powered by a dual-motor electric powertrain, with a total output of 385 kW (523 horsepower) and 765 Nm (565 lb-ft) of torque.
- The battery pack has a capacity of 111.5 kWh, with an estimated range of up to 630 km (391 miles) on a single charge.
- The iX can charge from 0-80% in just 34 minutes using DC fast charging.

SAFETY AND TECHNOLOGY

- The iX has a 5-star Euro NCAP rating and features a range of advanced safety features, including lane departure warning, blind spot detection, and automatic emergency braking.
- The iX also features advanced driver assistance systems like adaptive cruise control and lane centering.
- The iX has a comprehensive infotainment system with navigation, Bluetooth connectivity, and a range of apps.

PRICING AND AVAILABILITY

The BMW iX 2021 is priced from Rs.58L for the xDrive40 model and Rs.1.42cr for the xDrive50 Sport model

By
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JAWA 42 BOBBER

The Jawa 42 Bobber is a cruiser bike available in 7 variants and 7 colours. It is powered by a 334cc BS6 engine, which develops a power of 29.51 bhp and a torque of 32.74 Nm. The bike comes with both front and rear disc brakes and anti-locking braking system.

KEY SPECIFICATIONS:

- Engine Capacity: 334cc
- Transmission: 6-Speed Manual
- Fuel Tank Capacity: 14 litres
- Seat Height: 740 mm
- Max Power: 29.51 bhp
- Top Speed: 130 km/h

REVIEWS:

- The bike is known for its good engine performance and mileage.
- Some users have reported issues with durability and rust.
- The bike has a low ground clearance, which can be a concern for rough roads.
- The bike is available in 7 variants and 7 colours, offering a range of options for customers.

PROS:

- Good engine performance
- Good mileage
- Light and easy to handle

CONS:

- Durability issues
- Rust problems
- Low ground clearance
- Performance degrades over time

By
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TATA NEXON EV

The Nexon EV, an electric SUV, has impressive range, swift acceleration, and ample interior space. Apart from that, the good ride and handling, sleek design, fast charging capability, and advanced features like regenerative braking make it a compelling choice.

SPECIFICATIONS

- Electric motor: Permanent magnet synchronous motor
- Power output: 94.7 kW (127 hp; 129 PS)
- Torque: 245 N·m (181 lbf·ft)
- Battery: 30 kWh or 40.5 kWh lithium-ion battery pack
- Range: Up to 325 km (202 miles) on a single charge (Medium Range), up to 465 km (290 miles) on a single charge (Long Range)
- Charging time: 4.3 hours (Medium Range), 6 hours (Long Range) with a 7.2 kW AC home charger; 56 minutes (Long Range) with a 50 kW DC fast charger

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Driving Towards Sustainability: The Impact of Refrigerant Replacement on Automobile Air Conditioner Emissions in China

This focuses on the environmental impact of refrigerants used in automobile air conditioners in China. The study highlights the need for replacing R134a, a refrigerant contributing to the greenhouse effect, with more environmentally friendly options like R1234yf and R744. noting China's commitment to reducing emissions and the potential impact of replacing refrigerants on emissions reduction. The introduction sets the stage by discussing China's goals for carbon emissions reduction and the urgency of replacing HFC refrigerants in automobile air conditioners. The research methods section outlines the predictive modelling approach used to analyse the impact of refrigerant replacement on emissions in China. The results section presents key findings, such as the peak in emissions in 2030 and the subsequent decrease to 58,300 tons of CO2 equivalents by 2045. The discussion delves into the importance of policy interventions, the significance of using refrigerants with low GWP values, and the role of relevant policies in accelerating replacement efforts. The conclusion emphasizes the potential for emission reduction through policy interventions and the need for effective policies to promote non-carbon greenhouse gas emission reduction in China.

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By
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MAHINDRA XUV700

The Mahindra XUV700 2021 model represents a leap forward in the SUV segment, combining cutting-edge technology, superior performance, and luxurious comfort.

PERFORMANCE AND ENGINE OPTIONS:

- The XUV700 2021 offers a range of powerful engine options to suit different driving preferences.
- Whether it's the refined petrol engine or the torquey diesel variant, the XUV700 delivers a spirited performance on any terrain.
- Superior handling, responsive steering, and a comfortable ride quality ensure a dynamic driving experience.

SAFETY FEATURES:

- Safety is paramount in the XUV700 2021, with a comprehensive suite of advanced safety features.
- From multiple airbags and ABS to electronic stability control and hill hold assist, the XUV700 prioritizes the safety of its occupants.
- The 2021 model incorporates robust structural design and crash-tested safety measures to provide peace of mind on every journey

PRICE:

The pricing of the XUV700 is competitive, offering great value for the features and performance it provides. It ranges from INR 12.49 lakh to INR 22.99 lakh (ex-showroom), depending on the variant and features.

By
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HONDA SP125

The Honda SP 125 2021 is a motorcycle that is part of the Honda's popular SP series. It is a 125cc commuter bike designed for daily use, offering a perfect blend of performance, fuel efficiency, and reliability.

ENGINE AND PERFORMANCE

The Honda SP 125 2021 is powered by a 124.7cc, single-cylinder, air-cooled engine that produces 10.3bhp of power and 10.3Nm of torque. The engine is equipped with stop-start technology to save fuel and reduce emissions.

FEATURES AND SPECIFICATIONS

- Engine: 124.7cc, single-cylinder, air-cooled
- Power: 10.3bhp
- Torque: 10.3Nm
- Mileage: 65 kmpl (approximate)
- Suspension: Telescopic fork at the front and twin shock absorbers at the rear
- Top Speed: 95 km/h (approximate)
- This system ensures balanced braking by distributing the brake force between the front and rear wheels. It helps in reducing stopping distances and enhances overall stability during sudden braking.

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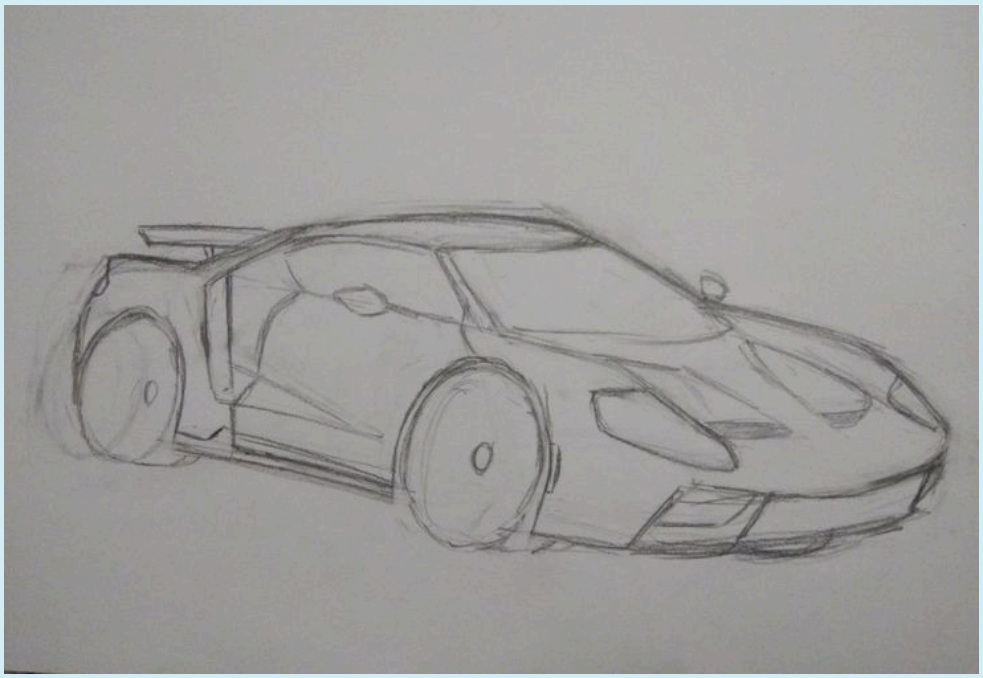

A PENCIL SKETCH OF LAMBORGHINI

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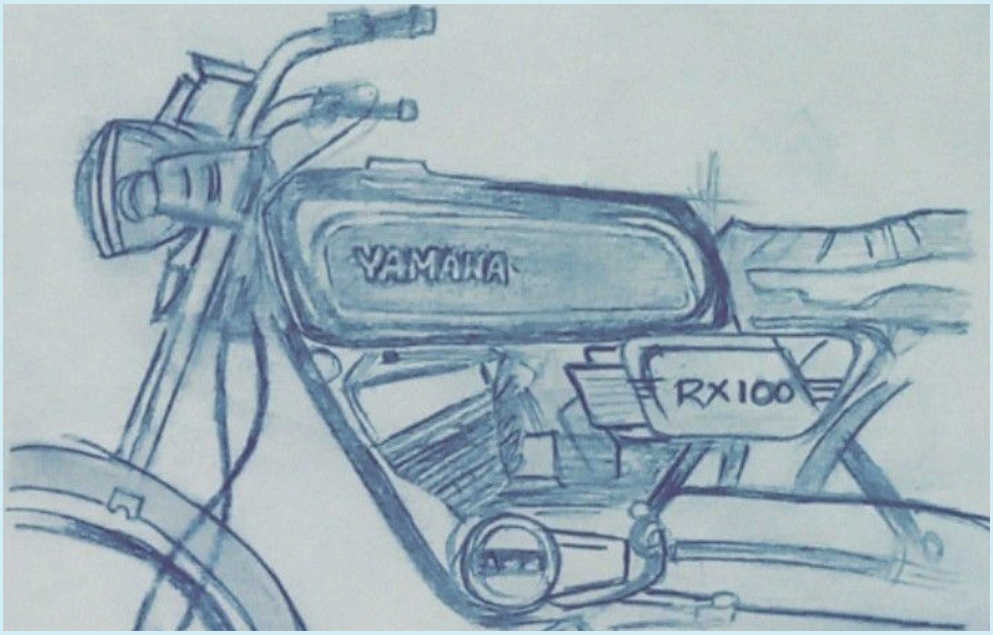

A PENCIL SKETCH OF RX 100 MOTORCYCLE

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MG ASTOR

MG's latest SUV is loaded with tech, including an AI assistant and ADAS driving features. But does it have enough to dethrone the current midsize SUV king, the Creta? Read all about it in this issue

TATA TIGOR EV ROAD TEST

We put Tata's latest and smallest EV offering through our rigorous road test. Find out how it performs in the real world in this issue.

MERCEDES EQC CLEAN ENERGY DRIVE

Given that most of India's electricity is still generated via thermal energy, we set out in a Mercedes-Benz EQC in search of some clean electricity from green sources such as solar, wind and hydro.

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ROYAL ENFIELD CLASSIC 350 VS HONDA H'NESS CB350

LOOKS :

Both motorcycles have a retro design but it is the Honda that carries few modern elements with all LED lighting. Some people might like this while some others would prefer the timeless retro design of the Royal Enfield with its halogen bulbs and the fact that it still looks very close to the original Classic 350 despite being based on the new- gen J-platform. The lower variants of the Classic come with a set of spoked rims which adds to the retro appeal of the motorcycle.

FEATURES:

In terms of features, the CB350 comes with all-LED lighting, a digi-analogue instrument cluster, an emergency stop signal, a Honda Smartphone Voice Control system and traction control. The Classic 350 comes with a more retro analogue speedometer with a small digital display and there is also Tripper Navigation on the top-end variant.

HARDWARE:

The CB350 uses telescopic forks in the front and twin gas-charged shock absorbers at the rear. Braking duties are done by a 310 mm disc at the front and a 240 mm disc at the rear. There is also the safety net of dual-channel ABS as standard.

The Classic 350 also uses an identical suspension setup. However, braking duties are done by a 300 mm disc in the front and a 270 mm disc or a 153 mm drum at the rear. There is a single or a dual-channel ABS on offer, depending on the variant.

ENGINE:

Powering the CB350 is a 348.36 cc, air-cooled, 4-stroke, single-cylinder engine that gets fuel injection and is BS6 Stage 2 compliant. It puts out 20.78 bhp of max power at 5,500 rpm and a peak torque output of 29.4 Nm of torque at 3,000 rpm. There is a 5-speed gearbox with slip and assist clutch.
The J-platform engine on the Classic 350 is a 349 cc, air-oil cooled unit that produces 20.2 bhp at 6,100 rpm and a peak torque output of 27 Nm at 4,000 rpm. It is mated to a 5-speed gearbox.

PRICE:

The Classic 350 is priced between 1.93 lakh and 2.25 lakh whereas the CB350 costs between 2 lakh and ₹2.18 lakh. All prices are ex-showroom.

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YAMAHA R15 V4

The Yamaha R15 V4 is a stellar motorcycle that delivers exceptional performance, handling, and style. Its 155cc engine provides a thrilling ride, while its aerodynamic design and vibrant color options make it a head-turner on the road. With advanced features like traction control and a slipper clutch, this bike is a great choice for both beginners and experienced riders. Overall, the R15 V4 is an excellent value for its price

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