

AUTOMOTIVE ENGINEERING

- Building a car takes a long time from **research**, through **design** to final **development**. First, researchers need to determine what consumers want, and then suggest what kind of automobile to make, During the design phase, new ideas are converted into tangible **parts** or products, At the same time engineers modify existing parts and **features** for the new **model** and draft new plans for the **prototype** (a working example of a new design). Then manufacturers begin to construct a few prototypes. These are extensively **tested in wind tunnels** and **dust tunnels**, factory **tracks**, **water-proofing** bays, **desert heat**, **Arctic cold**, and **crashes**. At the next stage a plant is set up to build the new model and the necessary **components**. Product planners monitor the process to ensure that the new car program finishes on time and within budget. Managers must also coordinate different activities, including producing the cars, purchasing materials, and training the workers.

Marketing teams must then sell the car. Every year the major car manufacturers launch their new models, but a single car design can take several years from **the drawing board** to the **showroom** floor. A typical company will therefore have several new designs in various stages of development at any given time.

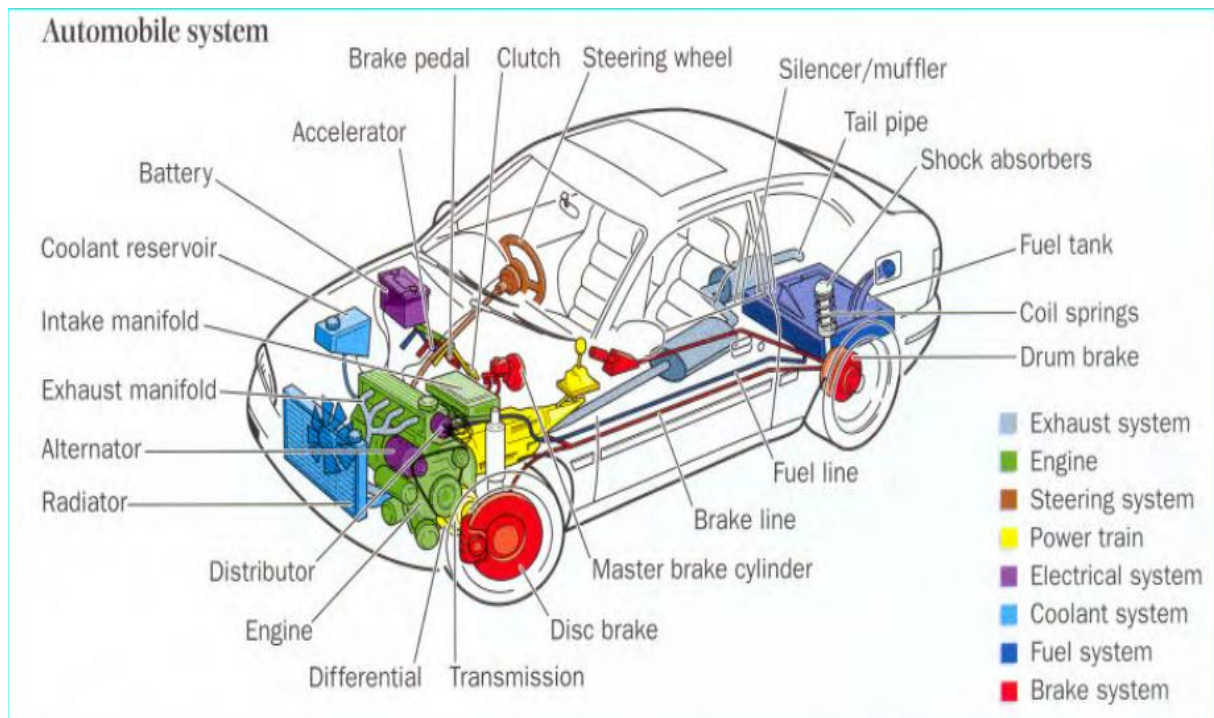
- Automobiles have developed over the years, both in terms of mechanics and design. Today's automobile system is more efficient and safer, and the range of models more varied. A central part of car manufacture is the workshop where car bodies are shaped and painted (the body shop).

Models

*bus *executive *4x4 *jeep *lorry *luxury *medium *mini
*multi-purpose vehicle (MPV) *people carrier *pickup *small family
*sport *super mini *trucks *van

Body shaping and painting

*body panel *cast *cut *fiber glass *forge *machine operator mould
*paint shop *press shop *spray gun *stamp *steel



➤ **Advertising plays an important role in promoting the features of cars.**

- *advanced braking system (ABS) *air conditioning *airbag *alarm
- *alloy wheels *central locking *climate control *electric windows immobilizer
- *power assisted steering (PAS) *sunroof

Task 01 :

There are several steps in the process of developing a car. Put the following steps in the correct order.

- a- A plant is set up to build the new model.
- b- Marketing teams work to promote the new model and the new car is launched.
- c - Researchers analyze the answers and suggest the type of car to be built.
- d- Engineers work to modify existing parts for the new model.
- e- Customers are asked questions about the sorts of features they would like in a car. f Product planners make sure that the new car is ready on time.
- g- Tests are carried out in different conditions.
- h- A prototype is built.

i- Designers work to design a new car based on these suggestions.

Task 02 :

Match the part of the car with its function.

steering wheel	holds brake fluid
exhaust manifold	provides the power
radiator	stores electricity
fuel tank	ensures that the rear wheels turn at a different speed to each other when a car corners
brake line	produces electricity
silencer/muffler	sends an electric current to the spark plugs
battery	carries waste gases to the exhaust pipe
clutch	makes the car go faster when it is pressed
differential	used by the driver to turn the car
engine	holds fuel
brake cylinder	cools water from the engine
accelerator	connects the brake cylinder to the brakes
distributor	reduces the exhaust noise
alternator	disconnects the engine from the gearbox while the gears are changed

SOLUTION 01 :

e c d h g a b

SOLUTION 02 :

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