

(Attempt the questions at the back of your exercise book)

QUESTION 1

Problem: Cars can make life easier particularly when travelling to school, work or shopping etc. Quite often cars require servicing, tyre repairs.

Brief: Design a car jack ramp that makes it easier for repair and servicing.

The **mechanism** should be:

1. made from a combination of metal and plastic or wood;
2. relatively cheap and *safe for the user*;
3. light and easy to use *under the car*
4. operated manually or with a *source of power*.

Requirements:

- (a) Produce two freehand pictorial sketches of the car jack ramp. (8 marks)
- (b) Evaluate each sketch on the following criteria:
- (i) materials
 - (ii) strength (4 marks)
- (c) Explain with the help of sketches *how the jack is operated* under the car (3 marks)
- (d) Draw a pencil-rendered or a colour-rendered pictorial sketch of the final solution. (5 marks)

QUESTION 2

Problem: Pawpaw and mango business is common in Fiji but it becomes difficult for farmers to harvest it during the season due to the height of the plants. The fruit is partially or fully damaged while picking.

Brief: Design a **fruit picking device** which could assist in this important fruit picking task.

The **mechanism** should be:

1. made from *locally available materials* and manually operated;
2. relatively cheap and safe for the user;
3. have *storage compartment* attached to avoid damaging of fruits;
4. have *adjustable handle* to reach varying heights.

Requirements:

- (a) Produce two freehand pictorial sketches of the device. (8 marks)
- (b) Evaluate each sketch on the following criteria:
- (i) materials
 - (ii) strength (4 marks)
- (c) Explain with the help of sketches *how the device will pick the fruits* and *how the length can be adjusted* to reach varying heights. (3 marks)
- (d) Draw a pencil-rendered or a colour-rendered pictorial sketch of the final solution. (5 marks)