

Q.3. Read the following passage and answers the questions that follow. (20)

It is in the very nature of the helicopter that its great versatility is found. To begin with, the helicopter is the fulfillment of one of man's earliest and most fantastic dreams. The dream of flying – not just like a bird – but of flying as nothing else flies or has ever flown. To be able to fly straight up and straight down – to fly forward or back or sidewise, or to hover over and spot till the fuel supply is exhausted.

To see how the helicopter can do things that are not possible for the conventional fixed-wing plane, let us first examine how a conventional plane “works.” It works by its shape – by the shape of its wing, which deflects air when the plane is in motion. That is possible because air has density and resistance. It reacts to force. The wing is curved and set at an angle to catch the air and push it down; the air, resisting, pushes against the under surface of the wing, giving it some of its lift. At the same time the curved upper surface of the wing exerts suction, tending to create a lack of air at the top of the wing. The air, again resisting, sucks back, and this gives the wing about twice as much lift as the air pressure below the wing. This is what takes place when the wing is pulled forward by propellers or pushed forward by jet blasts. Without the motion the wing has no lift.

Questions:

- (i) Where is the great versatility of the helicopter found?
- (ii) What is the dream of flying?
- (iii) What does the wing of the conventional aircraft do?
- (iv) What does the curved upper surface of the wing do?
- (v) What gives the wing twice as much lift?

Where is the great versatility of the helicopter found?

Versatility is found in the nature of the helicopter. Because helicopter tries to fulfill human's earliest desires and magnificent dreams. Hence, nature of the helicopter indicates its versatility.

What is the dream of flying?

The dream of flying is not just like a bird but of flying to the places that never have been visited. Moreover, a man wants to fly everywhere; forward and backward, until the fuel supply is exhausted. So the dream of flying is not restricted to the limited spots.

What does the wing of the conventional aircraft do?

The wing of the conventional aircraft enables the aircraft ^{to do work} by its shape. The wing deflects air when aircraft is in the motion due to density and resistance of air. Furthermore, wing also reacts to force. Hence wing of conventional

helps ^{the} aircraft in operation.

What does the ^{curved} upper surface of the wing do?

The curved ~~upper~~ surface of the wing ~~is set~~ sets an angle to attract the air and draws down and it pushes air down to lift the aircraft. At the same time **curved upper surface** of the wing exerts suction and creates air shortage at the top of the wing. Hence, curved upper surface helps to initiate movement of aircraft.

What gives the wing twice as much lift?

The curved upper surface of the wing is responsible for suction and lack of air at top of ~~up~~ wing. This air and sucks back give the wing about twice as much lift as the air pressure below it. Hence without movement wing has no lift and only motion enables it to lift.