

## FOR THOUGHT AND DISCUSSION

1 The term *hypoxia* usually refers to a condition in which the availability or utilization of oxygen is depressed. The data listed below illustrate four different types of hypoxia compared with the state of a "normal" person breathing fresh room air. (The weight, sex, and age of all subjects are the same.)

Subject	Hemoglobin (grams Hb per 100 ml blood)	O <sub>2</sub> content of arterial blood (ml O <sub>2</sub> per 100 cc blood)	O <sub>2</sub> content of venous blood (ml O <sub>2</sub> per 100 ml blood)	Cardiac output (liters/ min)
A NORMAL	15	19	15	5.0
B HYPOXIA	15	15	12	6.6
C HYPOXIA	8	9.5	6.5	7.0
D HYPOXIA	16	20	13	3.0
E HYPOXIA	15	19	18	no information

- (a) Which subject is suffering from a dietary iron deficiency?
- (b) Which subject is suffering from heart failure and poor blood circulation?
- (c) Which subject has recently climbed a mountain, where the air is "thin" and atmospheric oxygen low?
- (d) Which subject is suffering from a poison (for example, cyanide) which prevents his cells from using oxygen?
- (e) Subject B has increased respiration. Briefly describe the physiological mechanism that is responsible.
- (f) In subject A how much blood is flowing through the lungs each minute? Using this figure, and data from the table, calculate how many cc of oxygen are carried *to* the lungs each minute. How many cc of oxygen are carried *away* from the lungs each minute. Using these last two figures, calculate the oxygen consumed each minute.