

**KEY FACTS  
AND  
HANDLING QUESTIONS**

Vol. 2

**JAR-FCL  
Type Examples**

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*By Anthony Stevens*

Human Performance & Limitations

Navigation

MET

Operational Procedures

Air Law

Radio Navigation

Communications

## **PREFACE**

The route to obtaining a professional pilot's licence is both complex and arduous, particularly during this time of change to the JAR-FCL syllabus. Any tools that can help to make that path easier will be of benefit to you, the student since the level and quality of knowledge required are both high. Some of you may not have studied for exams for some years but will remember particularly the process of revision. This book is primarily aimed at aiding that revision process and is not designed to take the place of a formal course, nor the comprehensive notes that accompany such a course. I hope, however, that it does help make the path to your chosen goal a little bit easier.

Good Luck, I wish you well.

**Anthony Stevens**  
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# CONTENTS

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Navigation

MET

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Radio Navigation

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# **HUMAN PERFORMANCE & LIMITATIONS**

## **HUMAN PHYSIOLOGY**

1. In the Respiratory System air can be drawn into the body through the nose and mouth. Filtered air is then taken to the lungs via the trachea (windpipe)
2. The trachea divides into 2 bronchi which in turn divide to produce millions of tiny passages or bronchioles each of which ends with many grape like air sacs called alveoli.
3. Each alveolus is covered with fine capillaries which carry blood.
4. Because the walls of the alveolus are very thin and a pressure gradient exists across them, oxygen readily diffuses into the blood and carbon dioxide is removed from the blood.
5. Oxygen is transported from lung to tissues in the protein haemoglobin in the red blood cells.
6. Carbon Dioxide is transported from the tissues to the lungs in solution in the blood as carbonic acid.
7. The major factor in the control of respiration is the level of carbon dioxide in the body.
8. With relation to blood pressure hydrostatic pressure is the difference between the pressure in the head and the pressure in the feet.
9. Blood pressure is lowest in the head as gravity pushes the blood towards the feet.
10. The ear has two functions: it allows us to hear and helps us to maintain our balance.
11. The hearing components are as follows: The external ear is a passage connecting the ear drum to atmosphere. Sounds create pressure variations which cause the ear drum to vibrate. This vibration is transferred to the fluid filled cochlea through a series of small bones in the middle ear. Nerves in the cochlea transmit the vibrations as electrical impulses to the brain where they are interpreted as sounds.
12. For balance the inner ear functions as a series of accelerometers detecting linear and angular acceleration of the head. Angular acceleration is detected by 3 semi-circular, mutually perpendicular canals and linear acceleration is detected by the Otolith organ. The complete system is called the vestibular apparatus.
13. The vestibular apparatus provides information to the brain which, when combined with visual information controls and maintains spatial orientation.