Humans as organisms

Chapter 11 Drugs

It is very important that you are able to answer the questions on your own, using your own knowledge of Biology. Have a go at the questions first, and then check your answers using this page. If you get a question wrong, try to work out where you have made an error.

1 Chemical, nervous, slow, reaction, stimulants, shorten, heroin, addictive, users/addicts, addicted, tolerance, dependent, nicotine, carbon monoxide, bronchitis, emphysema.

2 a) Depressants slow down the nervous system and lengthen reaction time. They act by reducing the rate at which the nerve impulses pass across the synapses.
   b) Stimulants are drugs that speed up the nervous system and shorten reaction time. They increase the speed of transmission of impulses across the synapses.
   c) i) Tolerance is when the body gets used to a certain kind of drug. To keep getting the same effect, a person has to take an increasing amount of the drug.
       ii) Addiction means that a person has become so dependent on the drug that it is doing them serious harm.
       iii) Withdrawal symptoms can occur when a person stops taking the drug that they have been addicted to. The symptoms can include sickness, nausea, shaking and high temperature.
       iv) Rehabilitation involves weaning a person off a drug so that the effects fade after two or three weeks.

3 a) Gas exchange. Oxygen diffuses from the air in the alveolus into the blood and carbon dioxide diffuses in the opposite direction.
   b) Two of: the wall of the alveolus is very thin; it is moist so that gases can dissolve; it has a large surface area to volume ratio; it has a good blood supply to maintain diffusion gradients.
   c) In the diseased lung, the alveolus has a greatly reduced surface area and the bronchiole is constricted (much narrower).
   d) In the diseased lung, the reduced surface area of the alveolus would reduce the amount of oxygen that could diffuse across. The constriction of the bronchiole reduces the amount of oxygen entering the alveolus. Breathlessness occurs as a person does not get enough oxygen.

4 D

5 a) i) 8.15 p.m.
    ii) 2.30 p.m.
   b) 7.00 p.m.
   c) 9.00 p.m.
   d) 3.00 a.m.

6 a) Beer has less alcohol content than spirits but drinking a greater volume can make it more harmful.
   b) Alcohol is a depressant and slows down the body’s reactions.
   c) It is unsafe to drive with any alcohol in your bloodstream.
   d) Drinking heavily over a number of years develops a tolerance but the long-term effects can lead to cirrhosis of the liver, heart disease and brain damage.
7. a) Accurately drawn bar chart with number of deaths on the y-axis and type of disease on the x-axis.
   b) Each bar divided into the relevant proportions to show the number of deaths in men and women.
   c) i) Chemicals in tobacco smoke weaken the walls of the alveoli. They can become damaged or even burst. A person's lungs cannot take in enough oxygen and they get breathless.
      ii) Nicotine and carbon monoxide make the blood clot more easily. This can block the arteries to the heart and reduce the supply of oxygen to the heart muscle.
      iii) Tar is thought to be the main cause of lung cancer. Tumours form in the lung and if they are not quickly discovered they can spread around the body.
      iv) Cilia on the cells lining the air passages stop beating. So the mucus, dirt and bacteria stay in the lungs. The bacteria start to breed resulting in chronic bronchitis.

8. a) i) 1890
      ii) 1925
   b) The number of cigarettes smoked per day increased dramatically up until the 1940s, but since the 1970s it has declined.
   c) i) The number of cigarettes smoked by men per day rose significantly from 4 to 6. There was no effect on women.
      ii) Stress of warfare/being in the company of many others who smoked/ignorance of the effects on health.
      iii) The number of cigarettes smoked by men per day rose from 10 to 12 and by women from 1 to 3.
      iv) Stress of warfare/being the company are many others who smoked/ignorance of the effects on health.
   d) i) It gradually caused it to decrease.
      ii) It continued to increase until the 1970s when it started to decrease.
   e) The less cigarettes smoked, the less tar accumulating in people's lungs. Therefore less tumours form and less people are likely to die of lung cancer.