AS Level Biology B

H022/02 Biology in depth

Question Set 1

1 Fig. 1.1 is a diagram of a cell found in the trachea. The structures labelled **A** to **G** are organelles found within the cell.

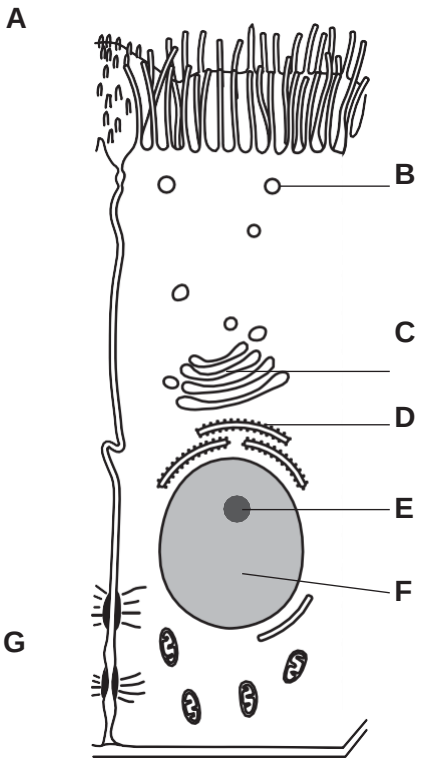

Fig. 1.1

(a) Using Fig. 1.1, complete the table below with the **letter** of the organelle that corresponds to the function being described.

Function	**Letter**
Provides ATP	
Modifies proteins	
Involved in protein synthesis	

[3]

(b) Tobacco smoke is a carcinogen. It can damage the DNA of the cells lining the trachea resulting in the development of a tumour.

Explain how damage to DNA can result in the development of a tumour.

[2]

(c) Research was carried out into the effect of smoking on the incidence of lung cancer.

Fig. 1.2 shows the results of this research.

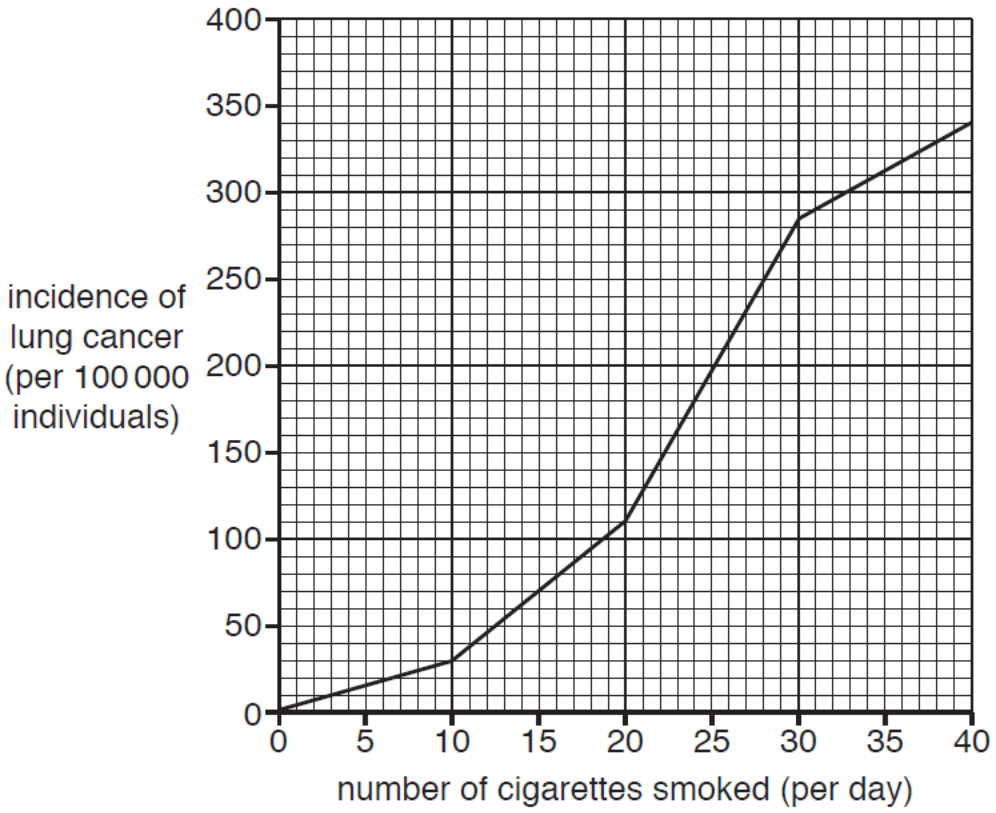

Fig 1.2

(i) State **two** factors that should have been considered when selecting people to participate in this research.

Factor 1 .....

Factor 2 .....

[2]

(ii) Using Fig. 1.2, calculate the percentage increase in the incidence of lung cancer when the number of cigarettes smoked increases from 20 to 40 per day.

Give your answer to the **nearest whole number**.

Answer = ... **% [2]**

(d) **(i)** Lung cancer can be detected using a technique called endoscopic ultrasound.

When using this technique, instead of placing the ultrasound probe on the outside of the chest, it is inserted through the mouth and into the airways of the lungs.

Suggest why endoscopic ultrasound is used rather than standard ultrasound for detecting lung cancer.

[1]

(ii) The number of people alive ten years after being diagnosed with a disease is called the ten year survival rate.

Lung cancer has one of the lowest ten year survival rates of all common cancers.

Suggest why the ten year survival rate for lung cancer is low. **[2]**

(e) Trastuzumad is an immunotherapy drug used in the treatment of breast cancer, but it has proved ineffective in treating lung cancer.

Using your knowledge of how **immunotherapy** drugs work, explain why trastuzumad can be used to treat breast cancer but **not** to treat lung cancer.

[1]

(f) During chemotherapy treatment, the majority of body cells are not affected by the drugs used.

However, some cells, such as those in hair follicles and bone marrow, may be damaged by chemotherapy drugs.

Explain why. **[1]**

Total Marks for Question Set 1: 14