

X-RAYS

1. **1995 Q28 P1**
Name the metal used to shields X – rays operators from the radiation. Give a reason why it is used. (2 marks)
2. **1998 Q4 P1**
State one industrial use of X – rays
.....
3. **1999 Q23 P1**
State the energy transformation when fast moving electrons are suddenly stopped by a target in an X- ray tube.
.....
4. **2000 Q35 P1**
State and explain the effect of increasing the E.H.T in an x-ray tube on the X-rays produced.
.....
.....
5. **2001 Q33 P1**
State the factor that determines the hardness of the X – rays produced in an X – ray tube.
.....
.....
6. **2002 Q32 P1**
State the property of X-rays, which makes it possible to detect cracks in bones.
.....
7. **2003 Q25 P1**
Give a reason why the target in an X-ray tube is made of tungsten or molybdenum.
.....
.....
.....
8. **2004 Q28 P1**
State the difference between X-rays and Gamma rays in the way in which they are produced.
.....
.....

9. 2004 Q33 P1

State the difference between hard X-ray and soft X-rays.

.....
.....

10. 2005 Q33 P1

The target of X-ray tube is made of metals of high melting point. Give a reason for this (1mark)

.....
.....

11. 2006 Q14 P2

State with a reason the effect on the X- rays produced in an X- ray tube, when the p.d across the tube is increased (2 marks)

.....
.....

12. 2008 Q13 P2

The accelerating potential of a certain X-ray tube is increased. State the change observed on the X-rays produced. (1mark)

.....
.....

13. 2008 Q19 P2

(a) X- rays are used for detecting cracks inside metal beams

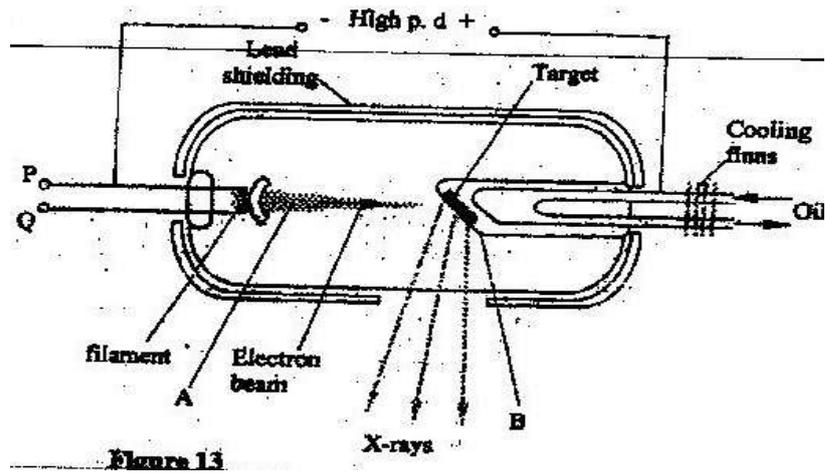
(i) State the type of the X- rays used (1 mark)

.....

(ii) Give a reason for your answer in (i) above (1 mark)

.....
.....

(b) **Figure 13** shows the features of an X-ray tube



(i) Name the parts labeled A and B (2 marks)

A.....

B.....

(ii) Explain how a change in the potential across PQ changes the intensity of the X-rays produced in the tube. (2 marks)

.....

(iii) During the operation of the tube, the target becomes very hot. Explain how this heat is caused (2 marks)

.....

(iv) What property of lead makes it suitable for use as shielding material? (1 mark)

.....

In a certain X- ray tube, the electrons are accelerated by a Pd of 12000V. Assuming all the energy goes to produce X- rays, determine the frequency of the X- rays produced. (Plank’s constant $h= 6.62 \times 10^{-34}$ Js and charge on an electron, $e = 1.6 \times 10^{-19}$ C). (4 marks)

.....

14. 2009 Q11 P2

In an x-ray tube, it is observed that the intensity of x-ray increases when potential difference across the filament is increased. Explain this observation. (3mark)

.....

15. 2010 Q12 P2

An x-ray tube produces soft x-rays. State the adjustment that may be made so that the tube produces hard x-rays.

.....

16. 2012 Q18a, b

Figure 18 shows the parts of an x-ray tube.

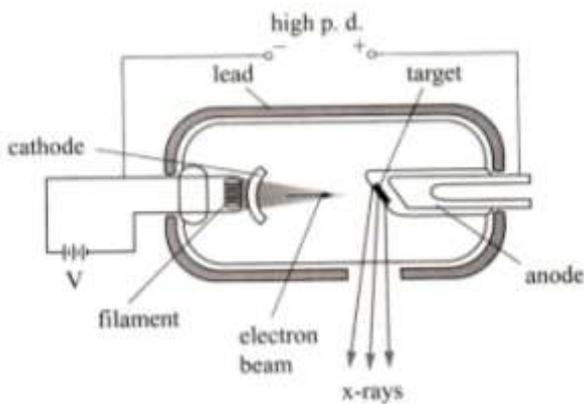


Figure 18

a) Explain why;

i). A potential difference is applied to the filament (2marks)

.....
.....

ii.)A high potential difference is applied between the cathode and the anode (2marks)

.....
.....

iii) Most of the tube is surrounded by lead. (1mark)

.....
.....

b) State how the resulting x-rays are affected by increasing the potential difference between the anode and the cathode (1mark)

.....
.....