

CATHODE RAYS AND CATHODE RAY TUBE

1. **1996 Q32 P1**

The control grid in a cathode Ray Oscilloscope (CRO) is used to control the brightness of the beam on the screen. How is this achieved? (2 marks)

2. **1998 Q19 P1**

State two differences between the cathode ray tube (CRT) of a TV and the cathode ray oscilloscope (CRO)

3. **2000 Q35 P1**

State and explain the effect of increasing the E.H.T in an x-ray tube on the X-rays produced.

4. **2001 Q4a P2**

Fig 3 shows the main features of a cathode ray tube (CRT) of a cathode ray oscilloscope (CRO)

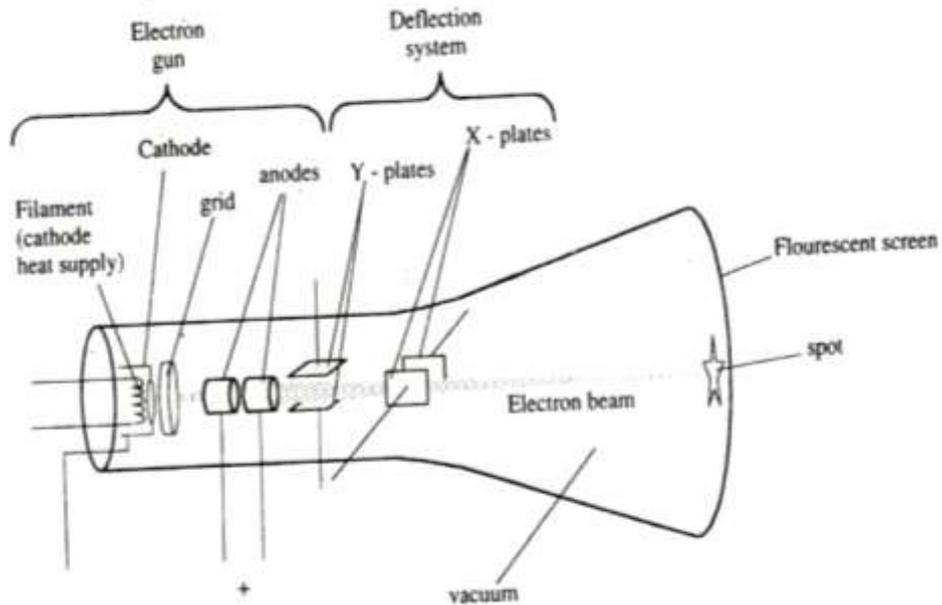


Figure 3

- i) Describe how the electrons are produced in the tube.
 - ii) State and explain the function of the grid.
 - iii) State what would be observed on the screen if an a.c voltage is connected across the y-plates.
 - iii) State how the deflection system of a television differs from that of a CRO.
 - iv) Give the reason why it is possible to have a wider screen in the television set than on the C.R.O.
5. **2004 Q32 P1**

Figure 17 shows the appearance of an alternating signal on a screen of a cathode ray oscilloscope.

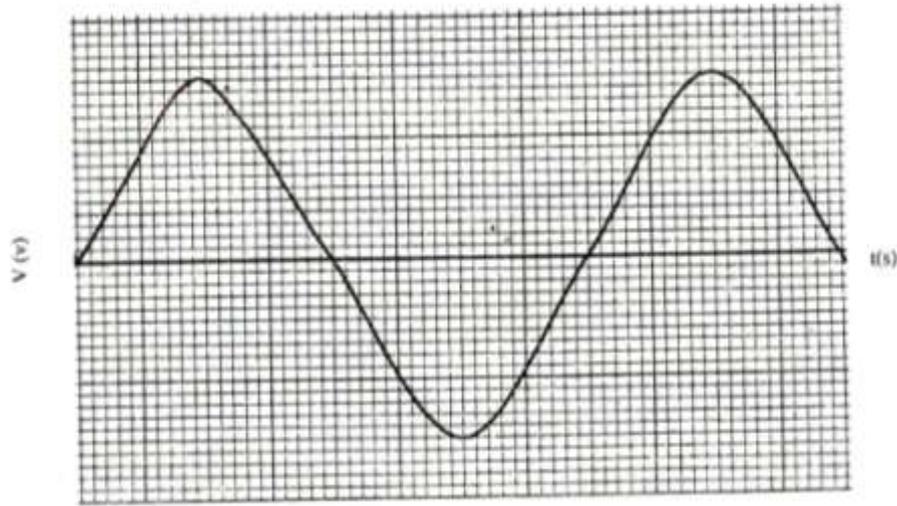


Figure 17

On the same diagram, sketch the appearance of the signal when the frequency is doubled and the voltage halved.

6. 2006 Q12, 13 P2

12. What property of the beam of electrons show that the electrons are traveling at a very high speed?

Figure 6 shows a tube for investigating the properties of a beam of electrons.

Use the information in the figure to answer questions 13.

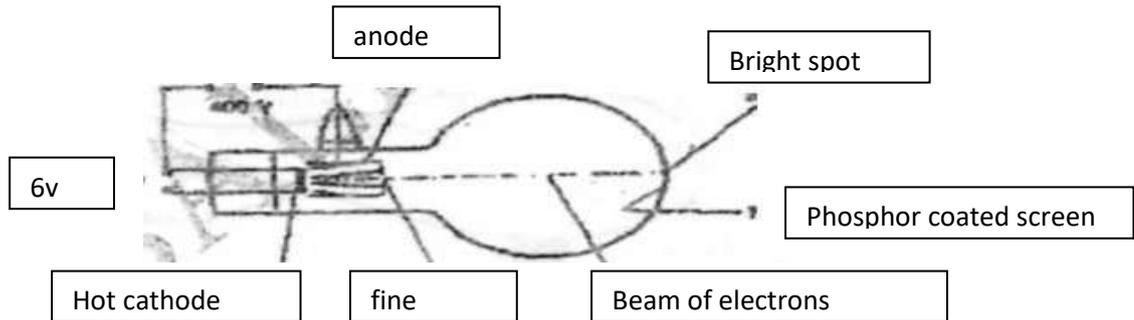
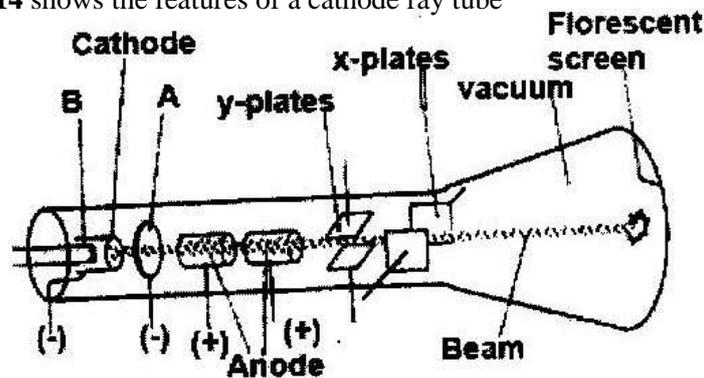


Figure 6

13. The beam of electrons is subjected to a strong magnetic field which is perpendicular to the path and into the paper. Sketch on the same figure, the new path of electrons. (1 mark)

7. 2007 Q18 P2

(a) **Figure 14** shows the features of a cathode ray tube



- (i) Name the parts labeled A and B (2marks)
- (ii) Explain how the electrons are produced in the tube (2 marks)
- (iii) State two functions of the anodes (2 marks)
- (iv) At what part of the cathode ray tube would the time be connected?
- (v) Why is a vacuum created in the tube? (1 mark)
- (b) The graph in **figure 15** was obtained on a cathode ray oscilloscope (CRO) screen when the output of an a.c generator was connected to the input of the CRO. The time-base calibration of the CRO was set at 20 milliseconds per centimeter and the y- gain at 5 volts/centimeter.

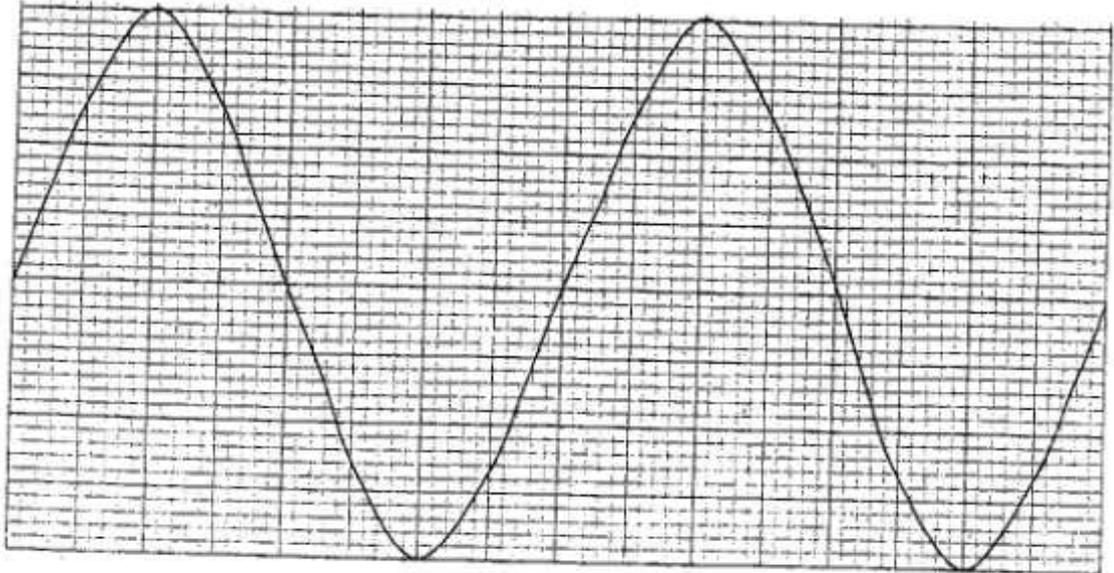


Figure 15

- (i) Determine the peak voltage of the generator (2marks)
- (ii) Determine the frequency of the voltage (3 marks)
- (c) On the same grid, redraw the graph for the same voltage when the time base calibration is set at 40 milliseconds per centimeter and y- gain at 10 volts per centimeter. (Show at least one complete cycle) (2 marks)
- 8. 2008 Q12 P2**
A narrow beam of electrons in a cathode ray oscilloscope (CRO) strikes the screen producing a spot. State what is observed on the screen if a low frequency a.c source is connected across the y-input of the CRO (1mark)
- 9. 2011 Q18a P2**
State two differences between cathode rays and electromagnetic radiations. (2 marks)