

**GATUNDU SOUTH SUB-COUNTY KCSE REVISION MOCK
EXAMS 2015**

232/2
PHYSICS
PAPER 2
2 HOURS

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NAME:.....INDEX.....DATE

SCHOOL:.....SIGNATURE.....

GATUNDU EVALUATION 2015 EXAMINATION

232/2

PHYSICS

PAPER 2

2 HOURS

INSTRUCTIONS TO CANDIDATES

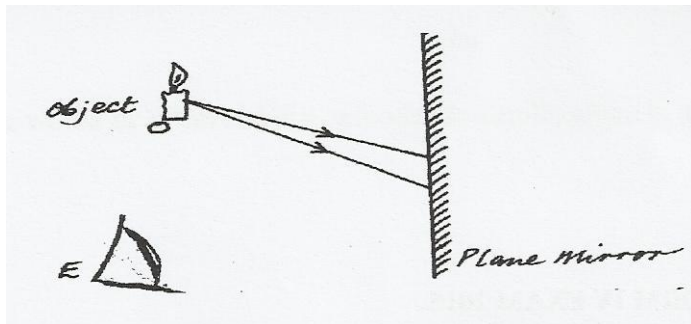
- ❖ *Write your name and index number in the spaces provided above*
- ❖ *Sign and write the date of the examination in the spaces provided*
- ❖ *Mathematical tables and electronic calculators may be used.*

For Examiner's Use Only

Section	Question	Maximum Score	Candidates' Score
A	Q1 – Q14	25	
B	Q15	10	
	Q16	6	
	Q17	8	
	Q18	10	
	Q19	12	
	Q20	9	
		80	

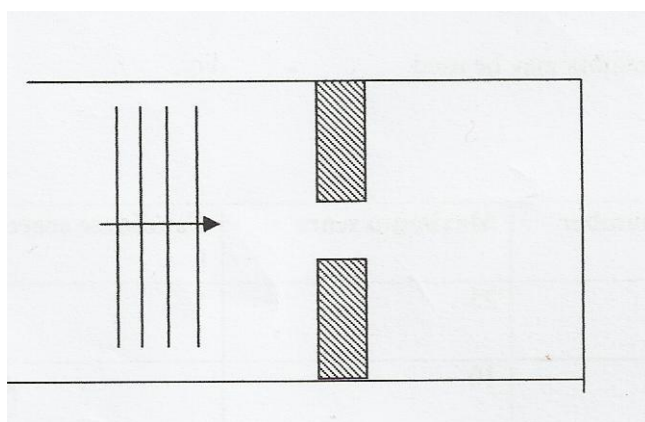
SECTION A (25 MARKS)

1. Figure 1 below shows an object O placed in front of a plane mirror.



On the diagram, draw rays to locate the position of the image I, as seen from the eye, E. (2 marks)

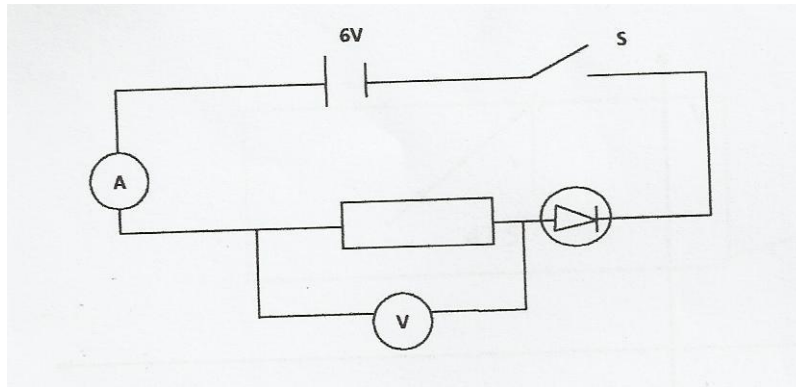
2. The figure 2 below water waves of different wave length incident on aperture which is greater than the wave length of the wave.



Complete the diagram to show the pattern of the wave beyond the aperture. (1 mark)

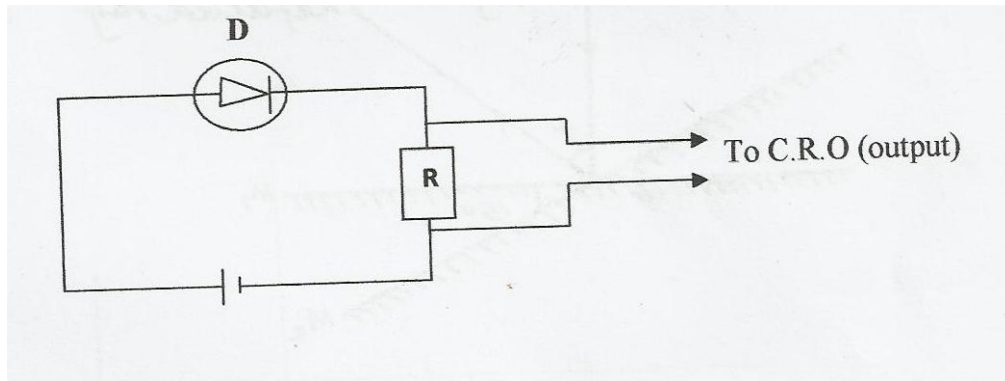
3. State one difference between X-rays and gamma rays based on their production. (1 mark)

4. In the circuit diagram in figure 3 below, the voltmeter and ammeter read 4v and 40mA respectively.



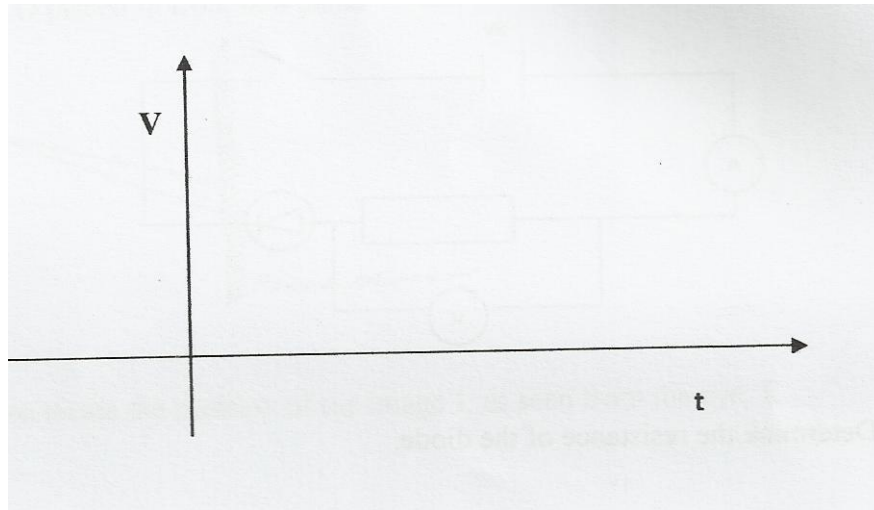
Determine the resistance of the diode. (2 marks)

5. Figure 4 below shows the supply of d.c. to a resistor, R through a diode, D.

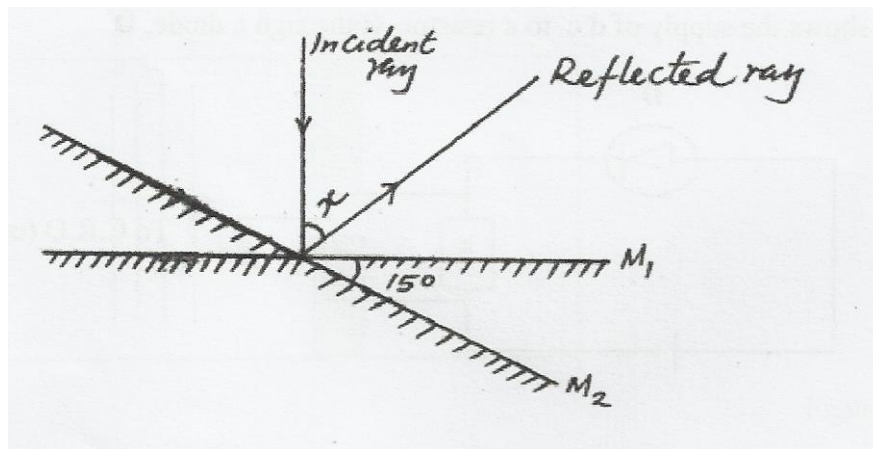


a) Give the bias of the diode. (1 mark)

b) An a.c supply is now supplied to the resistor R. On the axes provided below, sketch the output observed in the C.R.O connected across R. (1 mark)



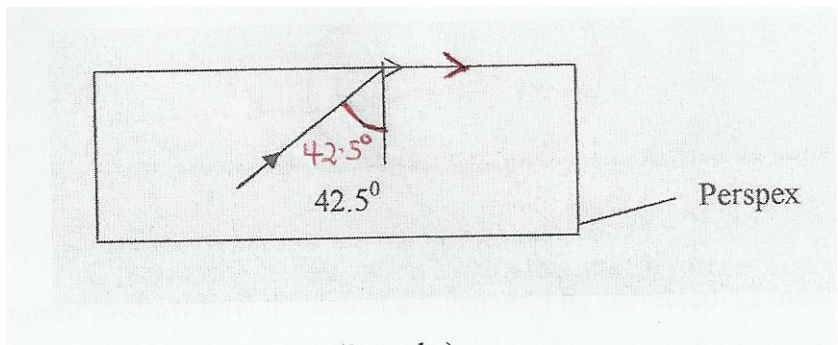
6. Figure 5 shows a ray of light incident along the normal. The mirror is rotated at an angle of 15° in a clockwise direction without changing the position of the incident ray,



Determine the angle between the reflected ray and the incident ray. (2 marks)

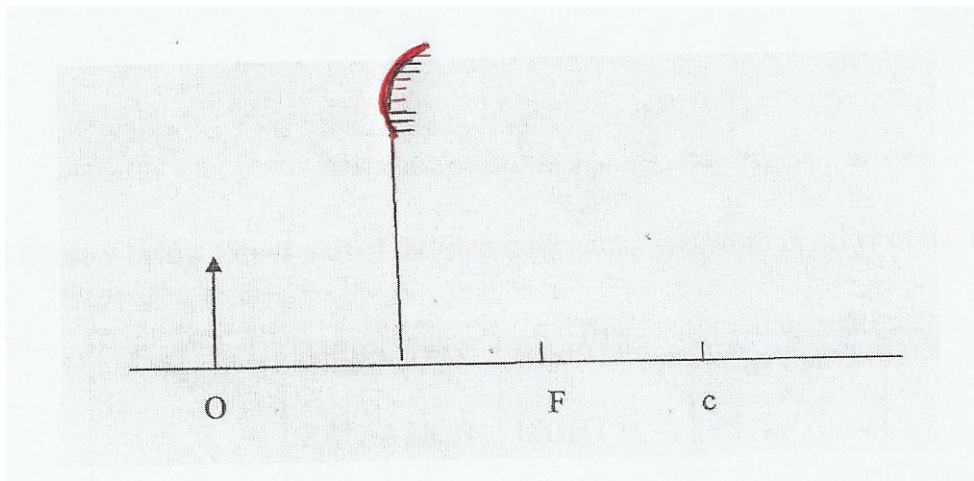
7. An electric heater is found to have a resistance of 950Ω when operating normally on a 240V mains. Find the power rating of the heater. (2 marks)

8. Figure 6 below shows a path of a ray of light through a rectangular block of Perspex placed in air.



Calculate the refractive index of Perspex. (2 marks)

9. Figure 7 below represent an object O placed 5cm in front of a convex mirror. F is the focal point of the mirror.

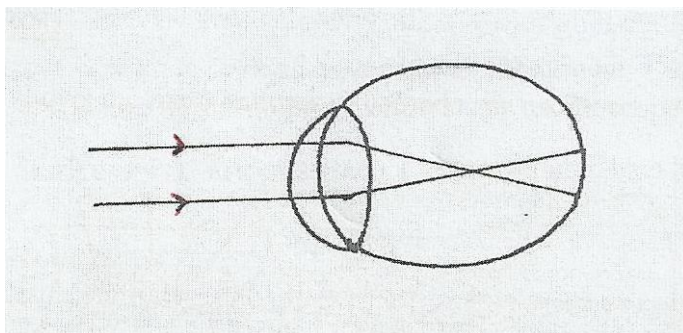


Draw rays to locate the position of the image. (2 marks)

10. A boy watching fireworks display sees the light from an explosion and hears the sound 2.5 seconds later. Determine how far is the explosion. (Speed of sound in air 330m/s). (2 marks)

11. Why is repulsion a sure way of testing polarity of a magnet?(1 mark)

12. Figure 8 below shows an eye defect



Use a ray diagram to show how the defect above could be corrected. (2 marks)

13. State two properties of X-rays similar to those of visible light. (2 marks)

14. The table in figure 9 below shows part of the electromagnetic spectrum in order of decreasing wavelength.

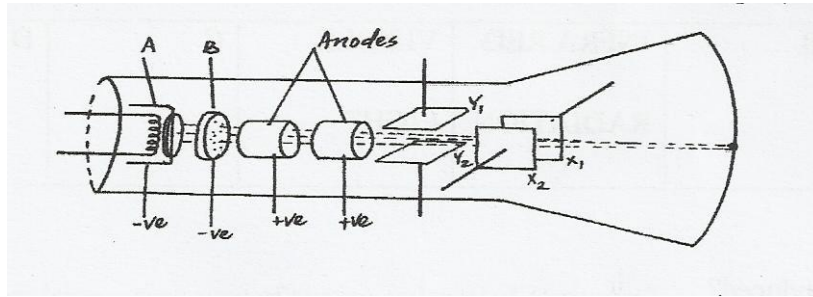
A	B	INFRA RED RADIATION	VISIBLE LIGHT	C	D
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a) How are waves C produced? (1 mark)

b) State one use of the wave D. (1 mark)

SECTION B (55 MARKS)

15. Figure 10 below shows the main features of cathode ray oscilloscope (C.R.O)

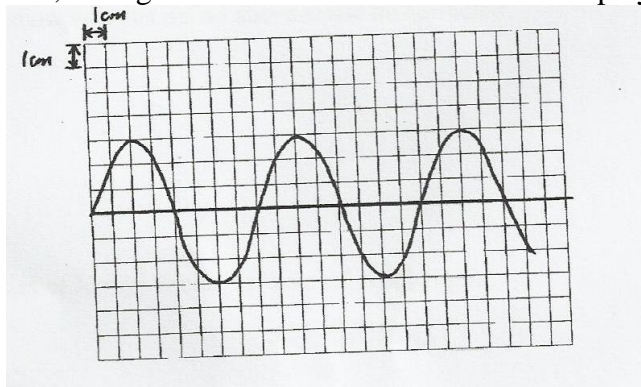


a) (i) Name the parts labeled A and B. (2 marks)

(ii) State the function of B and briefly outline how it works. (2 marks)

(iii) State two function of the anodes. (2 marks)

b) The output of an a.c generator was connected to the input of the cathode ray oscilloscope whose time base setting was 5 milliseconds per centimetre and the y-gain at 10 volts per centimetre, the figure below shows the waveform displayed on the screen of the C.R.O.



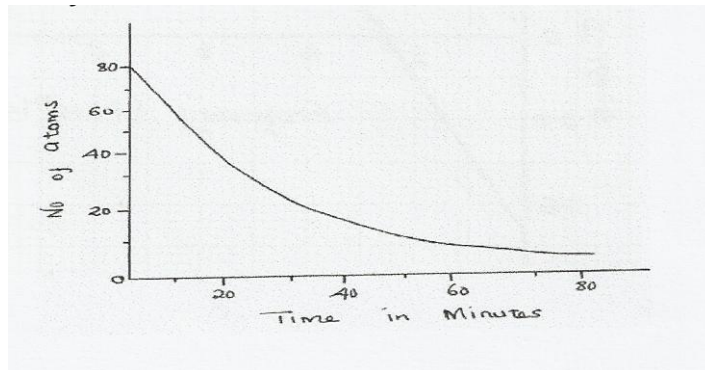
Determine

(i) The peak voltage of the generator. (2 marks)

(ii) The frequency of the voltage (2 marks)

16. a) Define the term half-life of a radioactive material. (1 mark)

b) Figure 11 below shows a decay of a certain element. The diagram is drawn to scale.

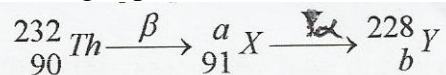


From the graph find.

i) Half-life of the element (1 mark)

ii) Number of half-lives undergone when the count rate is 10 atoms. (2 marks)

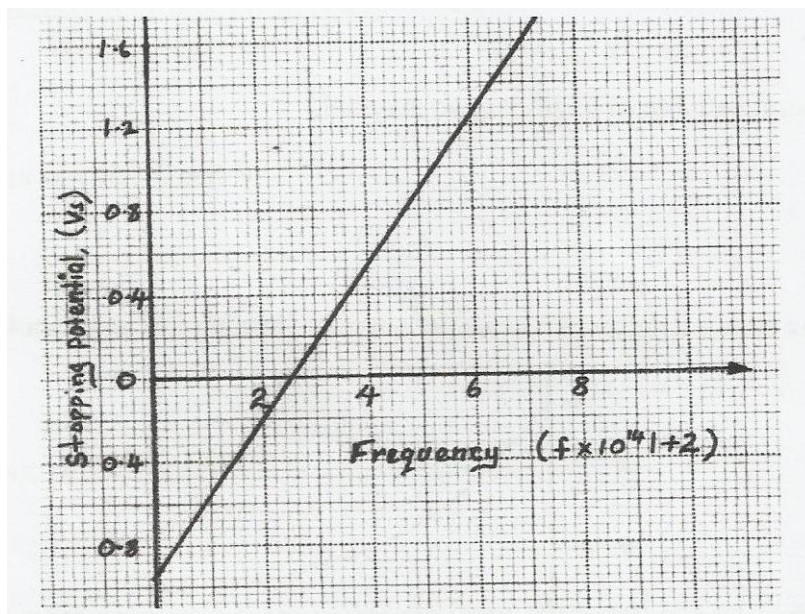
iii) The following is part of a radioactive decay series.



Determine the value of 'a' and 'b'. (2 marks)

17. a) Define the term photoelectric effect. (1 mark)

b) In an experiment to find relationship between frequency of radiation and kinetic energy of photoelectrons in a photoelectric device, the following graph was obtained.



Use the graph to answer the following questions.

i) Determine the threshold frequency. (1 mark)

ii) Find the plank's constant h . (Take the charge of an electron to be $1.6 \times 10^{-19}\text{C}$)

iii) Calculate the work function of the metal in joules. (2 marks)

c) The threshold frequency of sodium is $4.8 \times 10^{14}\text{Hz}$. Calculate the work function of sodium. (Take the plank's constant to be $6.6 \times 10^{-34}\text{JS}$) (2 marks)

18. a) State Lenz's law of electromagnetic induction. (1 mark)

b) A transformer with 2000 turns in the primary circuit and 150 turns in the secondary circuit has its primary circuit connected to a 800V a.c source. It is found that when a heater is connected to the secondary circuit, it produced heat at the rate of 1000W. Assuming 100% efficiency, determine the;

i) Voltage in the secondary circuit. (2 marks)

ii) Current in the primary circuit. (2 marks)

iii) Current in the secondary circuit. (1 mark)

iv) State the type of transformer represented above. (1 mark)

b) (i) State the reason why long distance power transmission is done at a very high voltage and using thick cables. (1 mark)

(iii) Calculate the cost of using the following appliances in one month (30 days) if the company rate is ksh. 9.50 per unit. (2 marks)

- I A 2000W water heater for 2 hours per day.
- II A 75W bulb for 10 hour per day.
- III A 1500W electric iron for 1 hour per day.

19. a) Define capacitance. (1 mark)

b) Figure 12 shows three capacitors of capacitance $3\mu\text{F}$, $2\mu\text{F}$, $6\mu\text{F}$ and 12V supply connected in a circuit.

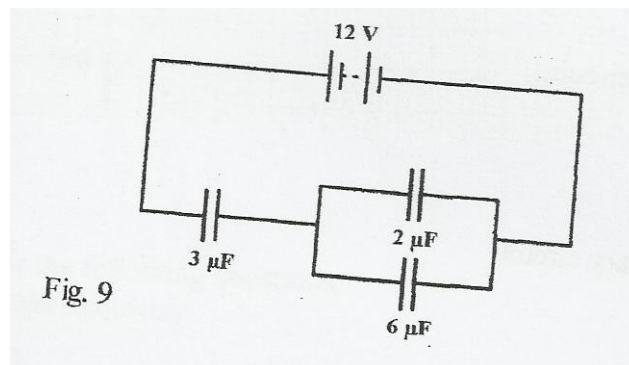


Fig. 9

Calculate

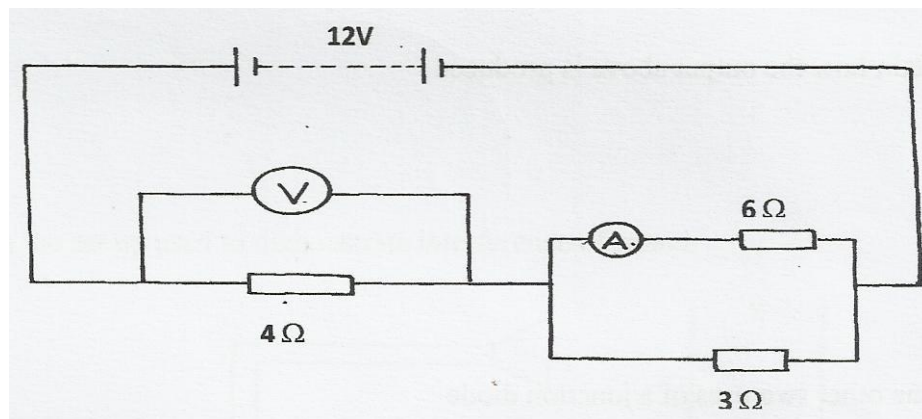
i) The total capacitance of the circuit. (2 marks)

ii) The charge stored in the circuit. (2 marks)

iii) The potential difference across the $2\ \mu\text{F}$ capacitor. (2 marks)

C i) State Ohm's law. (1 mark)

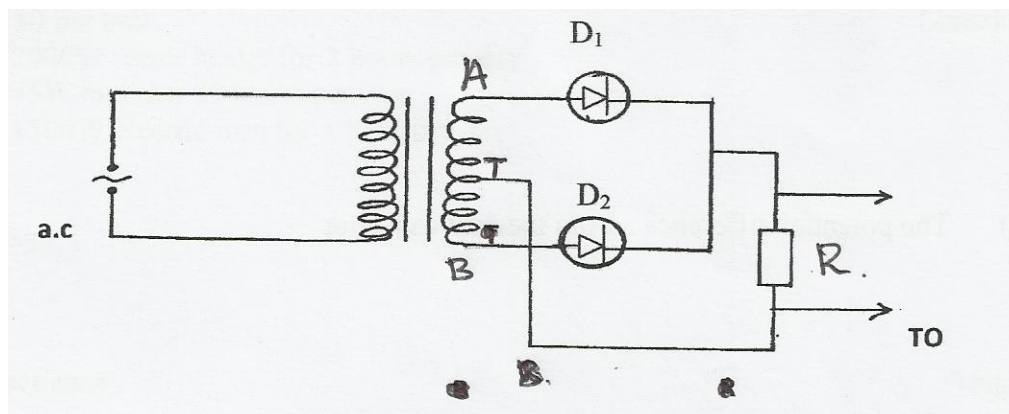
Study the circuit diagram shown below.



(ii) Determine the reading of the voltmeter V. (2 marks)

(iii) Determine the reading of the ammeter A. (2 marks)

20a) A student connected a circuit as shown in figure 13 below hoping to produce a rectified output.



i) Sketch the graph of the output on the **CRO** screen. (1 mark)

ii) Explain how the output above is produced. (2 marks)

iii) Name other two uses of a junction diode. (2 marks)

b) Figure 14 shows circular waves approaching a concave reflector.

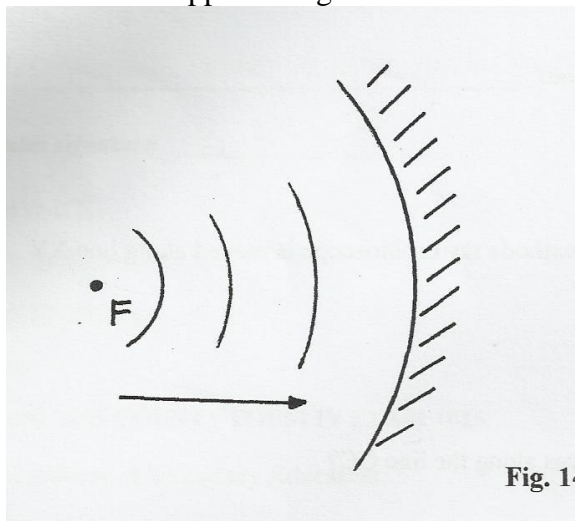
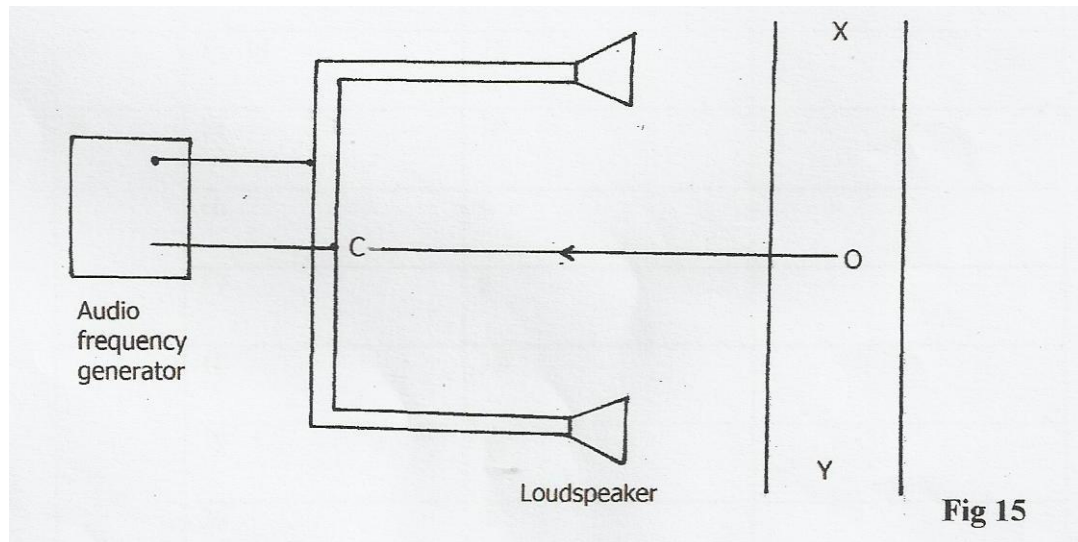


Fig. 14

Show the reflected waves. (2 marks)

c) Figure 15 shows the set up used to demonstrate interference of sound



i) An observer O, moves along XY.

State the observation(s) made. (1 mark)

(ii) State what would be observed if a cathode ray oscilloscope is moved along line XY. (1 mark)

(iii) What will a student hear if he moves along the line OC? (1 mark)