Name ..... Index No. .....

class .....Candidate's signature .....

NYABURURU GIRLS' NATIONAL SCHOOL

OUR LADY OF LOURDES

DATE DONE.....

INVIGILATOR.....

DATE RETURNED.....

DATE REVISED.....

PHYSICS

232/2-PAPER TWO

Time: 2 hours

FEBRUARY SERIES EXAMINATION-2016

Kenya Certificate of Secondary Education

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 above.
- This paper consists of two sections A and B.
- Answer ALL questions in section A and B in the spaces provided.
- All working must be clearly shown in the spaces provided in this booklet.
- Non-programmable, silent electronic calculators and KNEC mathematical tables may be used.

EXAMINER'S USE ONLY

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
A	1 – 14	25	
B	15	14	
	16	16	
	17	14	
	18	11	
TOTAL SCORE		80	

SECTION I (25MARKS)
Answer all questions in the spaces provided

1. (a) **What** is the name of the apparatus shown in the diagram below?

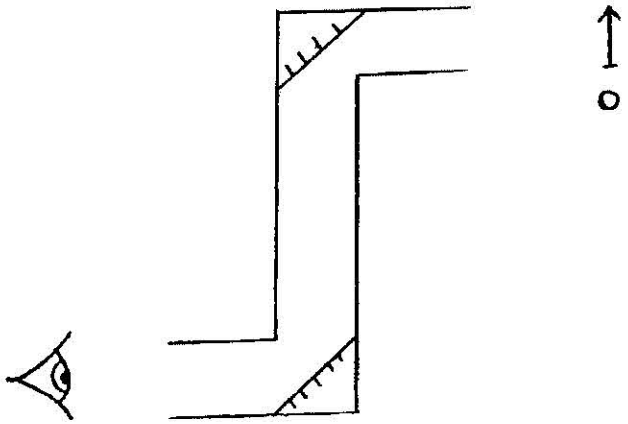

Figure 1

Name of instrument..... (1mk)

(b) A student used the above apparatus to observe a concert in a crowded theatre. **Complete** the ray diagram to show to the final image position (1mk)

2. The diagram below shows a positively charged rod brought close to a candle flame. It is Observed that the flame split into two

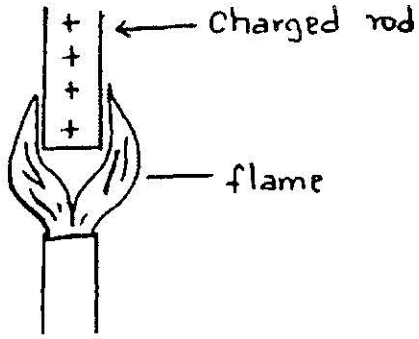

Figure 2

Explain this observation. (2mks)

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3. **Explain** briefly how heating demagnetizes a magnet (1mk)

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4. **Why** is it possible to start the car engine with a 12v –lead -acid accumulator, but not with eight 1.5V dry cells arranged in series (1mk)

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5. A conductor carrying current is placed in the magnetic field and moves in the direction shown

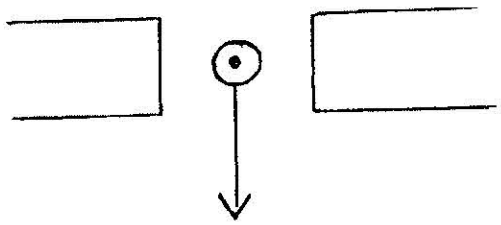

Figure 3

Indicate the polarity of the magnets in the diagram (1mk)

6. The reading of the Ammeter in **fig.4** below is 0.5A when the switch, S is closed.

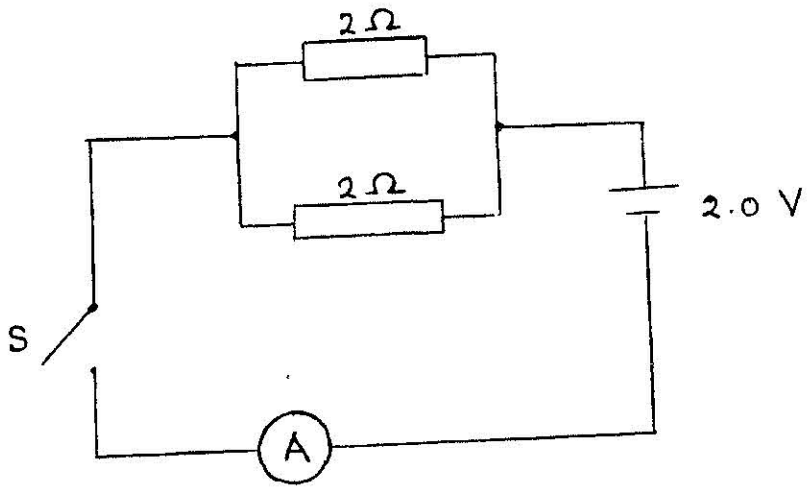

Fig. 4

Determine the internal resistance of the cell (3mks)

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7. The sketch graph in figure 5 (a) and (b) below represent the same wave.

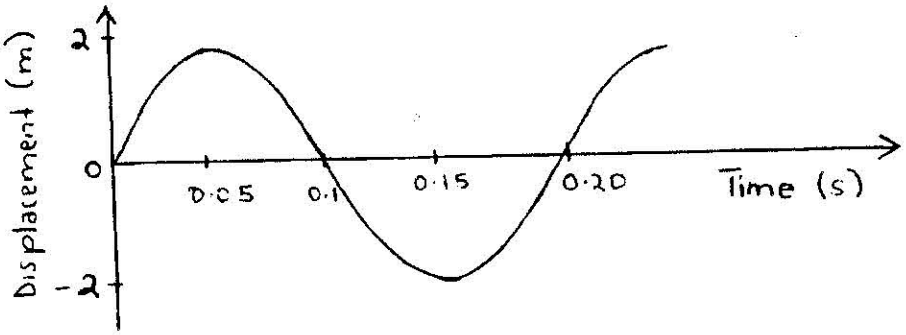

Fig. 5(a)

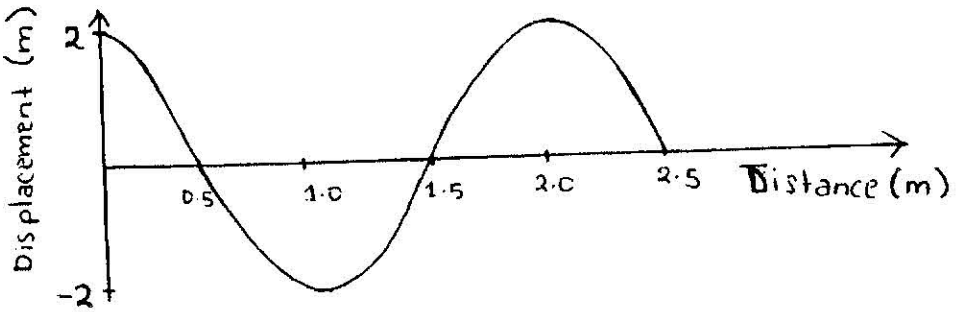

Fig. 5(b)

Determine the velocity of the wave (3mks)

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8. **Fig.6** below shows an object, O placed in front of concave mirror and its image, I formed by the mirror. **Draw** rays to show the principal focus of the mirror. (2mks)

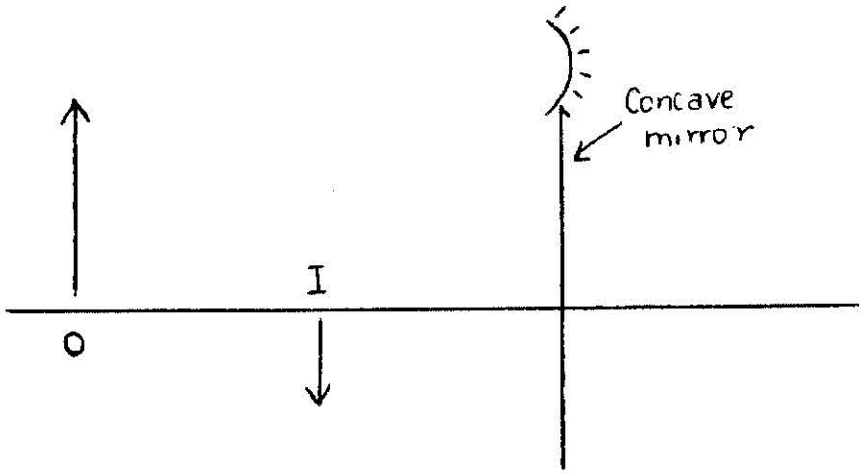

Figure 6

9. **Give** a reason why flourescent tubes are preferred to filament bulbs for domestic lighting. (1mk)

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10. **Arrange** the following electromagnetic radiations in order of increasing frequency; infra - red, Gamma rays, radiowaves, ultra-violets rays. (1mk)

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11. **Calculate** the apparent depth of an object, O in the **fig.** 7 below. (3mks)

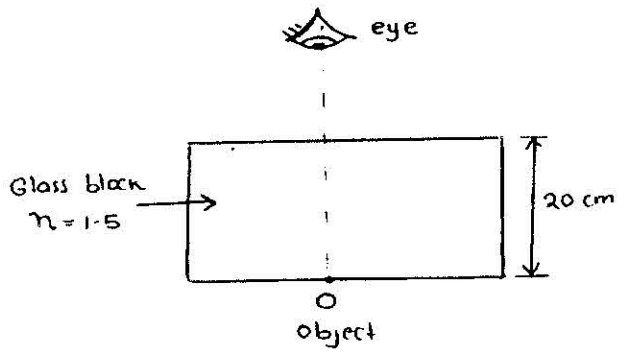

Figure 7

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12. What is the maximum number of 100w bulbs that can be connected to a 3A fuse on a main power supply of 240V. (3mks)

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13. What is meant by '**consequent poles**' as used in magnetism? (1mk)

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14. State the SI unit of power of a lens (1mk)

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SECTION II (55 MARKS)

15. A student carried out an experiment to investigate how current varies with potential difference applied across a filament lamp. The following readings were obtained.

P.d.(V)	0	0.20	0.40	0.60	0.80	1.20	1.60	2.40
I (A)	0.0	0.11	0.20	0.28	0.34	0.43	0.50	0.58

(a) **Draw** a diagram for the circuit used to obtain the values. (2mks)

(b) **Describe** briefly how the experiment was carried out. (2mks)

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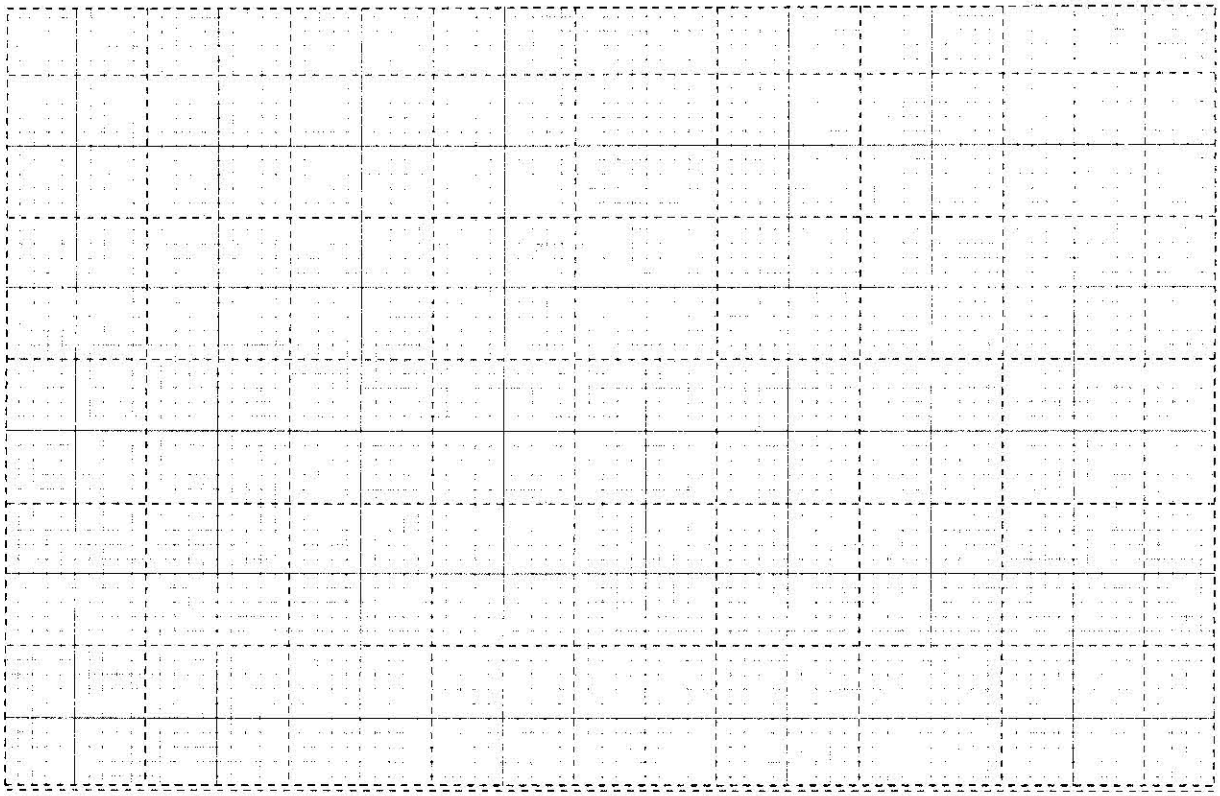
(c) **Plot** a graph of V against I for the values presented in the table. (5mks)



(d) **Determine** the resistance of the lamp when a current of 0.4A flows through it. (3mks)

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(e) **Explain** why a filament lamp does not obey Ohm's law. (2mks)

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16. (a) **Define** the term principal focus in relation to a thin convex lens (2mks)

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(b) **Distinguish** between a real and a virtual image. (2mks)

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(c) The diagram below shows an arrangement of lenses, L_o and L_e used in a compound microscope F_o and F_e are principal foci of L_o and L_e respectively.

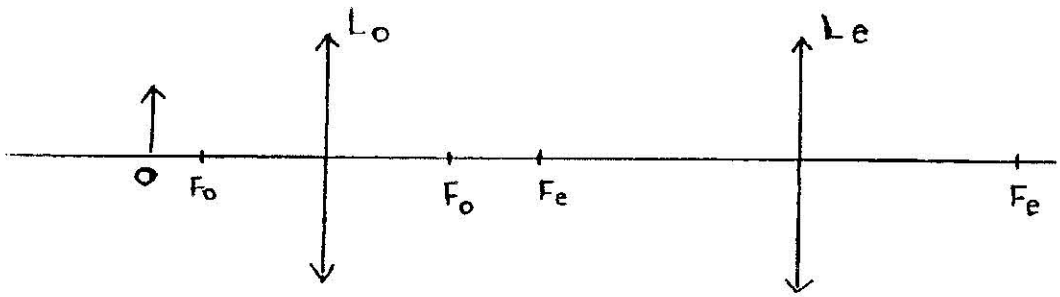
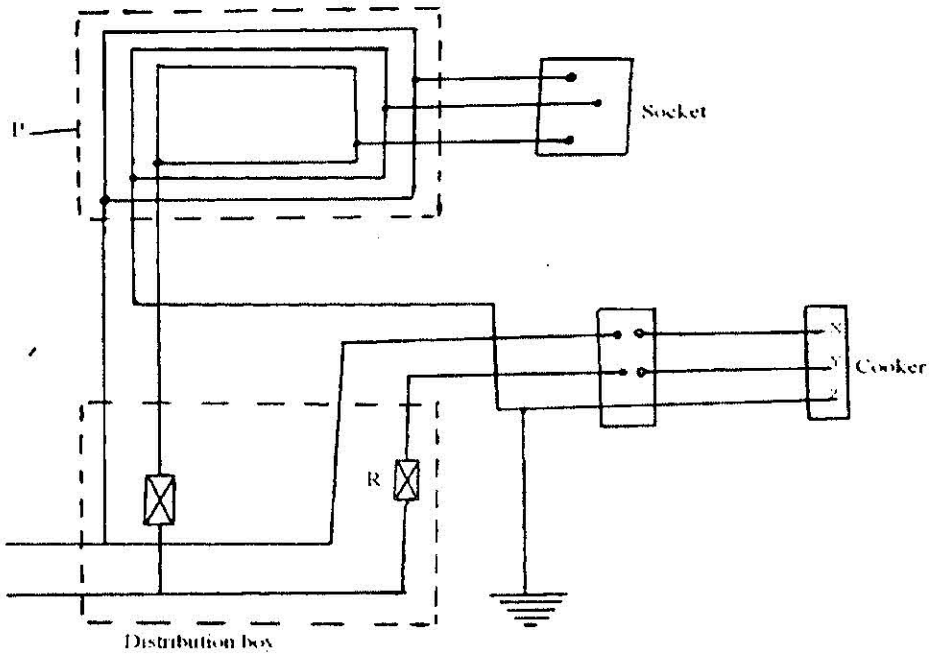


Figure 8

Draw the rays to show how the final image is formed in the microscope (3mks)

(d) Figure 9 shows a section of a house wire system.



i) Name:
The circuit labeled P (1 mark)

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The terminals labeled X, Y and Z (3 marks)

X .....

Y .....

Z .....

ii) I State the purpose of R in the circuit. (1 marks)

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II) Give a reason why R is connected to Y but not to X. (1 mark)

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iii) Why is the earthing necessary in such a circuit? (1 mark)

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(e) Determine the cost of using an electric iron rated 1500W, for a total of 30 hours given that the cost of electricity per kwh is Ksh.8 (2 marks)

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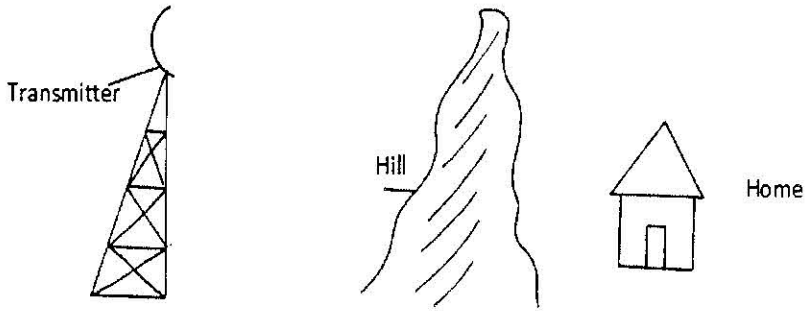
17. (a) Figure 10 shows a transmitter producing both TV and radio waves.



(i) Which wave can be detected by a receiver in the home at the foot of the mountain? Explain your answer. (2mks)

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Give an expression for the energy E of the TV signals if their wavelength is λ (Take speed of light in a vacuum and Planck's constant to be c and h respectively) (2mks)

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(c) A Hydro-electrical power station produces 500KW at a voltage of 10KV.The voltage is then Stepped up to 150KV and the power is transmitted through cables of resistance 200Ω to a step down transformer in a sub station. Assuming that both transformers are 100% efficient.

Calculate:

(i) The current produced by the generators. (2mks)

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(ii) The current that flows through the transmission cables. (2mks)

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(iii) The voltage drop across the transmission cables (2mks)

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(iv) The power loss during transmission (2mks)

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(v) The power that reaches the sub-station (2mks)

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18. a) State **two** factors that determine capacitance of a parallel plate capacitor. (2mks)

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b) Three capacitors of capacitance 100μF, 500μF and 400μF are connected together in a circuit.

Draw a circuit diagram to show the arrangement of the capacitors which gives

i) The effective capacitance of 250μF (2mks)

ii) Maximum capacitance (2mks)

c) Figure 11 shows a circuit where a battery of e.m.f 6V, a voltmeter, switches X and Y, two capacitors of capacitance 2μF and 4μF are connected.

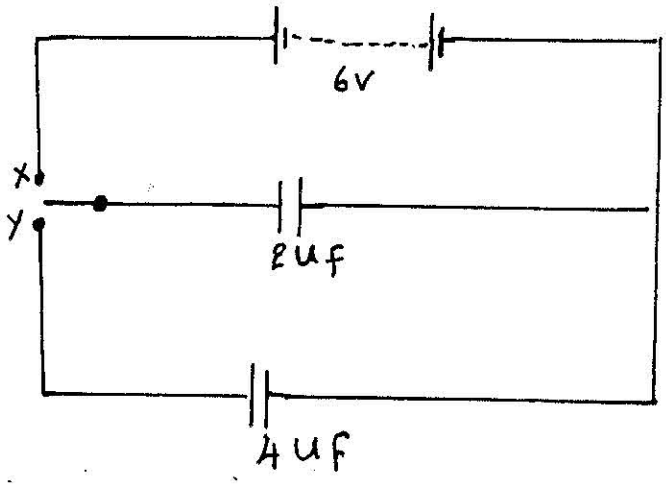

Fig. 11

i) Determine the charge stored in the 2μF capacitor when switch X is closed and switch Y is open. (2mks)

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ii) When the switch Y is finally closed and switch X is open, determine the potential difference across each capacitor (3mks)

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